An Assessment of the Services of College Library in the Context of Changing Information Scenario with Special Reference to Mizoram

A Thesis submitted to the Mizoram University
for the award of Degree of
DOCTOR OF PHILOSOPHY
in
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(School of Economics, Management and Information Science)

by
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D E C L A R A T I O N

I hereby declare that the thesis entitled **"An Assessment of the Services of College Library in the Context of Changing Information Scenario with Special Reference to Mizoram"** submitted by me has not been previously formed the basis for the award of any Degree or Diploma or other similar title of this or to any other University or examining body.

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C E R T I F I C A T E

This is to certify that the thesis entitled **"An Assessment of the Services of College Library in the Context of Changing Information Scenario With Special Reference to Mizoram"** submitted by Shri Lalbiaksanga Hnamte for the award of Doctor of Philosophy in Library & Information Science is carried out under my guidance and incorporates the students bonafide research and this has not been submitted for award of any degree in this or any other university or institute of learning

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Aizawl, Mizoram **Lalbiaksanga Hnamte**

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ABBREVIATIONS

AACR	Anglo-American Cataloguing Rules
AD	Anno Domini (After Christ)
AICTE	All India Council of Technical Education
AM	Ante Meridian
BARC	Bhabha Atomic Research Centre
BC	Before Christ
B Lib.Sc	Bachelor of Library Science
BLISc	Bachelor of Library & Information Science
CAS	Current Awareness Service
CC	Colon Classification
CCC	Classified Catalogue Code
CDC	College Development Council
CDS/ISIS	Computerized Documentation Service/Integrated Sets of Information System
CD-ROM	Compact Disk Read Only Memory
CEC	Continuing Education Centre
C Lib Sc	Certificate in Library Science
CPU	Central Processing Unit
CTE	College of Teacher Education
DA	Dearest Allowance
DDC	Dewey Decimal Classification
FID	International Federation for Information and Documentation
GDP	Gross Domestic Product
HRD	Human Resource Development
IARI	Indian Agricultural Research Institute
IASLIC	Indian Association of Special Libraries and Information Centers
ICAR	Indian Council of Agriculture Research
ICMR	Indian Council of Medical Research
ICT	Information Communication Technology
IFLA	International Federation of Library Associations and Institutions
IGNOU	Indira Gandhi National Open University
ILA	Indian Library Association

INFLIBNET	Information and Library Network
IT	Information Technology
IUC	Indian University Centre
LIS	Library Information Service
LOEX	Library Orientation Exchange
LRC	Learning Resource Centre
MAC	Media Access Control
MARC	Machine Readable Catalogue
MCLA	Mizoram College Library Association
MHTC	Mizoram Hindi Training College
MIS	Management Information Systems
MLISc	Master of Library & Information Science
MPL	Mizoram Polytechnic, Lunglei
MSCTE	Mizoram State Council for Technical Education.
MZU	Mizoram University
NAAC	National Assessment and Accreditation Council
NAPLIS	National Policy on Library and Information Systems
NEC	North East Council
NEHU	North East Hill University
NERIST	North East Regional Institute of Science and Technology
NGO	Non Governmental Organizations
NIC	National Informatics Centre
NISSAT	National Information System in Science and Technology
NKC	National Knowledge Commission
OCLC	Online Computer Library Center
OPAC	Online Public Access Catalogue
PM	Post Meridian
PLATO	Programmed Logic for Automatic Teaching Operation
PUC	Pachhunga University College
QAC	Quality Assurance Cell
RAM	Random Access Memory
RIPANS	Regional Institute of Para Medical and Nursing Sciences
RRRLF	Raja Rammohun Roy Library Association
SCERT	State Council of Educational Research & Training

SDI	Selective Dissemination of Information
SEI	Selective Elimination of Information
SLQACC	State Level Quality Assurance Co-ordination Committee
SOUL	Software for University Library
TA	Traveling Allowance
TE	Technical Education
TWE	Traveling Workshop Experiment
UGC	University Grants Commission
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNISIST	United Nations Information System in Science and Technology
VC	Vice-Chancellor

Abbreviations of College

PUC	Pachhunga University College
GLC	Government Lunglei College
GCC	Government Champhai College
GSC	Government Serchhip College
GAC	Government Aizawl College
CTE	College of Teachers Education
GKC	Government Kolasip College
GSHC	Government Saiha College
GHC	Government Hnahthial College
GHBC	Government Hrangbana College
GZRC	Government Zirtiri Residential Science College
GLTC	Government Lawngtlai College
GJBC	Government J.Buana College
GMC	Government Mamit College
MLC	Mizoram Law College
GSTC	Government Saitual College
GKZC	Government Khawzawl College
GZC	Government Zawlnuam College
GANC	Government Aizawl North College
GAWC	Government Aizawl West College
GJTC	Government J.Thankima College
GTRC	Government T.Romana College
KMC	Kamalanagar College
GJC	Government Johnson College

To
My family members

K.Vanlalzawni wife
Lalbiakzuali Hnamte Daughter
H.Lalbiakmawia Father
Zothansangi Mother
Lalbiakthuama Hnamte Brother
Lalbiakkima Hnamte Brother

Chapter – I

Introduction

1.1 Introduction

Mizoram, a mountainous region amalgamated in the Indian Union in February 1987 as the 23rd state which stretches down on the districts of Assam until 21st January 1972 when it became one of the Union Territories. Mizoram is located on the wedge of Myanmar in east & south and Bangladesh in west. It has got a strategic importance for trade and commerce which opened many fold openings for business, trade, commerce. For the development of North east region India is a underscoring the transformational potential of trade region and transport. The North East region including Mizoram shares along international border with China, Bhutan, Bangladesh and Myanmar. India look East Policy is dubbed as the new paradigm of development in North East regional development perspective. The policy envisages the region not as the periphery of India but as the centre of thriving as indicated the economic space. It gives a broad hint at a different reorientation towards the notion of South East Asia and is an endeavour to grapple with the emerging the global economic and political development especially with China, Singapore, Thailand, Indonesia and Malaysia. The state of Mizoram constituting eight districts is having a population size more than 8,88,573 according to the latest census and to its credit, it is witnessed a national image with regard to its literacy rate of 88.8% which is next to Kerala in India.

Mizoram witnessed is a series of developments especially with the establishment of the North-East Council (NEC) in 1971 by an Act of Parliament which functioned as the nodal agency for the economic and social development of the North-east region. There was also a remarkable development in education in the north-east in general and Mizoram in particular. The constitution of the NEC has marked the beginning of a new chapter of constructed and planned endeavour for the rapid development of the region

Education is the innermost call of human kind to evolve, innovate, and reach its pinnacle socially, culturally, economically, and spiritually. This has become an indispensable ingredient for the development of a society. Therefore, education has been recognized as the need for the development of human intellect, behavior etc. It relates to both rational and spiritual attributes comprising of reading, writing, understanding and better livelihood in one hand and sacred qualities like love, patience, truth, righteousness, tolerance etc. on the other hand. The complete

development of human personality is possible when both the qualities of head and heart are developed over a period of time. Hence, Education, in true sense of the term, has been acknowledged as a central element for progress. It may be mentioned that, when India began its drive for social and economic development fifty years ago, education was perceived as a means not only of raising political and social consciousness, but also of increasing the number of skilled workers and raising the level of trained manpower.

Further, education is recognized as a viable tool for the development of human resources, which not only alleviates poverty, ignorance, and development barrier but also contributes significantly to growth in national productivity. Mention may be made that there are more than 99.54 lakhs of students spread over 16, 885 colleges with a teacher strength of 4.57 lakhs in India (http:// www. education. nic.in/ higedu. asp) in India. However, in the higher education sector, Mizoram also is not lacking behind which can be visualised from the institutions of 28 Colleges affiliated to Mizoram University (Appendix 3), the only central university in the state , and out of these, Regional Institute of Para Medical and Nursing Sciences (RIPANS), DOAECC, College of Nursing and Higher and Technical Institute though affiliated to the Mizoram University are being funded by other organisations remaining thereby, 24 degree colleges covered under study are being funded by the State Government & UGC. Mizoram University was established by an Act of Parliament with a central university status on the 2nd July 2001. The long cherished desire for promoting higher education in the State came to a reality with the establishment of the University.

Innovations and changes are the two basic factors which help the human beings to adjust themselves with the environment. The principle of "survival for the fittest" is applicable to all areas of knowledge. Many changes are taking place in every walk of life such as in political system, technology applications, education, etc. Higher education scenario including the institutions devoted for higher education is bound to be influenced by the changes. They cannot remain aloof and be silent spectators of these powerful forces of change. For adapting to such changes evaluation of past events and present situations are required for plotting a map of future environmental situations and requirements. The present study is a modest exercise in this direction.

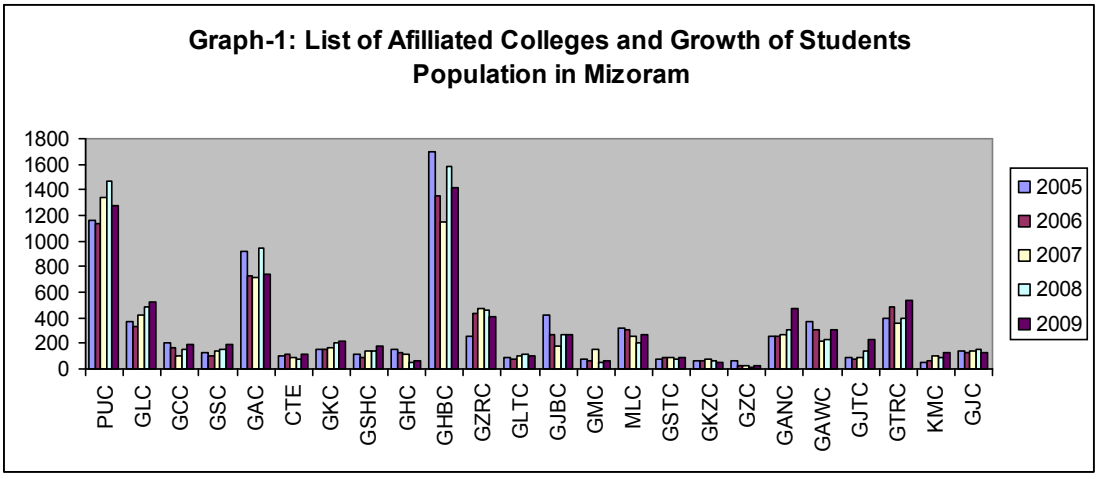
Mizoram is considered as one of the most progressive states in India which is known for its continuous efforts in promotion of knowledge in all branches including those that support for the development of education and other aspects. The state has a glorious tradition of academic colleges of 24 as already discussed excluding technical institutions which include Hindi college, nursing college, etc. Mizoram witnessed the establishment of first academic college of arts in Aizawl in the year 1958 by the Christian missionaries of Rev. Sandy.

While throwing a light upon the growth of education in the national scenario, there are 12 Central and state Universities in North East India. Further, there are 712 colleges affiliated to these universities. About thousand of teachers are engaged in the various academic programmes for more than 2.9 lakhs of students & research scholars at different stages are enrolled in university level.(www. indiastudycenter.com/ univ/ list.html) (Accessed on 20.1.10). Growth of student's enrolment for higher education in Mizoram generally in all 24 degree colleges covered under study for last five years has been shown in Table-1 supplemented with Graph-1 for clear vision.

Table-1: List of Affiliated Colleges & Growth of students' population in Mizoram

Sl.	College	Estd	2005	2006	2007	2008	2009
1	Pachhunga University College, Aizawl	1958	1160	1140	1337	1468	1280
2	Govt. Lunglei College, Lunglei	1964	367	330	417	480	521
3	Govt. Champhai College, Champhai	1971	202	164	107	154	186
4	Govt. Serchhip College, Serchhip	1973	130	104	144	154	193
5	Govt. Aizawl College Aizawl	1975	918	734	714	945	740
6	College of Teachers Education, Aizawl	1975	106	112	90	82	120
7	Govt. Kolasib College, Kolasib	1978	149	150	169	207	222
8	Govt. Saiha College, Saiha	1978	118	90	137	137	176
9	Govt. Hnahthial College Hnahthial.	1979	151	123	117	57	70
10	Govt. Hrangbana College, Aizawl	1980	1696	1356	1143	1581	1416
11	Govt. Zirtiri Resi. Sc. College, Aizawl	1980	257	428	469	464	413
12	Govt. Lawngtlai College, Lawngtlai	1980	92	82	96	110	104

13	Govt. J. Buana College, Lunglei	1983	418	267	180	267	268
14	Govt. Mamit College Mamit	1983	78	66	151	55	59
15	Mizoram Law College	1983	324	303	254	198	271
16	Govt. Saitual College Saitual	1984	76	86	84	77	85
17	Govt. Khawzawl College, Khawzawl	1985	60	67	81	70	51
18	Govt. Zawlnuam Colleges, Zawlnuam	1986	61	30	20	16	31
19	Govt. Aizawl North College, Aizawl	1988	251	249	273	311	468
20	Govt. Aizawl West College, Aizawl	1990	375	301	218	232	304
21	Govt. J. Thankima College, Aizawl	1992	92	79	87	136	234
22	Govt. T. Romana College, Aizawl	1992	401	480	360	399	532
23	Kamalanagar College, Chawngte	1992	52	61	100	83	127
24	Govt. Johnson College, Aizawl	1993	141	122	144	150	122
	Total		7675	6924	6892	7833	7993



✡ Information Technology in College Library

Information technology has become an indispensable component in the present day of society which has positive brunt in higher education and the society as a whole. In the context of the emerging information society three primary things are highlighted such as, (i) information organization, (ii) dissemination and (iii) management which have

gained momentum. Today computers are considered to be indispensable for the growth and development of any organisation. Over and above, the developments of new technologies such as, Internet, multimedia, world wide web etc., have revolutionised the entire scenario of information management. Adoption of wide range of information and communication technologies for information related work calls for redefinition of services, roles and responsibilities of the information professionals. As a result, there is a rising demand for a new kind of information workers accomplished with the skills of various professions. How to generate appropriate manpower for the National Information Infrastructure is the major issue confronting the information profession today. Keeping in view the changes taking place in the society, there is a strong need to develop adequate number of trained information professionals with specialized skills for the emerging market. But, most of the Library and Information Science (LIS) institutions in India follow traditional curriculum, which are inadequate to meet the challenging demand of the emerging market. This calls for reassessment of strategies for developing competent manpower. In view of the latest developments in the information technology and rising demand for the information professionals, there is an urgent need to develop strategies conducive for the National Information Infrastructure.

The college library basically acts as a dynamic instrument for explaining and expanding the horizons of knowledge to its clienteles. The college library services are of two types of Technical and Reader services. Technical services are concerned with the preparation tools for providing better reader services, which include acquisition, cataloguing, binding, weeding out of reading materials, etc. On the other hand, reader services include circulation, reference services etc, where the staff are directly involved with the activities of the readers by providing library & information services. Besides, the college library according to Khan & Berkel (1999; pp.102-104) also provides lending services, bibliography instruction and library orientation, provision of general & specific information assistance in the location, searching of documents or readers advisory service, compiling of bibliographies, preparation of abstracting and indexing services, reservation of documents, interlibrary loan, holding of library exhibitions, including of display of new additions, current awareness service. But providing of all these services is not feasible through simple manual techniques and procedures due to unprecedented growth of information, knowledge proliferation and

ever growing diversified needs of the users. Hence, to overcome all these problems, now the libraries are restoring to capture the best advantages from the modern technology.

UNESCO (Murthy, and Chaubey; 1997; p222) has defined Information Technology (IT) as the scientific, technological, and engineering disciplines and the management techniques used in information handling, and processing, their applications, computers and their interaction with man and machines and associated social, economic and cultural matters.

From the aforesaid discussions, it is evident that, application of IT in library is indispensable to facilitate the optimum service. Further the emergence Information science, Computer science and Management science and its application more specifically in a service institute like college library and information centres have made the flow of information from the point of origin to the destination for its constant use in a lucid way. Appropriate use of IT in college libraries with clear understanding has got its potentiality and it is necessary for retrieving maximum information in terms of quality and efficient services provided to the students. The services that can be imparted in an IT environment includes E-mail, Tele-text, Videotext, Internet, Intranet, CAS, SDI, Reprographic services, compilation of bibliographies, directory, preparation of union catalogue, content management etc.

The application of IT in the present age is gaining momentum in various libraries as it has become an integral part of service. In one hand, while it has increased speed of information generation by reducing time of information search & retrieval, on the other hand it requires intensive, structural, formalized and centralized training of staffs for proper sustainability and innovative of library services. Due to multifaceted demands of the users, overwhelming of literature, spiralling cost of traditional publications, interdisciplinary research, the libraries especially in the college and university level can not be isolated from the purview of IT. In such a scenario, creation of conducive organizational environment in the library has become mandatory where every professional staff require clearing about the vision, mission, goals, and objectives of the library.

The Central Government and many State Governments are focusing their attention on use and application of Information Technology in higher education and especially in all service organisations including libraries and information centres. The UGC through INFLIBNET has taken a lot of initiatives towards application of IT in the College/University Libraries.

Almost all researchers agree to the fact that efficiency in library management can be achieved by adopting IT based services. However, one doesn't come across the evaluation level and quality based services in the libraries. Gujarat, for example, though it has a good number of schools, colleges, universities, including public and special libraries, one fails to make out such a study on the libraries of the State. However, an attempt has been initiated to study in this direction taking only the college libraries of the State.

1.2 Statement of the Problem

The growth and development of ICT and emergence of Internet with its application in the libraries, has proved to be viable platform for acquisition and effective dissemination of information. A college student requires authentic and update information including feasible environment for speedy search of information from vast array of information resources. Further, the researchers need an exposure of latest trends and developments in their subject field so as to make the research result more authentic and valuable. But the college libraries in Mizoram hardly facilitate the option neither to the students nor to the research scholars and the teachers as well. This is prevalent in the college libraries due to lack of ICT infrastructures in their libraries. Further, this is more prominent because of lacking of ICT knowledge and skills among the library staffs barring few. IT as already discussed has become a mandatory component to develop the college library environment in the present technological scenario. As the need has become paramount, it is high time that necessary steps are required to understand various information needs of the students, proper mobilization of library resources including upgrade of the existing library services, information system, and information dissemination by way of adopting the means of ICT in library purview. Moreover keeping in mind the job description required in an electronic environment, it is essential to generate appropriate men power to suit to the need of the present scenario in college library services. This

practical problem motivated the scholar to take up this research topic for the greater interest of the academic community in the state to provide effective information services to the users.

1.3 Objectives of the Study

The objectives for any research constitute the milestones, where the researcher has to reach. The objectives of the present study relate to:

- Present an overview of college library services provided by the Degree Colleges in Mizoram.
- Find out the information needs of the users in the College Libraries of Mizoram in the context of ICT environment.
- Ascertain the deficiencies available in the College Libraries with regard to ICT application.
- Suggest an IT environment in College Libraries and implementation of a developmental plan on the basis of findings to provide effective and efficient services.

1.4 Scope of the Study

After the establishment of the UGC in 1956, all the universities and colleges in India came under a single agency which is responsible for the growth and development of these academic institutions. As the subject of education comes under the concurrent list in the constitution of India, the state governments are also supposed to take necessary steps for the developments in Universities and colleges. However, UGC is the major funding agencies for the growth and development of colleges irrespective of the types. However, it recommends for more financial assistance for the development of the Libraries.

The scope of the present study is limited to the libraries of 24 degree colleges out of 28 affiliated colleges under the university (Appendix-3). The colleges under study provide the library services to its clienteles in various streams such as, Arts, Science and Commerce. The total population of the study is 384, out of which 24 are the Librarians of the college libraries under study and 360 constituting faculties and students of different colleges. The present research work is, however, focused to ICT application libraries in the colleges and its impact on library services. The study excludes the libraries attached to Polytechnics Institutes, Industrial Training Institutes,

Veterinary College, Theological College, Departmental library, Schools, RIPANS, and DOEACC etc.

1.5 Methodology

The following methodologies have been adopted for data collection for analysis and to draw conclusions and suggestions.

- **Questionnaire method**

The data required for study were collected through structured questionnaire with multiple variables relating to research topic and submitted to the Librarian of the colleges under study including the users of the respective college libraries. After collection of questionnaire duly filled-in by the Librarian, faculty members and other users were scrutinized, analyzed, tabulated for analysis and interpretation of data and conclusions were drawn and in the process of analysis, the problems associated with the college libraries, college authorities and the Government could be revealed The scholar has suggested some radical measures to be undertaken in the college libraries for implementation in the respective college library. The questionnaire used in the present survey was categorised into two types such as, one for the working librarian/ professionals while the other one relates to the users, who are using the library for various purposes. The main target group of the study relates to the librarian/library professional as they are the key persons to place overall view of the library including infrastructure development and the questionnaire built for them include the variable like building, timing, collection, users, ICT infrastructure, information handling, and automation etc. The second target group includes the users which include the teachers, students, research scholars etc. for whom the questions have been designed in tune with the user's profile, need, and their satisfaction.

- **Interview method**

To obtain the best result of the services, organization, administration and development of libraries in the College, the scholar obtained relevant information from all types of users in the college library concerning to the area of research through interview and the concerned data were organized in a structured way for analysis..

- **Observation method**

Observation method has also been applied to ascertain the lively situation prevailed in the college libraries under study and for getting information relating to the physical development of the concerned libraries which were applied to draw inferences. Further, the scholar explored various sources of information both documentary and non-documentary to find out the data relating to the area of study. Data were colleted from various sources include books, journals, gazetteers, government publications including work plan etc. and electronic sources. Moreover, Internet as a means of viable electronic source was also explored and the data obtained relevant to the study were properly verified and scanned so as to draw positive conclusions including viable suggestions for improvement of college library services.

1.6 Review of Literature

Good length of literature are available in the field of college library development, ICT application in college libraries, college library finance, staffing pattern, human resource development, college library management etc. both printed and electronic form. The scholar has made an exhaustive study of the existing literature available in the form of books, journals, conference proceedings, reports, research paper etc. including electronic resources. Some of the literatures concerning to the area of the study have been placed below.

- Anand, J.K. Role of Library in the Life of College students. *Library Herald*. 21(1-2): 1982 p.40-45.

The author in his paper has discussed the importance, objectives and basic functions of college libraries including role of college libraries in the life of the students. He has also provided suggestions towards making their role more prominent with a concluding remark a college library should become a teaching instrument through active participation in the teaching program.

- Bryson, T O (2002). Effective Library and Information Center Management. 2nd. Burlington: Ashgate Publishing Company.

Bryson has mentioned that, the modern management techniques are required so as to provide new ideas to be used for stimulation entrepreneurial and effective solution to management concern. Special attention is paid by the author to the concept of managing in times of economic restraint, changing words, attitudes, environments and

management styles and to the influence of technology corporate culture and commercialization.

- Chandel, Sunil Singh (2003). Information service in Academic Libraries. New Delhi: Rawat Publication.

While discussing over various information services in academic libraries the author has pointed out the users as the most precious to the libraries because the existence of user make possible for the libraries to ask for more grant. He further expressed that a large membership is possible only when users are fully satisfied with the libraries. User services and satisfaction of the user is a continuous process for improvement of library activities. Hence, it is a long-term management strategy. User service is a continuous process of creative design not only problem for information managers.

- Dhawan, S.M and Sachdeva, D.L Users' Approach to Information in Physical Sciences: An overview. *ILA Bulletin*.22(3-4): 1987 p.103-111.

Dhawan and Sachdeva gave an overview of user requirements in physical sciences. They described in detail about types of users, their information needs, motivating factors for seeking information, their information gathering habits, and indicators used for measuring relative importance of communication media. They also discussed the links and communication chains, which help diffuse information from the originator to the end user. They provided suggestions for improving user satisfaction.

- Kumar, P.S.G (2004) Library and Users. New Delhi: B.R. Publishing Corporation.

Kumar provided a detailed theoretical account of users, their behaviour, their needs and education of users in the use of library and information services. Besides, different techniques of survey are also provided and hence, quite a good number of questionnaires are provided which will be to use of researchers as well.

- Mahapatra,R.K and Panda, K.C. State of Information seeking and searching behaviour of working journalists in Orissa: A Study. *Annals of Library and Information Studies*. 48(40): 2001.p.133-138

Mahapatra and Panda have provided an insight into various behavioural approaches of working journalists in seeking and searching information. They have described the pattern of their searching and locating information sources and services, mode of communication and strategy employed in seeking information, their priority on information sources and constraints encountered by them in locating information.

- Mitra, D.P Users attitude to Microforms in academic Libraries. *Library Herald.* 22(10): 1983. p. 54-59.

Mitra has pointed negative feeling to the format of microform access by the user. He has analysed major reasons for users' inconvenience. He also has indicated the steps to be taken in order to reduce users' resistance and to promote microform use.

- Mohanrajan, P.A (1984). New Trends in International Librarianship. New Delhi: Allied Publishers Private Limited.

The book has been methodically discussed over the principles of various postulates of Dr. S R Ranganathan which can be equally applicable to all type of information systems and services including libraries, staffs and readers. With this view in mind, he turns the spotlight on user orientation, which are both orientation of the systems to the user requirements and the orientation of user to systems. The ideas are set out primarily in the context of developing countries.

- Rao,Tata.K. Users' attitude and behavioral pattern towards theft and mutilation in university Library. *IASLIC Bulletin*. 40(20): 1995. p. 49-62.

While explaining the reasons for theft-behaviour and its impact upon sincere users of all types in the libraries, Rao has suggested some preventive measures which include a simple publicity campaign to educate students on the danger posed to library services by delinquent acts, and with particular emphasis on the penalty which goes with the offence.

Moreover, the scholar will try to pursue studies on various other forms of literatures, documents available in the respective colleges to make the study more exhaustive. The scholar will further study e-journals for better clarity of information.

1.7 Hypotheses

Hypothesis is a presupposition to the proposal made by the researcher at the beginning of the research which, however, requires to be verified. Hypothesis also guides the researcher to choose the direction of research. Taking into consideration the above factors the researcher has framed following hypotheses for the present study.

- ⌘ The college libraries in Mizoram under study are facing major physical resources and financial problems.
- ⌘ Library professionals are lacking of information technology skills and ICT skills including its applications.
- ⌘ Application of ICT will facilitate better services to the users' communities.
- ⌘ The users' communities need the services of e-journals, content development, content management, resource sharing etc.

1.8 Chapterization

The present research work has been spilt over in seven chapters as discusses below. Each chapter is followed by a bibliography apart from the running bibliography in the body of the text. Further, a comprehensive bibliography alphabetically arranged also has been mentioned at the end of the thesis.

Chapter 1: Introduction

The first chapter of the research work deals with introduction , statement of the problem including the objectives, scope, methodology, review of literature and hypotheses for the research work,.

Chapter 2: College Library Scenario in Mizoram

Chapter 2 explains about an overview of the college libraries scenario in Mizoram. The scholar explained a detail account of the present status of higher education in India, growth of universities/colleges in India, growth of students enrolment, faculties in the universities and colleges, year-wise grants of higher education both plan and non-plan, objectives of higher education as laid down in UNESCO manifesto, functions of higher education, college education, objective and function of colleges, growth and development of college in India, Government initiatives in higher education, higher education in Mizoram, role of state Government in higher education, quality assurance cell, year-wise budget allocation under higher education from 1997-98 to 2010-11. Apart from above discussions, the scholar also have discussed growth and development of college libraries, recommendations of UGC committee on college libraries, college library scenario in Mizoram including district wise presentation of the colleges. The chapter also includes profiles of the college library services in Mizoram, list of library professionals/personals in colleges in

Mizoram, collection development in different college libraries for last five years, status of technical processing of all 24 college libraries including the role of various committees/commissions report for the development of library services.

Chapter 3: Information needs for the college library users

This chapter illustrates on information needs of the library users especially in academic environment, importance of information, its need, nature, clarification, identification, information seeking behaviour, types and programmes of users education, needs and training programme of users education, categories of information users, factors for change of information needs in college library, needs of electronic publishing, constraints and evaluation of user studies and user education etc.. It is necessary for conducting a programme of users' orientation, education and study of information seeking behaviour for rendering the exact needs of the users in college environment.

Chapter 4: Application of ICT in College Libraries

The fourth chapter of the work has been explained relating to the application of ICT in college libraries. The scholar discussed ICT and development, potentiality of ICT, ICT in Indian scenario, comparative study of information sectors, ICT enabled programmes, e-governance projects, e-literacy, role of ICT in different stems such as Government, medical, agriculture, mass-media, higher education etc. The chapter also focuses about the ICT based resources in higher education, application of ICT in library, areas of computer application in libraries, infrastructures in college libraries in Mizoram, factors for library automation in college libraries including other issues relating to the fundamental and nature of ICT with its application in every aspect.

Chapter 5: Digital Information Resources and Resource Sharing

This chapter explained about different digital information resources, collections, access and advantages of digital resources. Various models, searching facilities, technique and use of electronic resources in library are also included. Apart from the discussions about digital library, functions, advantages, components, and digitization process etc., the chapter also figures on networking, resource network in college libraries, library consortia etc.

Chapter 6: Data Analysis and Findings

This chapter illustrated vividly about the analysis of data supported with tables, graphs to make the study clear. Almost all the facets of the questionnaires obtained from the librarians of all the 24 college libraries under study including the responses of the faculties, students of various college libraries were analyzed and inferences have been drawn including the verification of hypotheses formulated at the initial stage.

Chapter 7: Suggestions and Conclusion

The seventh chapter which includes suggestions received from the librarians, faculties and students to improve the services of the libraries. Further, the chapter focuses about the conclusions derived out of the findings from analysis.

Apart from unfolding bibliography at the end of each chapter, a comprehensive bibliography at the end of study has been placed with. The final and the 7th chapter include suggestions and conclusion.

1.9 Conclusion

Library is as old as human society and it is an integral part of education. It can be proportioned to the backbone of education strength to built strength of information, knowledge among the users. It is the center of exploring knowledge and also acts as the developer of the society through services. It is the knowledge centre which imparts the students, research scholars and the teachers to develop their skills, searching of documents, capacity building, promotion of research activities, teaching and learning etc. Further, it serves the centre of research activities through its collection strengths. The college library is the beginning of all academic pursuits among the users which not only acquires knowledge through various sources of information but also takes all out efforts to disseminate the same among the users.

There is tremendous growth in its infrastructure and its services to serve the people from village to cities by giving knowledge and information to various communities, irrespective of race, tribe, religion, sex or gender in student community. The study of College Libraries in the context of changing information scenario is also a part and partial of Academic library system and services, and as such, it is quite essential to

comprise the study of College library system and services to have authentic acquaintance of this research work. Mizoram has witnessed a continuous growth of student's populations in different colleges as has been noted above. From the table-1 it is visualized that during last five years the total students enrolment comes to 37, 317 having an initial enrolment 7675. In 2006 there is a decline of 9.78%, in 2007 a further decline of 0.46%. But in 2008 there is an increase of 12.01% and further increase of 2% in 2009.

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Chapter – 2

College Libraries Scenario in Mizoram: An Overview

2.1 Introduction

Education helps a person to unfold his personality by revealing the potential qualities lying in him. It develops the mind, the physique, the senses including the skill and nourishes the thinking capacity of the learner. It helps the learner to contribute his full potential as individual and to contribute effectively to his personal development and ultimately to socio-economic development of the nation. Chadborne(1970;p20.) has mentioned that, education does not consist in mastering languages but is found in that moral training which extends beyond the school room to the playground and the street and which teaches that a minor thing can be done than to fail in recitation. Rao Dignarti Bhaskara(1996;p.8) emphasising the importance of education in national development have remarked that, education is deliberately used to develop more and more potential talents and to harness it to the solution of national problems.

Consequential development of education as observed by Goil(1962;5(1).p.7.) have been summarised as under:

- To develop the personality of the individual
- To provide him with the knowledge of the world in which he lives.
- To develop skills needed to sustain and advance social life so that he can be a creative member of the society.
- To satisfy the individual's search for values.

To achieve such results from education, there are various alternatives though the product, i.e., to help the citizen to acquire and develop his mental and physical qualities, is the same. Education is perceived with very wide compass that directly or indirectly influences the making of the individuals where library is considered as an integrated component to develop the standard of education. Chadbourne (1970; 20p) said that education does not consist in mastering languages, but it is found in that moral training which extends beyond the school room to the play ground and the street and which teaches that a minor thing can be done than to fail in recitation.

Education has long been recognised as a central element in development. The development of human resources thought the education not only alleviates poverty, but also contributes significantly to growth in national productivity and income. The comprehensive approach to development underlines the significance of higher education in following three interrelated ways (Tiwari, 2006 p.32),

- As a basic human need to acquire a broad base of knowledge, attitudes, values and skills on which people can build in later life.
- As a means of meeting other basic needs education influences and is in turn influenced by access to other basic needs.
- As an activity that sustains and accelerates overall development through trained manpower, advancement of knowledge and skills and improving ability of individuals to find constructive roles in society and take a critical view of changing culture

It has been noticed that generally, higher education starts at the age of 16 under the present pattern of 10+2+3 of education which begins at +2 stages. At this stage, the student develops thinking ability. Quality of classroom teaching depends upon the quality of a teacher which in turn depends upon the knowledge of the subject matter and pedagogy. Such knowledge can be imparted to the students and teachers effectively through library only. Therefore, before knowing the objectives and functions of college library, it is essential to consider objectives and functions of college library, it is essential to consider objectives and functions of higher education first.

2.2 Present Status of Higher Education in India

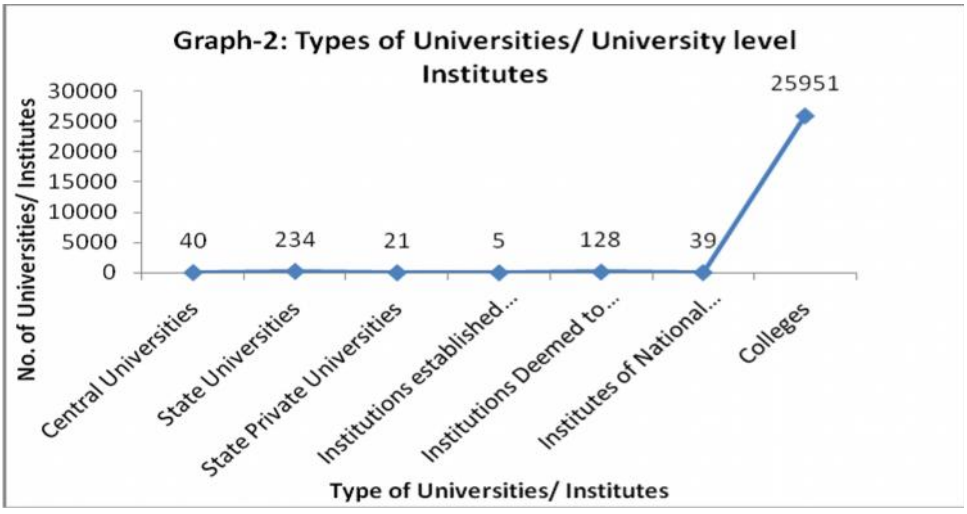
The Indian education system is the second largest in the world and is the most complex in terms of its spatial outreach and profile of students and teachers in terms of their linguistic, social, cultural and economic background. The higher education in India has witnessed many fold increase in its institutional capacity since independence. During 1950 and 2008, the number of universities has increased from 20 to about 431, colleges from 500 to 20,677 and the teachers from 15,000 to nearly 5.05 lakhs. Consequently, the enrolment of students has increased from a mere 1.00 lakh in 1950 to over 116.12 lakhs. (Report on VC conference, East Zone, 2009).

Higher education in India has witnessed multifaceted increase in institutional capacity since Independence. There were only three universities, 27 colleges and 5399 students enrolment in 1857 while it enhanced to 20 Universities, 500 colleges and enrolment of 2, 41, 369 students in the year 1947. Taking into the account of the entire higher education prevailing in the globe, the Indian higher educational system is considered to be the second largest which is next to the United States of America. The

government policies and the opportunities that are created by the government for higher education have made the system very huge. After independence the growth of higher education was phenomenal. Centre and State ties in the context of education being under concurrent list and centre and state governments established various types of higher educational institutions long with the establishment of institutions by philanthropists. Table 2 corroborated with Graph 2 given below depicts various types of institutions established in India and the latest number of these institutions.

Table-2: Types of Universities/ University level Institutes

Sl.No	Types of Institutions	Number of Institutions
1	Central Universities	40
2.	State Universities	234
3.	State Private Universities	21
4.	Institutions established through State Legislation	05
5.	Institutions Deemed to the Universities	128
6.	Institutes of National Importance	39
7.	Colleges	25951



As on 31st March, 2009, as reflected under Table- 2 there were a total of 40 Central universities established by the Act of Parliament, 234 State universities and 21 state private universities set up by the respective state legislatures in India. In addition to these, there are 05 institutions established through State legislation at par with university. Central Government has conferred the status of Deemed to be University to 128 institutions established by the Central Government and Philanthropists. The number of Institutes of National importance was 39 established by the Central

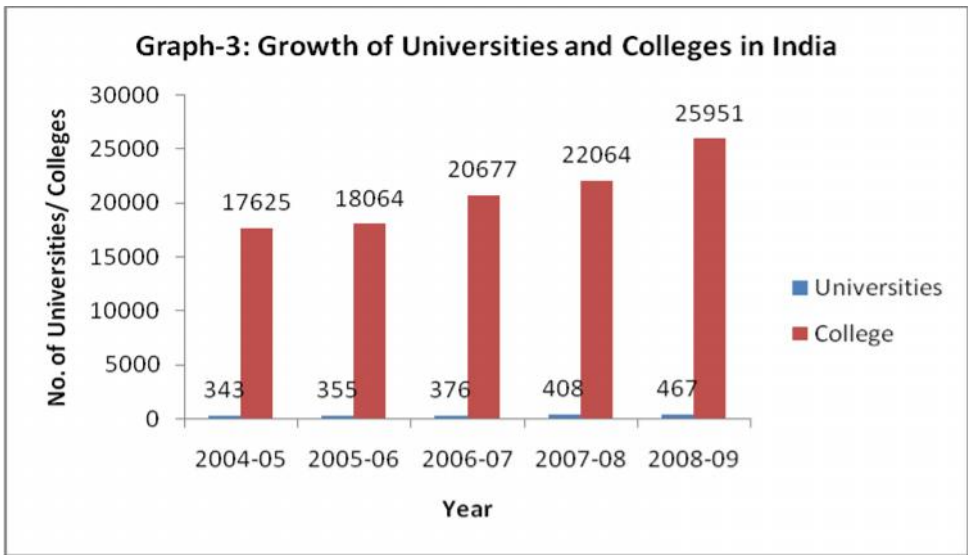
Government. The total number of Colleges in India is 25951, established by the central government, State Government and philanthropists. It is important to mention here that the Central Government is responsible for major policies relating to higher education.

2.2. 1 Growth of universities/ colleges in India

There was stupendous growth with regard to universities and colleges as well in India during last five years i.e. 2004-05 to 2008-09 and the same has been reflected Table 3

Table 3: Growth of Universities and Colleges in India

Year	Universities	College	Total
2004-05	343	17625	17968
2005-06	355	18064	18419
2006-07	376	20677	21053
2007-08	408	22064	22472
2008-09	467	25951	26418



From the above table supplemented with Graph No 2, it could be pointed out that, as many as 17968 higher educational institutions comprising 343 universities and 17625 colleges were established in the year 2004-05. In the year 2005-06 the number of institutions increased to 18419, out of which, there were 355 universities and 18064 colleges. There were a total of 376 universities and 20677 colleges which made a total number of 21053 institutions in the year of 2006-07. In the year 2007-08 the total number of institutions further it increased to 22472 in total in higher education sector which included 408 universities and 22064 colleges. During the year 2008-09, the

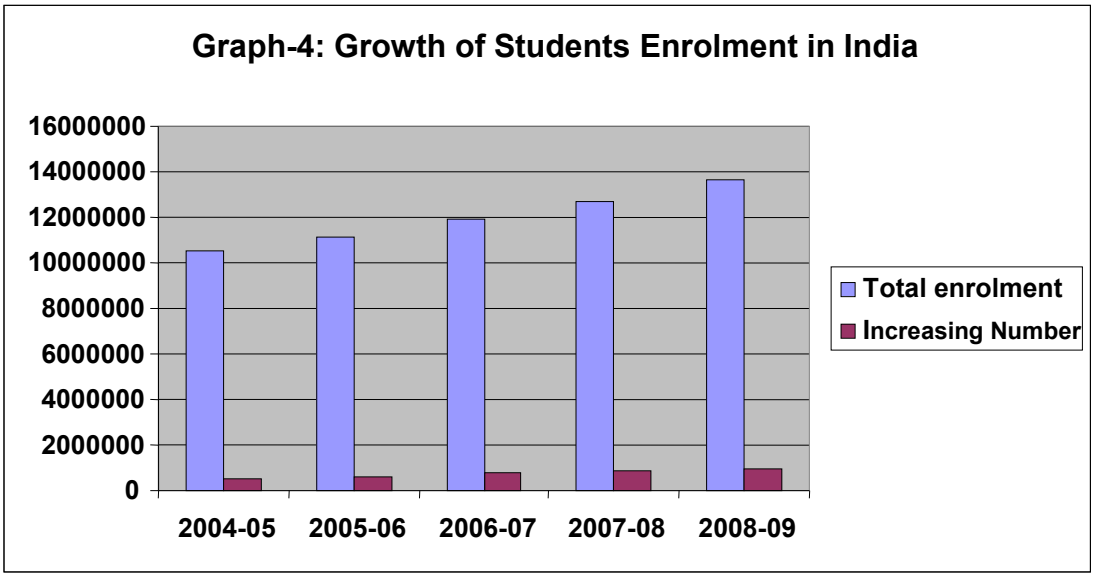
total numbers of the institutions are 26418 which covered 467 universities and 25951 colleges. This year, the number of both universities and colleges were increased slightly high in comparison to other previous four years covered under the study. From the above, it is observed that the number of universities and colleges are steadily increasing. During the five year period, universities and university level institutions have been increased to extent of 36 % and colleges 47 % in comparison to the figures in 2004-05.

2.2. 2 Growth of students enrolment

The growth of students' enrolments in India both universities and colleges has been reflected under Table 4 which has been supplemented with Graph 4.

Table-4: Growth of Students enrolment in India

Year	Total enrolment	Increasing Number	Percentage
2004-05	1, 05,42,262	5, 30,617	5.3 %
2005-06	1, 11,37,627	5, 93,365	5.6 %
2006-07	1, 18,87,095	7, 49, 468	6.7 %
2007-08	1, 27,27,082	8, 39, 987	7.0 %
2008-09	1, 36,41,808	9, 14, 726	7.2 %



The above table indicates the trend of growth of student's enrolment in universities and colleges in India from the year 2004-05 to 2008-09. There was a total of 1, 05, 42,262 students enrolment in universities and colleges in the academic year 2004-05

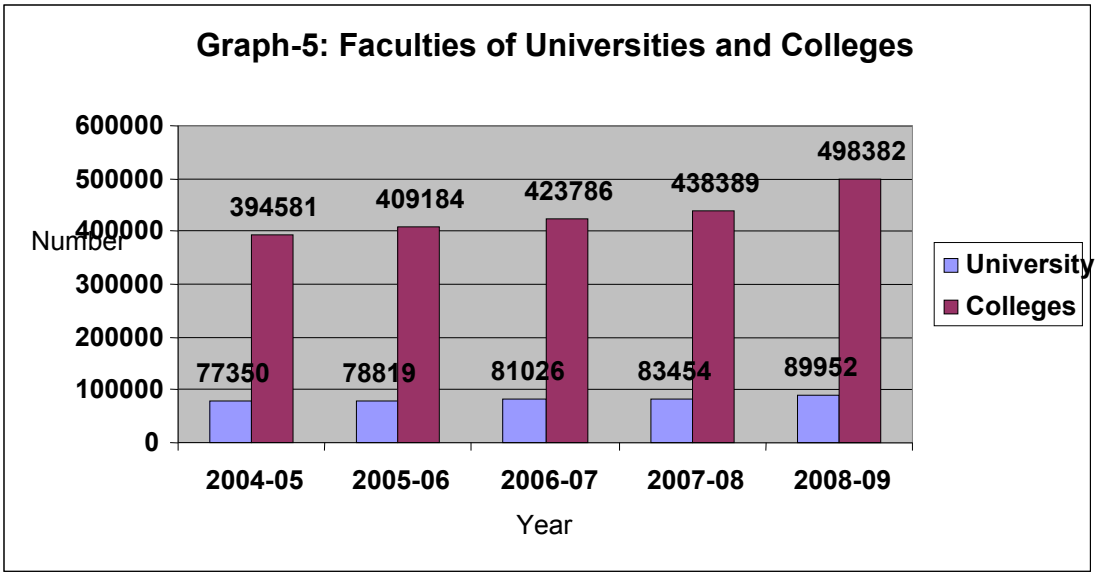
which was of an increase of 5, 30,617 students over the preceding year i.e about 5.3%. During the year 2005-06, the enrolment of students was 1, 11, 37,627 which was an increase of 5, 95,365 students (5.6%) as compared to the previous year. A total of 1,18, 87,095 students were enrolled during the academic year 2006-07. It was almost 6.7% (7, 49,468) increase over the preceding year. In the year 2007-08, a total of 1, 27, 27,082 students got enrolment which was an increase of 8, 39,987 students over the preceding year (i.e. 2006-07) and it was about 7.0 % increase. The figure of students enrolment in the year 2008-09 was 1, 36, 41,808 and it was an increase of 9,14,726 (7.2%) students enrolment in this year. The data clearly depicts that there was a continuous increase in the student's enrolment in universities and colleges. In comparison to the enrolment in 2004-05, there was an increase of 31 lakhs during the five year period, constituting 29.4 % increase. It was possible due to establishment of new institutions and increase of intake capacity in various demanding courses.

2.2.3 Faculties in universities and colleges

The faculties available in universities and colleges from 2004-05 to 2008-09 have been depicted in Table 5 corroborated with Graph 5.

Table 5: Faculties of Universities and Colleges

Year	Universities	Colleges	Total
2004-05	77350	394581	471931
2005-06	78819	409184	488003
2006-07	81026	423786	504812
2007-08	83454	438389	521843
2008-09	89952	498382	588334



It is evident from the above Table 5 and Graph-4 that 471931 teachers in the year 2004-05 were inducted which include 77350 and 394581 teachers in universities and colleges respectively. In the year 2005-06, a total of 488003 teachers were inducted out of which 78819 were in the universities and 409184 in colleges. In the year 2006-07, there were a total of 504812 teachers which included 81026 teachers in universities and 423786 teachers in colleges. The faculties strength rose to 521843 in universities and colleges in the academic year 2007-08 out of which, the total teachers, there were 438389 and 83454 teachers in universities colleges respectively. In the last year i.e. 2008-09 covered under the study, there was a total of 588334 teachers and this figure include 89952 teachers in universities and 498382 teachers in colleges in India. The figures clearly show that there was a continuously increases in the number of teachers in universities and colleges, which is due to expansion of institutions and increase in intake capacity of existing courses.

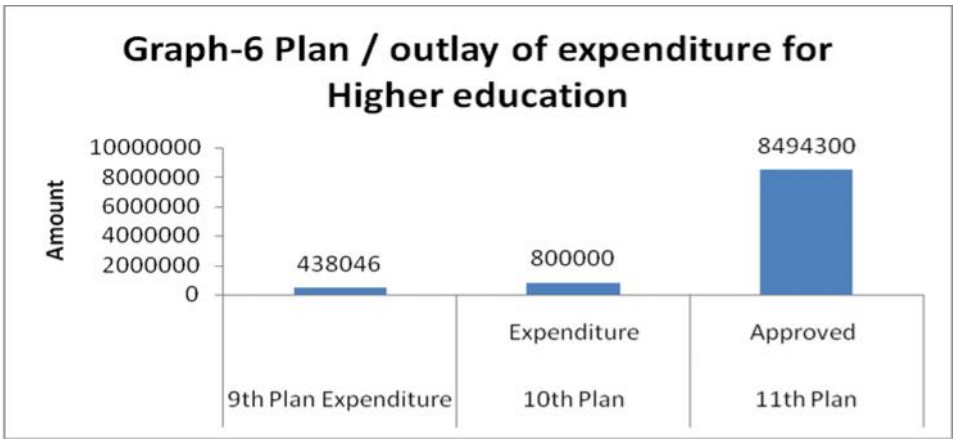
2.2. 4 Grants for Higher Education

The development of higher education is largely based on the economic conditions of the guardians of students, country's resources and government's policy and planning. In India, the central and state governments have emerged as the main agencies for funding the public system of higher education. The UGC is a statutory body, which promotes university and college education with financial help under various schemes and programmes. Financial assistance for the development and maintenance of higher education is given to universities (Central, state and deemed universities) and colleges affiliated to both central and state governments. The total expenditure in higher

education sector during 9th, 10th and 11th plan (Ahmad; 2010; p.4) has been shown in Table 6 supplement with Graph-6.

Table 6: Plan / outlay of expenditure for higher education

Head	**9th Plan Expenditure in Rs.**	**10th Plan Expenditure in Rs.**	**11th Plan Approved in Rs.**
Higher and Technical Education	4,38,046	8,00,000	84,94,300



The above highlights that an amount of Rs 438046 lakhs and Rs 800000 lakhs were spent during the 9th and 10th Five Year Plan for both Higher and technical education respectively while, Rs. 8494300 is an expected expenditure in 11th plan period. It seems that, amount spent during 10th plan was almost double than that of the amount spent during 9th plan. In the current 11th Five Year Plan, the Government of India has approved for an allocation of Rs 8494300.00 lakhs for the higher and technical education. It seems that the Govt. has exorbitantly allocated amount to be spent during 11th Five Year Plan.

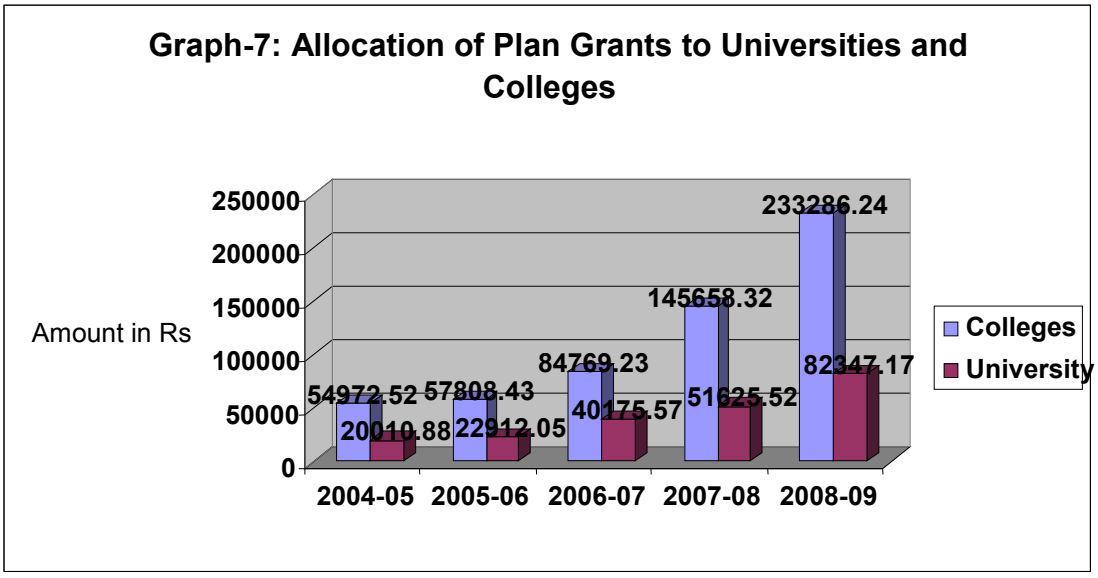
2.2. 5 Allocation of Plan Grants to Universities/ Colleges

UGC has been providing financial assistance for the development of higher education under Plan for priority sectors to both universities and colleges. At present, UGC provides Plan Grants for enhancing access, equity, quality and excellence, research projects, relevance and value based education, ICT integration, governance and efficiency improvement etc. The main purpose of the Plan Grants is to improve the infrastructure and basic facilities and also for expansion to increase intake capacity.

The allocation of grants to different universities and colleges (Ahmad; 2010; p.4) have been shown in Table 7 supplemented with Graph- 7

Table 7: Allocation of Plan Grants to Universities and Colleges

Year	Universities	Colleges	Total
2004-05	54972.52	20010.88	74986.40
2005-06	57808.43	22912.05	80720.48
2006-07	84769.23	40175.57	124944.80
2007-08	145658.32	51625.52	197283.84
2008-09	233286.24	82347.17	315633.41
Total	576497.74	217071.19	793568.93



Above Table 7 supplemented with Graph-7 provides a view of plan grants allocation to universities and colleges from 2004-05 to 2008-09. A total grant of Rs 74986.40 lakhs was paid to the universities and colleges during financial year 2004-05 out of which, Rs 54975.52 lakhs and Rs 20010.88 lakhs were disbursed to universities and colleges respectively. The year 2005-06 witnessed a distribution of Rs 57808.43 to universities and Rs 22912.05 lakhs to colleges thus, coming to a total expenditure of Rs 80720.48 lakhs. During 2006-07, a total amount of Rs 124944.80 lakhs were provided to universities and colleges and out of which a share of Rs 84769.23 lakhs was meant for universities while Rs 40175.57 lakhs for colleges. UGC released a total of amount of Rs 197283.84 lakhs to universities and colleges with a distribution of Rs 145658.32 lakhs to universities and Rs 51625.52 lakhs to colleges. During the last

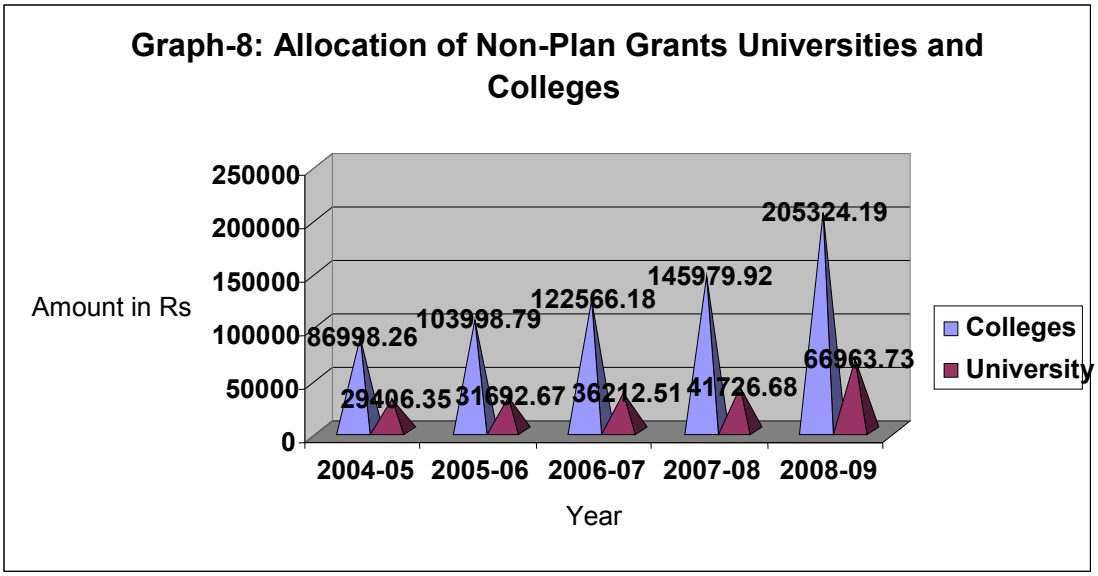
year covered under the study i.e. 2008-09, a total amount of Rs 315633.41 lakhs were provided to universities and colleges which included Rs 233286.24 lakhs to universities and Rs 82347.17 lakhs to colleges. The table also indicates a total funding for five years i.e. from 2004-05 to 2008-09 under the Plan Grant which was Rs.793568.93 lakhs and this include Rs 576497.74 lakhs for the universities and Rs 217071.19 lakhs for the colleges. The data indicates that, allocations of grants are constantly increasing to meet the needs of the universities and colleges as well. It further depicts that, there was considerable enhancement in funding for the universities as compared to the colleges.

2.2.6 Grants under Non-Plan to the Universities & Colleges

The Non-Plan Grants are provided to the universities and colleges in India through Block grants, Research grants, Fellowship, Scholarship for Rank Holders, Indira Gandhi PG Scholarship for Single Girl Child etc. Block Grants are provided on actual basis to meet the recurring expenditure on salaries of teaching and non-teaching staff and for non-salary items in central organizations. The components of non-salary items include maintenance of laboratories, libraries, buildings and payments of taxes, electricity and telephones bills, payment of TA/DA etc. the main purpose of providing this grant is to maintain universities and colleges. However, the UGC allocates the Non-Plan grants to the state universities and colleges for first five years after appointment of the faculties. The non-plan grants (Ahmad; 2010; p.4) available to various universities and colleges have been mentioned in Table- 8 with the Graph-8 for clear understanding.

Table- 8: Allocation of Non-Plan Grants Universities and colleges

Year	Universities	Colleges	Total
2004-05	86998.26	29406.35	116404.61
2005-06	103998.79	31692.67	135691.46
2006-07	122566.18	36212.51	158778.69
2007-08	145979.92	41726.68	187706.60
2008-09	205324.19	66963.73	272287.92
Total	664867.34	206001.94	870869.28



It could be revealed from the table that, there is a continuous increase of allocation of grants and the universities take maximum share than that of colleges. To mention, the universities during last five years fetched an amount of Rs. 664867.34 lakhs as compared to Rs. 206001.94 during last five years.

The number of state and central universities rose from 133 to 206 during end of 9th plan and beginning to 10th plan (i.e., March 2005) and 339 during the end of 10th Five Year Plan (i.e., December, 2006). University Grants Commission (UGC), Professional Councils, Central Government, and State Governments are playing major roles in enhancing the quality of higher education in the country. The UGC is responsible for coordination, determination and maintenance of standards and release of the grants to the universities and colleges. Professional councils are responsible for recognition of courses, promotion of professional institutions and providing grants to undergraduate programmes and various awards.

In terms of allocation of grants, the government has allocated Rs 4,176 crore in the 10th Five Year Plan for the growth of higher education system in India, which is a 67% increase, from the budget (Rs 2,500 crore) allocated in the 9th Five Year Plan. 11th Five Year Plan are coming for more increase As per GDP spending on higher education in the country has remained stagnant at around 0.37% against 1.41% of US, 1.07% of UK and 0.50% of China.

India attracts 15,000 to 18,000 foreign students every year whereas China magnetize more than 1,40,000 students, even Singapore and Malaysia attract over 70,000 and

30,000 foreign students respectively for their higher education each year. The statistics demonstrate that India is lagging behind in attracting foreign students in various universities of India.

Keeping in view the presence of young population in the country, ranging age group 20- 25 and looking at the demographic profile of developed nation and shrinking proportion of their workforce, India has advantage of becoming knowledge hub. Government of India has constituted the National Knowledge Commission to seek new ideas on how we can modernize and expand our educational institutions and make them world class. Knowledge Commission has suggested for setting up of 1,500 universities by 2015, national missions for translation and libraries, and greater e-networking between institutions positive which is a healthy sign for the academic system. Realizing the importance of libraries for knowledge economy, it has also suggested the government 572 to constitute a National Commission on Libraries. Mr.Sam Pitroda, Chairman, NKC has suggested on behalf of the NKC to set up an Indian Institute of Library and Information Science to boost research and development of library system in the country.

Despite of the best efforts by the government, we still need more number of universities, better infrastructure, quality labs and world-class Digital libraries to compete with rest of the world. Universities should have access to world wide literature, research reports, reviews, and databases, full text journals which will boost research in the country and produce more Nobel laureate in various fields from the country.

Teaching and research are both integral part to create excellent institutions of higher education. We need to improve infrastructure in universities with sufficient grant and resources for students, teachers and research scholars. ICT should be an integral part of teaching and learning in universities. Technology has greater role to play in establishing of excellence. Campuses of institute of higher learning should be ICT enabled, fully networked with digital classrooms, facility to access digital resources, peer reviewed journals from across the globe, and video conferencing lecture theaters. Students should have access to world literature sitting at the libraries or classrooms. There must be adequate bandwidth for Internet and Internet application in the campus,

sufficient fiber optics nodes should be provided with access points with deployment of Wi-Fi technology.

In last three years UGC has taken certain steps to improve the Network infrastructure and access to scholarly journals to all universities which is described in later part of this paper. Still we have long way to go and extend these facilities to remaining universities and colleges which needs additional grants. For XI plan, INFLIBNET has prepared comprehensive document to cover networking facility to all the universities and facilitate scholarly journals to entire universities and colleges

2.2.7 Objectives of Higher Education

The UNESCO (UNESCO, 1972. p.131) has prepared a document in October 1998 deciding the preamble, prospective and programmes of higher education for 21st Century. The document was supplemented with following 16 Articles which reveal the goals of higher education:

Article-1 Mission to educate, to train and to undertake research.

Article-2 Ethical role, autonomy, responsibility and anticipatory function.

Article-3 Equity of access.

Article-4 Enhancing participation and promoting the role of women.

Article-5 Advancing knowledge through research in Science, the arts and humanities and the dissemination of its results

Article-6 Long-term orientation based on relevance.

Article-7 Strengthening co-operation with the world of work and analysing and anticipating societal needs.

Article-8 Diversification for enhanced equity of opportunity.

Article-9 Innovative educational approaches: critical thinking and creativity.

Article-10 Higher education personnel and students as major actors.

Article-11 Qualitative evaluation

Article-12 The potential and the challenge of technology.

Article-13 Strengthening higher education management and financing.

Article-14 Financing of higher education as a public service

Article-15 Sharing knowledge and know-how across borders and continents

Article-16 From ‘brain drain’ to ‘brain gain’

The National Assessment and Accreditation Council, Bangalore (op.cit.p.3), a premier body for accreditation has identified the objectives of higher education as follows:

- To train students in a wide range of academic and professional discipline to fulfil personal, social and national needs; and
- To advance knowledge through fundamental and applied research.

Those who undergo a programme of higher education must become enlightened members of society and be prepared to assume active and responsible citizenship in a democracy. According to Reddy(Reddy;1995.p 6), higher education, unlike other levels of education, promotes development by:

- Providing skilled manpower,
- Helping to spread science and technology, and
- Generating new knowledge through research.

Stressing the need to revise and objectives and functions of higher education Bomnai (in his address delivered at the 66th Convocation of Andhra University (Bommai; 35(39) 1997) has remarked that, twenty-first century is the demanding year in the field of education as it is increasing in manifold directions. In the past, the goal of education was to impart knowledge, skills and values which, however, have changed to the objective of development of human society and it must reach out beyond this limited elimination of economic imbalance, technological up-gradation and the demands of globalisation and international competitiveness.

Higher Education has a special importance within the educational system. It is the driving force of development, the repository and creator of knowledge that helps determine the future shape of society including the educational system itself. Higher education is gaining importance at such a time when intellectual resources are becoming more significant than material resources, when routine tasks are diminishing in all sectors of economic activity and when intelligence, initiative and imagination are the principal qualities required of the workforce.

2.2.8 Functions of Higher Education

Functions of Higher education are also described by many scholars and philosophers. The Education Commission (1971, pp.497-498), in its report for the period 1964-66, described the functions of a university in the modern world as on to-

- Seek and cultivate new knowledge, to engage vigorously and fearlessly in the pursuit of truth, and to interpret old knowledge and beliefs in the light of new needs and discoveries.
- Provide the right kind of leadership in all walks of life to identity gifted youth, and help them to develop their potential to the full by cultivating physical fitness, developing the powers of mind and cultivating right interests, attitudes and moral and intellectual values.
- Provide the society with competent men and women trained in agriculture, arts, medicine, science and technology and various other professions, who will also be cultured individuals imbued with a sense of social purpose.
- Strike to promote equality and social justice and to reduce social and cultural differences through diffusion of education.
- Inculcate into the teachers and students and through them in society in general, the attitudes and values needed for developing a good life in individual and society.

Similarly Ahluwalia and Bais (1981; p.29) recognised the aim of university education to provide and sustain an environment conducive to sharing, extending and critically examining knowledge and value and to furthering the search for wisdom. Universities in general considered to be the thought of centres for free and untrammelled thinking and their functions relate to create and preserve a climate of reflection essential for the and bold pursuit of truth and the same spirit is also applicable to the colleges as it is the premier step for higher learning. Further, the colleges also impart higher learning courses in Master's level and research.

2.3 College Education

The books Dictionary of Education edited by C.V Good (1959; 110p) defines the term College as an institution of higher education, usually offering only a curriculum in a liberal degree. He also mentions that college is a major division of a university, usually division of arts and science especially on that required for admission to study beyond the completion of secondary education. Likewise, another Dictionary of Education edited by R.P Taneja (1995; 49p) defines the college as a tertiary institution of higher education which are establish usually for the junior status to a university. In higher education colleges have occupied predominantly important position in the educational system. Since the establishment of UGC, colleges are being funded for

the development of infrastructure, building, library etc. However, the administration of the colleges is shouldered on the respective state government. According to Goil (1962; p7), the purpose of college education can be summarised as to-

- Develop the personality of the individual
- Provide him with the knowledge of the world in which he lives.
- Develop skills needed to sustain and advance social life so that he can be a creative member of the society.
- Satisfy the individual's search for values.

It becomes imperative for each college to include the above discussed purposes for the growth and development of the students with regard to subject, techniques, skills, habits of thought and methods of work in their respective fields. To achieve all these, the mere class instructions are not sufficient and one has to resort to other sources and methods.

2.3.1 Objectives and Functions of a College

S.K Hulbe (Hulbe, 1967; p.218) has stated four missions for any college or university, namely:

a) Preservation of knowledge,

b) Extension of knowledge,

c) Training of professional workers, and

d) Social mission.

Hulbe further states that our colleges or universities, it would seem, are aware of the first three of above missions, but there is unfortunately little concern for the social mission of a college or university.

J.N. Kaula (1974; p.108) has further classified and analysed the strength of students in colleges and according to him, 90 % of the total student population in our universities and colleges are in the streams of arts, science, commerce and law among whom, the incidence of unemployment is highest and 90 % of them are from the affiliated colleges. This, however according to experts are lacking of standard of education than the universities. The affiliated colleges are also increasing their inclination towards postgraduate studies and research work and if the present policies are continued they are likely to prove a serious contender for a lion's share of this sector, particularly in the humanities and in the social sciences.

2.3.2 Growth and Development of College Education in India

The progress of Indian College education was allowed during the ancient period was very impressive. Some of the Universities such as Taxila, Nalanda, Vallabhi, Odanta, Puri, Somapuri, and Vikamasila attracted students form all over the world and had excellent libraries to serve their students and faculty members between the fifth century BC, and the eleventh century AD. Almost all the universities in ancient India maintained healthy collections of the subjects and provided efficient services to their students.

During the Medieval period, Mohammedans rulers encouraged the establishment of College at a place like Lahore, Delhim, Rampur, Ajmer, Lucknow, Allahabad and other places. During the British period, several Colleges were established in the country by the East India Company and the Christian Missionaries with a purpose to import English language to the Indian soil including promotion of Christianity.

2.4 Government initiatives in Higher Education

It is necessary to recognize that the present approach towards higher education initiated by Government of India with the establishment of National policy on Education and Program of Action which emerged in 1986 and 1992 respectively in the light of the report presented by the University Education Commission of 1948-49 (popularly known as Radhakrishnan Commission), and the Education Commission of 1964-66, (popularly known as Kothari Commission Report).These reports in fact, laid down the framing of basic national policy for higher education in the country.

The University Education Report also set the goals for development of higher education in the country. While articulating, the goals of Radakrishnan Commission on University Education, 1948-49 it can be mentioned that, the most important and urgent reform is required in education through transformation it as it relates it to the life, needs and aspirations of the people and society at large and thereby, making it a powerful instrument of social, economic and cultural growth because transformation was necessary for the realization of the national goals. For this purpose, growth of education became imminent so as to increase productivity, achieve social and national integration, accelerate the process of modernization and cultivate social, moral and spiritual values.

The National Policy on higher education of 1986 has translated this vision of Radhakrishnan and Kothari Commission in to five principles and have identified as the goals for higher education which include Greater Access, Equal access (or equity), Quality and excellence, Relevance and promotion of social values. The directions and actions of the policy promulgated in 1992 are known as Program of Action which has been developed to make these goals in to practice. The importance of the first three goals namely, Access, Equal Access and quality have been highlighted in subsequent discussion.

2.4.1 Higher Education in Mizoram

The British who arrived in Mizoram in the second half of the nineteenth century paid a little consideration to all round development in Lushai Hills. The development of education was left in the charge of Christian Missionaries who were keen to propagate Christianity. It was Rev. F.W.Savidge and Rev. J.H Lorrain who prepared Roman script for Lushai language and started the first primary school on 2nd April 1894. They did not take much interest to the spread of education beyond primary level. There were only three middle schools in Mizoram between 1908 and 1943 and the first secondar4y school was founded by a voluntary organization only in the year 1944. In the post independence period Mizoram made tremendous progress in the field of education at all levels.

Since missionaries made no efforts towards the development of higher education, the Mizos had no chance to enhance their knowledge. As reported by McCal (1949) young Lushais were being trained for appointments as clerks, teachers, and hospital assistants etc. They developed a belief that education and Christianity could give them relief from worrisome toil of cultivating a hard land. A common mass of young people thus left the agriculture pursuits. But they were not so well off to even think of continuing their studies in a college outside Mizoram. In those days Mizoram was not having any motor-able road and thus was inaccessible. The nearest rail station of Silchar(Assam) could be reached on two to seven days by small boat down to the river of Tlawng. However with the opening of the motor road between Aizawl and Silchar, a small number of well to do Mizos could afford to get education outside the state. The roads to college education still remained closed to a majority of Mizos.

When some public figures were moved to see brilliant students discontinue their studies after matriculation, they took an action to establish the college. Thus, the first college in Mizoram was opened in Aizawl on 15th August, 1958 as a purely private enterprise. This college was named as Aijal College and the first classes were conducted at the Theatre Hall of Aizawl, now called as Vanapa Hall. The recognition of the university was received from Gauhati University, Guwahati in 1960. The college comes under the government sector as an aided college. It was renamed as Pachhunga Memorial College in 1964 on the remarkable gift from Mr. Pachhunga who donated a sum of Rs. 50,000/-(Rupees Fifty Thousand only) for the growth and development of the college. In 1965 the colleges' provincialisation order are notified by the Government and it became the first Government College in Mizoram, and was renamed as Pachhunga Memorial Govt. College. In 1979, the North Eastern Hill University (NEHU), Shillong upgraded the college into a constituent university college and it is since known as Pachhunga University College.

Since, the first college of Mizoram was opened after a long wait for the provisions of higher education; it attracted students from the wide age range. Most of the students are generally who were serving in offices and working in other fields during the day time, and attend the classes at night for their convenient. Soon college education spread to the southern of Mizoram and first college of southern Mizo district was established after the interval of six years in 1964 at Lunglei. There after the numbers of colleges are started increasing rapidly during the span of time in Mizoram. This college was affiliated to Gauhati University till 1973 when North Eastern Hill University took them over.

It is easy to start a college with teaching facilities in Arts or Humanities subjects, so all the colleges in Mizoram had such provisions. The teaching of science stream in the colleges of Mizoram started only in 1973-74 session at Pachhunga University College and at present 4 colleges has offered a science stream in a graduation level. The credit for starting commerce stream, an essential stream for the development of knowledge of business practices in trade, goes to Hrangbana College in Aizawl. Now there are 3 colleges are provided Bachelor degree in commerce stream. Women education is one of the important area in the society, Government should take an initial action for the growth and development of women in higher education. The first women colleges

Zirtiri Women College (now changed name and the provision and named as Govt. Zirtiri Residential Science College) in Mizoram were established at Aizawl in1980, they introduced Home Science for the first time. It is now providing teaching facilities up to B.Sc (Hons) in Home Science. In other colleges also teaching at Honours level is being done in both Arts and Science Subjects.

There has been a continuous increase in the number of students enrolled in the colleges of Mizoram. An important milestone in the expansion of higher education in Mizoram was the opening of Post-Graduate Centre of North Eastern Hill University, Shillong in 1979 offering Master's degree courses in the few departments. They have run the classes on the rented house, along with the administrative are headed by pro vice-chancellor and the officer on special duty, latterly the officers has been replaced by a Deputy Registrar. In spite of the constraints of infrastructure the faculty members of the campus have been publishing research articles in the journals of repute at the national and international level. They have also been organising seminars in the campus from time to time.

The enrollment of the students has been comparatively low in some departments though each department has an intake capacity of twenty (20) students. The reason for this could be traced to the lack of teaching facilities at Honours level in some subjects in the colleges of the state. A description of higher education should also include the institution of teachers training which trained the graduates for secondary school teaching. When the number of secondary schools increased, there was a tremendous increase in the number of untrained teachers. It was felt that lack of pedagogic training of high school teachers was a serious flaw in the high school education. To make qualitative improvement in teacher education at secondary level, Mizoram Institute of Education (MIE) was established in the heart of Aizawl town in March 1975. To begin with four graduate teachers were deputed for giving training leading to B.T degree in the Mizoram District of Assam. The college got affiliated later on to NEHU, Shillong and started giving training leading to B.ed degree of the university. The college has been renamed as College of Teachers Education. The Central Government takes an action for the development of backwardness to the higher education in Mizoram as the establishments of full fledge Central University in the State on 2001. The centers of the North Eastern Hill University are change and

inherent into Mizoram University. The administrative staffs, faculties and the material acquired by the centers are shifted into the property of the Mizoram University.

Now, the establishment of the Central University figures the development of education in the field of higher education and professional courses. The institutions which are the expansion of higher education in Mizoram are still very young. While in other parts of the country institutions of higher learning have celebrated their Diamond and centennial jubilees, some of the colleges in the state have been established only recently and have a long way to go. There are colleges which are still constructing their buildings while others have not yet been able to acquire their own land. Thus the vital amenities and infrastructural facilities are lacking. The Government of India has been promoting higher education throughout India and equal importance has also been put forth in non accessible areas. Central Government has been given special attention to higher education in north-eastern, remote/ inaccessible areas and the university located far off places. The Ministry of HRD, University Grants Commission, UGC-Infonet, Information and Library Network, Education and Research Network are making all out efforts to strengthen ICT resources and its application in eliminating remoteness and providing access to vast amount on information resources to students, teachers and research scholars. The State government also equally taking measures for effective coordinating among higher schools and higher education into the different section assemble by the Directorate of the state government.

2.4.2 Role of State Government in Higher Education

The Directorate of Higher & Technical Education, Govt. of Mizoram headed by the Director was established as a separate Department consequent upon the trifurcation of Education Department in April 1989. This Directorate deals with Higher Education from Collegiate level upwards including Science & Technical Education in the State with the approval of Administrative Head of Department.

At present, under the jurisdiction of Higher & Technical Education, there are as many as 24, including 1 (one) Law College. There are two Teacher Training Colleges and one of which is of Mizoram Hindi Training College. Altogether, there are 27 Collegiate Institutions under this Department. The department handles Technical Education in the State. There are 2 (two) Polytechnics Institutes viz Mizoram

Polytechnic, Lunglei, recognized by All India Council for Technical Education (AICTE) and Women Polytechnic, Durtlang, Aizawl, which is established with the approval of All India Council for Technical Education since 1998.

In order to upgrade the standards and to facilitate the functioning of Higher & Technical Education in Mizoram, the Directorate has to take up various schemes such as up-gradation of Colleges as per UGC Norms in staffing pattern, upgrading of Private Colleges into Deficit Grants-in-aid and provincialisation. To maintain uniformity of standards among the Colleges, financial assistance in the form of recurring and non-recurring grants is being given to Colleges. Financial assistance is also available to the students for specific purposes, etc. It has also established and looked after Collegiate Hostels in various places in and outside the State.

Engagement of Guest Lecturer/guest teacher is applicable to the Government/ Deficit Colleges / CTE / MPL/ WPA and MHTC on the condition of where regular Lecturers had already been appointed and where classes are in full swing.
The State Government through the Directorate is maintaining rules, regulations and sections in the colleges for promotion of higher education in the state.

- **Technical Section**:

As per the guideline of All India Council for Technical Education, Technical Cell/Section/Wing was set up in April 1994 under Directorate of Higher & Technical Education. The Technical Cell combined with examination cell controls the Academic (TE) matter only. However, special functions, duties and responsibilities attached to the technical section include:

Selection of candidates for Higher Technical Studies (i.e Degree & Diploma courses)

- To issue mark-sheets and Certificates of Diploma Courses in Polytechnics and Regional Institute of Paramedical & Nursing Sciences in the name of MSCTE.
- To review and revise the Curriculum
- To arrange training for students and faculty.
- To give stipend and book grant for Polytechnics and NERIST
- To inspect the Institution as per AICTE norms under State Level Committee for the approval of AICTE
- To develop the Technical Education

- To promote Community/Rural Development on Scientific lines for Community Polytechnic Scheme as per guidelines and norms of Community Polytechnic through Executive Committee, Advisory Committee and State Level Review Committee.
- To give apprenticeship training for the pass out students.
- To maintain and conduct the NVET through the Institution.
- To look after MSCTE as Secretariat and do all the matter relating to MSCTE
- To do all the matter relating Technical Education.

- **Quality Assurance Cell (QAC):**

Quality Assurance Cell has also been established as a unit of the Higher & Technical Education in 2004. This cell is headed by Officer-in-charge (OC) pulled from Senior Officer Higher & Technical Education Sector, Mizoram. It is, otherwise, the operational Administrative Unit of the State Level Quality Assurance Coordination Committee (SLQACC). It functions under the guidance and supervision of the SLQACC through the Director, Higher & Technical Education. Quality Assurance Cell (QAC), in fact, acts as a nodal agency between the Higher Education Institutions of the State and the National Assessment and Accreditation Council (NAAC). The duties and responsibilities attached to the cell include to:

- Conduct awareness programmes throughout the State on quality assurance related issues.
- To motivate the Colleges and other Higher Education Institutions in State to undergo Assessment and Accreditation to be prepared in consultation with NAAC.
- To assist NAAC in initiating post accreditation quality sustenance measures in the State.
- To help NAAC in achieving the targets of assessment and accreditation in the case of affiliated Colleges.
- To advise the State Government to initiate suitable measures for ascertaining the maintenance of minimum standards in higher education institutions.
- To advise the NAAC on Quality Assurance activities to be take up by the Higher Education institutions in the State for achieving globally acceptable standards.

- **State Project Implementation Unit**:

Mizoram State through having the highest percentage of literacy in India but yet has to go along way especially in areas of Technical Education. Technical Education is still in its initial stage of development in Mizoram. There used to be only one Polytechnic called Mizoram Polytechnic, Lunglei which was established in 1981. The second Polytechnic called Women Polytechnic; Aizawl was established with the permission of AICTE at Aizawl only in September, 1998.

The education in the State is highly Arts biased that while there are still numerous employment opportunities in technical fields, un-employment percentage is very high due to the presence of considerable number of Arts Colleges producing a great number of Arts Graduates every year. To solve the un-employment problems in technical field and to supply the required technical manpower to cater to the need of the State, it is necessary to develop technical education at a fast pace.

While there are as many as 360 High Schools and 28 Colleges of degree level affiliated in Mizoram University in the State, as stated above, there are only 2 (two) Polytechnics. Although the Government of Mizoram feels the necessity of improving technical education both in infrastructure and quality, it is not in a position to solve the problems at present or in the near future due to extreme financial constraints.

With regard to the present management of the technical education system in the State, though a separate budget head for Technical Education right from creation of Education Department in the State has been provided still there is no separate Directorate of Technical Education in Mizoram. At present, Technical Education is placed under the Directorate of Higher & Technical Education. The Directorate of Higher & Technical Education is at present covers 2 (two) existing Polytechnic Institutes including the matters relating to technical education alongwith the State Council for Technical Education in the State.

2.4.3 Budget allocation under Higher and Technical Education

Higher and technical education department is the main source to mandate the college and higher secondary schools in Mizoram. The department looks after the institution for financial assistance to salaries of staff and planning other annual budget. The year

wise allocation of fund to Higher and Technical education department (in lakh of Rupees) are shown Table No- 9 below

Table 9: Budget allocation of Higher and Technical Education in Mizoram

YEAR	PLAN	NON-PLAN	TOTAL
1997-98	487.80	755.00	1242.80
1998-99	882.92	790.00	1672.92
1999-00	361.88	800.00	1161.88
2000-01	1119.84	1038.39	2158.23
2001-02	1040.77	1054.87	2095.64
2002-03	1590.14	1182.75	2886.40
2003-04	1628.34	1282.48	3032.24
2004-05	2940.76	1362.92	4303.68
2005-06	2911.87	1451.48	4363.35
2006-07	2972.19	1531.87	4576.31
2007-08	2192.40	1672.85	3865.25
2008-09	2288.32	2138.48	4617.75
2009-10	2280.00	2733.85	5504.33
2010-11	2280.00	3048.75	5328.75

The recommendation of Education Commission of 1964-1966 and National Education Policy of 1968 were not followed in regard to allocation of fund for Higher & Technical Education department in Mizoram. This Dept allocated 1.82% of Plan fund during 2009-2010. In the meantime, the above commissions had recommended that al least 6% of the state budget has to be set aside for Higher and Technical Education Department

As present, about 90% of department's budget (State Budget) is utilized for salaries and the rest for administrative costs. This reveals that new schemes for the department could not be introduced and the colleges and institutions could not be provided facilities as demanded by UGC & AICTE. In view of the above the Department of Higher Education strongly proposed to increase the fund allocation at least 5%-6% of the total outlay of Mizoram

2.5 Academic Libraries in India: Growth and Development

The present educational system in India comprises schools from the primary to the higher secondary levels, colleges in both academic and professional offering courses leading to bachelors' degrees and universities for higher studies leading to masters' degree & research. This system has evolved over the last 150 years initiated by the British rulers of the country and after 1947 and the same was developed by independent India with appropriate changes and modifications. During the last four decades, the educational system has been reviewed by high power commissions set up by the Government of India at different periods to introduce appropriate measures to improve the quality of education and make it more relevant to the country's requirements. In recent years, the government has been very much concerned with educational reforms, especially at the school level. It has resulted in the adoption of an educational policy in 1986 to provide the best education to all sections of the society in tune with our national heritage as well as modern advances in science, technology and management.

To materialize these efforts and to modernize educational system, academic libraries have been considered vital components and integral parts of the entire educational process. Considerable thought and attention have been given to the planning and development of academic libraries at all levels.

2.5.1 Pre- Independence (1901 – 1947)

In the latter half of the 19th Century, no hesitation, the Universities in India are for the purpose of ascertaining proficiency acquired in a given area of knowledge, yet the progress in Education in general and academic libraries in particular was somewhat slow. There was a time gap between the establishment of the universities and their libraries, as is clear from the following Table 10 given.

Table 10:Time gap between the establishment of the University and their Libraries

Name of the University	Year of estt.	Year of Library Estt.	Time gap between estt. of Univ & Lib
Bombay	1857	1874	17 Years
Calcutta	1857	1873	16 Years
Madras	1857	1907	50 Years
Allahabad	1887	1916	29 Years.

A major obstacle to the development of the University libraries was that the universities established during the latter half of the 19th century were not really established for the advancement of learning and research. They restricted their activities merely to holding examinations and awarding degrees. The teaching work was done by colleges which did not form an integral part of the Universities. The Universities themselves did not feel any need for an organized library system, as there was neither a provision for teaching nor for research under their direct control. The Indian Universities Commission (1902), under the chairmanship of Sir Thomas Raliegh, observed the poor state of affairs of the University libraries. It remarked that, of the present University libraries there is not much to be said. The library at Madras appears to be entirely neglected. Bombay has a good collection of oriental and other books; but the library is little used by graduates and hardly at all by students. Calcutta has a library and money has been granted for the purpose making it supplementary to other libraries in Calcutta. It is opened to fellows and to persons permitted by the syndicate to use it for the purpose of literature search. The Allahabad University has no library. Lahore has not a very large university.

The Commission, therefore, sought to recommend that good reference libraries should be provided in this connection both with universities and colleges in order that students may have an opportunity of forming the habit of independent and intelligent reading. These observations and recommendations soon led to the enactment of the Universities Act of 1904 which was quite specific as to the place of a library in a university setup. The Punjab University, Lahore was the first university to take a note of this and secured the services of Don Dickinson, an American Librarian and a student of Melvil Dewey to reorganize and catalogue and administer the university library and to give a course of training in modern library methods.

The Calcutta University Commission (1917) was appointed by the British Indian Government to consider the maintenance of an adequate university library kept up to date as essential to a first class university.

2.5.2 Post-Independence (1948 - onward)

History of Indian higher education clearly shows that the British Indian Government adopted biased policies towards the development of education in India. This fact is evidently established when we came to know the growth of literacy among the

Indians at the time of Independence. In 1947, only 12.2 percent of the population was literate and the expenditure on education was only Rs 0.69 per head. This not only shows the poor state educational development but also indicates the adverse effect of the policies of the British Government on the development of the academic libraries in India.

One of the major causes for the inadequate growth and development of the academic libraries was that even the commissions and committees were appointed by the Government of India before independence to examine the problems of education did not make specific recommendations for the development of libraries. But after Indian Independence, during the last forty five years, academic libraries have expanded considerably in numbers, because after Independence, educational sector in our country has been given a place of importance. It has been recognized as the breeding ground for the intelligentsia and the variety of manpower needed in Industry, agriculture, administration and services. College and University libraries have been considered by our planner as crucial for future development.

The major factors which can be attributed for the rapid growth and development of the academic libraries in India are (i) Five Year Plans, (ii) various Educational Commissions/Committees, (iii) University Grants Commission, (iv) various library committees headed by Dr. S.R Ranganathan, (vi) Library Science Education in india.

Library in schools has been given a proper focal point in the report of the Secondary Education Commission held during October 1952-June 1953 under the chairmanship of Dr. AL Mudaliar. The Commission pointed out a sordid state of affairs of libraries in schools and it emphasized the significance of the habit of general reading among children including advocacy for the establishment of good libraries in schools with a provision to impart effective library services to the pupils. It further, expressed that individual work, pursuit of group projects, academic hobbies and co-curricular activities were the call of the hour for presence of a good and efficient function of library. The Commission recommended that every secondary school should have a central library under a trained librarian. It also articulated the view that in smaller places it may be more economical to build the school library in such a way as it may also serve the function of a public library for the locality. But the school libraries, on the whole, have been a neglected lot.

2.6 College Library and the services:

College library play a significant role not only for dissemination of information to the users but also add substantial instructions in the teaching method which is one of the primitive way for the students to get abreast with the latest development in the concerned subject fields. It more over, acts as a guide where the students irrespective of the types receive sufficient instructions through books, journals, and other recorded literatures available in the library.

College as defined by C V Good (1990; 23p) in the dictionary of education relates to an institution of higher education which usually offer only a curriculum in liberal degree. He also has defined it as a major division of a university through arts and science especially required for admission to study after completion of secondary education. Another educationist RP Taneja (2002; 287p) has opined college as a tertiary institute of higher education establishment, usually of junior status to a university. Thus, college occupies an important position in the present set up of university education. The quality of University education largely depends on the standards maintained by the Colleges which in turn are dependant upon the staff, equipment, libraries, laboratories and other facilities.

Every educational institution requires library containing various literatures such as books, journals, digest, dictionary, encyclopaedia, year book, almanac, and electronic information sources. It can be rightly pointed out that, library is the heart of any institution and college libraries are not exception to it as every college needs a library to flourish education. P N Gaur (2006; p. 58) has mentioned that the library in a college is organised and administered for the use of its students and staff members. Therefore, it can be viewed that, a library which is indispensable is established, maintained and administered by a college to meet the needs and requirements of students, teachers and other non teaching staffs and promotion of academic programmes. The main functions of college library is to serve the parent body in its educational objectives, to aid the faculty to supplement the class-room lectures, to help the students for finding and providing the information requirement and reading materials.

Now-a-days, college library is recognized as an important institution in the community, where every person can seek every kind of knowledge. The library not

meets the requirements of the students in the college but also general people like, writers, orators, and journalist, researchers etc. seek information and consult the library documents. It can be equated with a science laboratory in a science college as the college with out laboratories is bloodless. A laboratory in a science college serves as an integral, compulsory and obligatory wing as it accelerates the education in the right direction like wise a library in a college is also regarded as an inseparable wing of the educational system. Libraries are also considered as store house of knowledge as multiple types of documents irrespective of the subjects and categories are available in print and electronic form and it is practically next to impossible for any student to afford wide and versatile collections in any subject filed. The importance of college library has been seriously felt the University Education Commission and other commissions. Tracing the importance of college library Dr. S. Radhakrishnan in his report on University Education Report in 1948 has emphasized that, training and research in higher branch of learning is merely a question of learning to use the tools, and techniques and in the absence of library tools, there is no option for a student to use the same.

Truman's Commission (Choudhary, 1983; p.19), however, on higher education has viewed that; library is next to the instructional staffs that have the importance for maintaining quality of instruction and research. The National Policy on Education, 1986 has mentioned that the studies of librarian need to be improved. It needs to be reemphasized that there is a holistic relationship between education and library service where formal education ends and informal education begins as a lifelong learning process and this is pursued through personal reading.

Colleges in the present days require to be housed with a well-planned and systematic managed functional library so as to make the use of resources profusely by the students, and teachers. In the present educational scenario efforts are being initiated to modernize the total educational system where libraries are considered to be vital and major components in the entire educational process. Considerable thoughts and attentions are been given for planning and development of academic libraries at all level. Table 11 broadly indicates the various types of academic library systems attached to the different educational institutions in India.

Table 11: Academic Library System

School	College	University
Primary	Polytechnics	Conventional Universities
Middle	Undergraduate	Institute of Science & Technology
Secondary	Post Graduate	Indian Institute of Technology
Higher Secondary	Professional	Agriculture University
		Indian Institute of Management
		Universities or distance education and others.

In general, the academic library system in India broadly can be grouped under three primary groups such as, (i) School, (ii) College and (iii) University. Libraries attached to these educational institutions are also divided in the same way as:

- School Library (attached to School)
- College Library (attached to College)
- University Library (attached to University)

The library is an indispensable part of academic pursuit in the higher education stream. The primary services of a college library apart from lending of books also are extended to multiple areas. However, in several colleges, books are being transacted form the library on a particular day in a week, thus denying the students the privilege of borrowing books on the other six days. Open access is a very a rare phenomenon in these libraries due to fear of theft of books by users. However, the graduate students and teachers in many colleges are permitted to reach the stacks. Reference service is hardly being provided due to lack of basic reference books and sufficient professional staff. It is also reported that most of the students are ignorant of an effective use of the collection aids and tools available in the library. Certain libraries exist exclusively for teachers and students are denied the user of a library. The books are purchased as per the requirements of teachers. The teachers do not find any stringent regulations of the library to be followed and as such teachers in most of the colleges use the library in an abrupt way with regard to issue of books and other reference materials and no restrictions is generally being imposed ignoring the interest of the students.

2.6.1 Objectives of College Library:-

The partial statement of objectives of Milwaukee Downer College Library given by C.H.Brown (Brown,1946;p.XII), Chairman, Committee of War time Activities, Association of College and Reference Libraries, USA, is Short but comprehensive. It states that a college Library requires working for:

- Scholarship where the college wishes to stimulate thoughts to help students to obtain, recognise and evaluate knowledge and
- To familiarise them with the possibilities for further education and scholarship after their college years are over.

The objectives of a College Library to:

- Promote the records of human knowledge and to keep them up-to-date in accordance with the growing needs and requirement of today and tomorrow.
- Remind faculty members of the various opportunities for using library resources in teaching.
- Facilitate an individual and a group of the readers in the use of library resources with practical demonstration on how to seek the information.
- Provide necessary resources for staffs and students.
- Assist teaching staffs in organizing the synthetic methods of teaching.
- Bring the documents to the notice of students and the academic together under environments which stimulate reading for pleasure, self-realization, personal growth and development and the cultivation of intellectual excellence for entertainment.
- Provide the support for the students to meet their curriculum requirement and
- Provide the reference materials to its students and teachers.

2.6.2 Functions of College Library

The functions of College Library according to Lyle (Lyle 1961) can be grouped under three broad headings such as,

- Curricular programme
- Method of teaching
- Attitude towards the use of library in teaching

2.6.3 Role of the College Librarian

Librarian plays a significant and important role in the promotion of independent study by the student. His role is primarily is focussed on to:-

- ✓ Keep in constant touch with the teachers to know their research problems, method of teaching.
- ✓ Attend faculty meetings so that he is informed of the changes taking place in the curriculum. This helps the librarian to plan to support the teaching programmes.
- ✓ Bring to the knowledge of the teachers now and then the resources and services that the library can make available.
- ✓ Inform the teachers about new additions of books to the library. This can be done sending lists of addition every month.
- ✓ Determine with the help of teachers what materials the library lacks and the steps to be taken to acquire them.

2.6.4 Requirements of a College Library

The basic requirements of a college library can be groped under as,

* Organisational Structure and
* Physical Infrastructure

(a) Organizational Structure

- ♦ Library section is to be treated as an academic section of the College and not under administrative.
- ♦ Library Committee with the Principal of the College as a chairman and librarian as a member secretary be constituted. Three heads of departments and chairman of student's council be included as a member of library committee. All matters relating to library be decided upon by the Principal of the College on recommendation of the Librarian. The committee will be in existence whether the post of librarian is filled or vacant.
- ♦ The Committee must meet at least three times in a year.

(b) Physical Infrastructure

- ♦ Space of at least 2,000sq.ft. must be made available for the library, out of which 1,000sq.ft. can be used for reading rooms.

- Reading room should accommodate 10percent of the students enrolled and the minimum number to be accommodated in the reading room should be 50.
- Library should have separate facility of reading room for teachers, with an intake capacity of ten teachers as a minimum. For the colleges where the number of teachers is more than 40, the teachers reading room should accommodate 25% of the total teachers.
- For college having enrollment of students of more than 1,000, there should be separate reading room for periodicals with seating capacity of 5% students and separate study room with seating capacity of 10% students. This will include provisions mentioned at sr.no.2 above.
- The space provided for the college library should have sufficient lighting, cooling arrangement. It should be centrally located and should have an easy access.
- Library should have good quality furniture prepared as per library specifications, e.g., as mentioned in I.S 1829(Part I and II) 1978 so as to give the identity to a library. This will include library stacks, reading room furniture, display boards and stands, notice boards, etc.
- There should be proper arrangement of drinking water, toilets in the area adjacent to the reading room.
- College must spend at least Rs. 50,000 or 6.5% of total college budget whichever is higher every year for the purchase of books and periodicals. The fee collected from students as library fee with the share from the management and government grants be used for this purpose.
- Every year the library should add at least two books per student and five books per teacher to its collection.
- College library must possess at least 5,000 volumes (in respect of single faculty college) and 10,000 volumes (in case of multiple faculty college) as a basic collection.
- College library must possess at least five encyclopedias, ten dictionaries of various languages and at least 500 reference books on different subjects.
- Library should subscribe at least five newspapers. These newspapers are to be made available in the reading room for students.

- College library must subscribe to at least 50 periodicals. Out of these, at least 10 should be of general nature. This will help the students to increase

2.6.5 Importance of the College Library

A College is typically described as a community where teachers are the head, students are the body and the library its heart. If the body is to perform its functions properly and efficiently its heart must be strong and efficient in its functioning. Sir Charles Grant Robertson, a former distinguished Vice Chancellor of one of the modern universities of England was expressing the same idea in another way when he said that, if he were a dictator, he would reduce the time devoted to lectures to a third of that usually occupied by them and insist on the students spending three hours everyday in the library.

The importance of the library in College education has been often emphasized by educationists, librarians, education commissions and committees. To quote from the report of the Radhakrishan Commission on University Education (1948-50), "Training in higher Branches of learning and research is mainly a question of learning how to use the tools, and if the library tools are not there how can the students learn to use them?" Similarly the Kothari Commission on Education (1964-66) in its report further emphasized the importance of libraries in higher education in the following words that, no university, college or department should be set up without taking into account its library needs in terms of staff, books, journals, space etc. Nothing could be more damaging to a growing department than to neglect its library or to give it a low priority. On the contrary, the library should be an important centre of attraction on the college or university campus.

The ideal academic function of the College library as described by the Kothari Commission is that, the library should provide facilities and services necessary for success of all programmes of instructions, open the door to the wide world of books that lie beyond the boundaries of one's own field of qualification and bring books, students and scholars together under condition which encourage reading for pleasure, self discovery, personal growth and the sharpening of intellectual an intellectual workshop and should along with the teachers be in a position to teach with books.

The library is a living organism, humming with activity. Hence, one should find that all services are directed to meet the daily needs of the academic community. Both teachers and students should be provided with ample library facilities and services necessary for the success of all programmes of instruction. The librarian requires acting as a guide between students, the teaching faculty and the books. So, it can be summed up that the college library has to cater to the following functions.

- Providing information resources necessary for teaching and research.
- Aiding the teacher in keeping abreast of current development in the field.
- Providing instructions and guidance necessary for all academic programmes.
- Opening the door of the wide world of knowledge, that lie beyond the borders of teachers own field of specialization and.
- Bringing information, students and teachers together under one roof for encouraging the readers to derive pleasure, self discovery, personal growth and sharpening of intellectual curiosity.

2.6.6 Educative Services of the College Libraries

College Library provides various indispensable services to its users in the following manner. The primary aims of the said library are to-

- Provide materials to the college community adequately for their various needs and purposes.
- Make materials easily accessible physically through open access, orientation, and or other efficient means
- Provide bibliographical services through catalogues, bibliographies, and indexes.
- Allow the users for home loan.
- Make provision for formal and informal instructions while using the library.
- Encourage for wide reading through easy accessibility of materials, reader's guidance, displays and book discussion.
- Provide special materials for the faculty members of the college.
- Borrow required materials on inter-library-loan form other college libraries, and provide them to its users.
- Provide adequate and comfortable physical facilities for study including channels for special projects.
- Promote cultural activities to the college community

- Act as a nucleus centre for the growth and development of the community, academic and cultural affairs.

2.6.7 Growth and Development of College Library

Academic libraries play indispensable role in dissemination of information/ knowledge to the user communities at large in an academic environment. In academic libraries, the college library is open to the users/ members who constitute faculties, students, staffs of the college. In the process, higher education could be recognised as place of learning than teaching. Therefore the students in higher education require to be provided with necessary facilities/ infrastructures for their self learning process and the library is the first and fore most platform to provide the same to its users.

Records relating to the progress of Indian higher education and academic libraries visualise that, medieval period could not witness a considerable growth which, however, changed considerably in the 1980's with spell bound growth and the period is seems to be different from of ancient, medieval and pre-independences times. The development for academic libraries took a sharp turn in 1800 with the commencement of 'Fort William College' in Calcutta by the Lord Wellesley, the then Governor General of British India. Since then, libraries started developed, progressed and became a boon for the academic institutions. This development has attributed many factors including the progress of higher education and the guidance of many academic librarians.

The College libraries in India have a significant role to play in higher education. Records also reveal that majority of the undergraduate students i.e., 88.5% and graduate students, i.e. 53% attend the colleges. When India attained independence more than 533 colleges did not have their own libraries, but at present, every college in the country has a library with more or less collections. But it is surprising to know that, majority of the college libraries are lacking of adequate infrastructures/ facilities to meet the needs demands of their users including a meagre collection development, due to inadequate budget.

In many colleges the library is housed in a small room as neither a hall nor a big room is available so that it can be converted to the library. Further, an unused room, quite often somewhere out of sight are considered adequate to house a few shelves of

books. And in most college libraries there is complete darkness even during the day time, as the windows are closed out of a fear that the books may be stolen.

The previous research study of college library indicates that some scholars have explicitly established that the conditions of the college libraries in India are far from satisfactory. The college libraries open only six to eight hours a day and most of the libraries do not have qualified librarian.

While several commissions and committees like the Radhakrishnan Commission of 1948 hardly put stress upon the importance of the college libraries in their reports, the University Grants Commission put maximum importance to the college libraries as the quality of higher education and research, especially at the graduate level, depends upon the standard of the college libraries.

Therefore, the UGC has played a significant role in the growth and development of college libraries since 1953 by giving grants for books, equipments, staffs and library buildings and has done a remarkable job in salary improvement of the college librarians. The UGC contributed immensely to the college libraries through special grants for text books, when a new subject is introduced in the Curriculum. On the other hand, the colleges and the state government have failed to provide their equal share. The total expenditure on the College libraries according to the recommendation of the education commission should not be tally for the total budgets of the colleges in generally.

2.6.8 Recommendations of UGC committee on College Libraries

The UGC Libraries committee after giving serious consideration to the needs of college education, made the following five recommendations which were accepted by the UGC itself;

i. Each college library should be aided by UGC to purchase sufficient number of books.

ii. In each college there should be a Textbook library in addition to a general library.

iii. Each college library should have a librarian in the lecturer's grade. But he will have to be in Reader's grade in a large college library. He should be graduate with degree in Library science. Library should have staff depending on the strength of the

student Professional assistants should be appointed with degree in library science and semi-professional assistants with certificate course.

iv. Each college library should be aided by UGC to have library building, fitting and furniture

v. Proposal should be given and efforts be made as much as possible in the Third Plan period and widely in the Fourth Plan period.

The above proposals were also emphasised in the UGC sponsored library seminar on 'work flow' in 1959 which was directed by Dr. SR Ranganathan himself. The finding of the seminar wee as follows

- Book selection, book purchase and preparation of books should be spread evenly throughout the year.
- Open access system should be introduced with all the necessary safeguards.
- The administrative work should be streamlined so that library staff can give maximum time to reference service.
- The librarian should be the member of the faculty of the college.
- The librarian should be in close contact with the progress of work in each class. He should provide assistance to students in pre-class preparatory reading and post-class follow-up reading;
- College library should be opened all the days of the year for 12 hours with a provision of two shifts of staff each day and of the extra staff necessary for each member of the staff to have normal holiday in the year. This should mean 2.35 staff needed for one shift alone with the library closed on all the weekly and other holidays.

2.7 College Library in Mizoram

Colleges occupy a very important role in education at the degree level. The quality of university education largely depends on the standards maintained by the colleges.

In Mizoram, college education and its administration lie under the control of the Directorate of Higher and Technical Education Department of Government of Mizoram. There are a good number of colleges in Mizoram which can be categorized in four groups, viz. (i) University College, (ii) Government College, (iii) Deficit College and (iv) Private College.

To mention here, Pachhunga College located at Aizawl happens to be the first and foremost college in Mizoram started its functioning in 1958 and subsequently the administration of the college was taken over by the State Government. Since 1979, the college was under the jurisdiction of North Eastern Hill University (NEHU) and changed its name as Pachhunga University College (PUC). Consequent upon the establishment of Mizoram University (MZU) in 2001 at Mizoram, PUC not only controlled under the jurisdiction of MZU but also became a constituent college of the university.

- **Directorate of Higher and Technical Education**

To highlight a brief account of the directorate of Government of Mizoram, it came into existence in 1989 which looks after the following activities.

- University and college education
- Teachers Education at the post-graduate level
- Post-metric Scholarship and Research Fellowship
- Technical Education.

The Director of Higher and Technical Education is responsible for overall administration, supervision and co-ordination of all educational activities relating to higher and technical education. The above mentioned activities of the directorate, however, has been shouldered by three Joint Directors out of which, one of them is responsible for administration, establishment, university and college education, Hindi education, budgeting and planning.

College library which is mandatory is established, maintained and administered by the college to meet the needs and requirements of the students and faculty members. Experiences reflect that, at initial stage, the college library is being was looked after by attached teaching faculty, who do not have any experience or degree in library science. In some colleges, it was cared by the Principal himself from beginning of the College and there was no proper set up of library.

Meanwhile, State Government is the most important authority who issues permission and provides financial support to the new colleges. On the other hand, the inspection team sent by the University keeps aside due to solid request of college authority at the time of inspection Dr (Mrs) Helen Giri, former director of College Development

Council NEHU said that, the criteria concerning College library of what the team will inspect for affiliation is that:

- The College should have at least five thousand titles of books.
- College should have trained librarian.
- Students and teaching faculty should have good awareness of the library.

It is clear that State Government, the college authority and CDC are the three important responsible organs for the development of College library. Therefore, it is required to have proper co-ordination, otherwise library never grows properly and fruitful in terms of document holding for the users.

2.7.1 An overview of the Colleges in Mizoram

Till 1970, there were only two colleges in Aizawl, viz. Pachhunga Memorial College (now Pachhunga University College) and Aizawl College (now Govt. Aizawl College) which could accommodate for only few students. There was a perceived necessity of opening a new one in the northern part of Aizawl since many of the college going students belong to this part of the Aizawl. Fortunately, Mr. Hrangbana donated Rs. 1, 00,000 for the college establishment and since the institution of the college it was named after him i.e. Hrangbana College, which was formed officially on 21st July, 1980. During that time the classes were held in Govt. High School and were only an arts college with a morning shift. Subsequently, a class in the college was upgraded to BA with Honours in some departments after the college obtained University affiliation on 19th August, 1981. At present 24 colleges are affiliated into Mizoram University and the state government adopted UGC norms for mandatory of the colleges. Now 22 colleges are in the status of Government are fully provincialized while others two colleges like Mizoram Law College and Kamalanagar College are run by the Deficit status. Between the years of 1990-2004 two private colleges are sprint by the public finances such colleges of private are NE Khawdungsei College and Lunglei Morning College. But the colleges were closed due to the funds allocated from the public and unfold of government recognition.

Mention may be made that, out of 24 colleges as reflected below, 22 colleges were upgraded to a permanent status between 1980-2008, which enabled lectures and office staffs to enjoy the same pay scale with their counterparts while, 2 colleges are yet to be permanently affiliated. As regards to the enrollment of students, a total number of 8331 students were enrolled at different levels of the bachelor courses in the colleges.

The city of Aizawl happens to be the nerve centre for education in Mizoram. Out of 24 colleges, altogether 11 colleges are situated in Aizawl City itself out of which, 5(five) colleges are established in the South of Aizawl including college of teacher education and the constituent university colleges of Pachhunga University colleges, 3 (Three) colleges are situated in the Northern part of Aizawl, 3 (Three) colleges in Western area of Aizawl. However, other 13 colleges are built outside Aizawl.

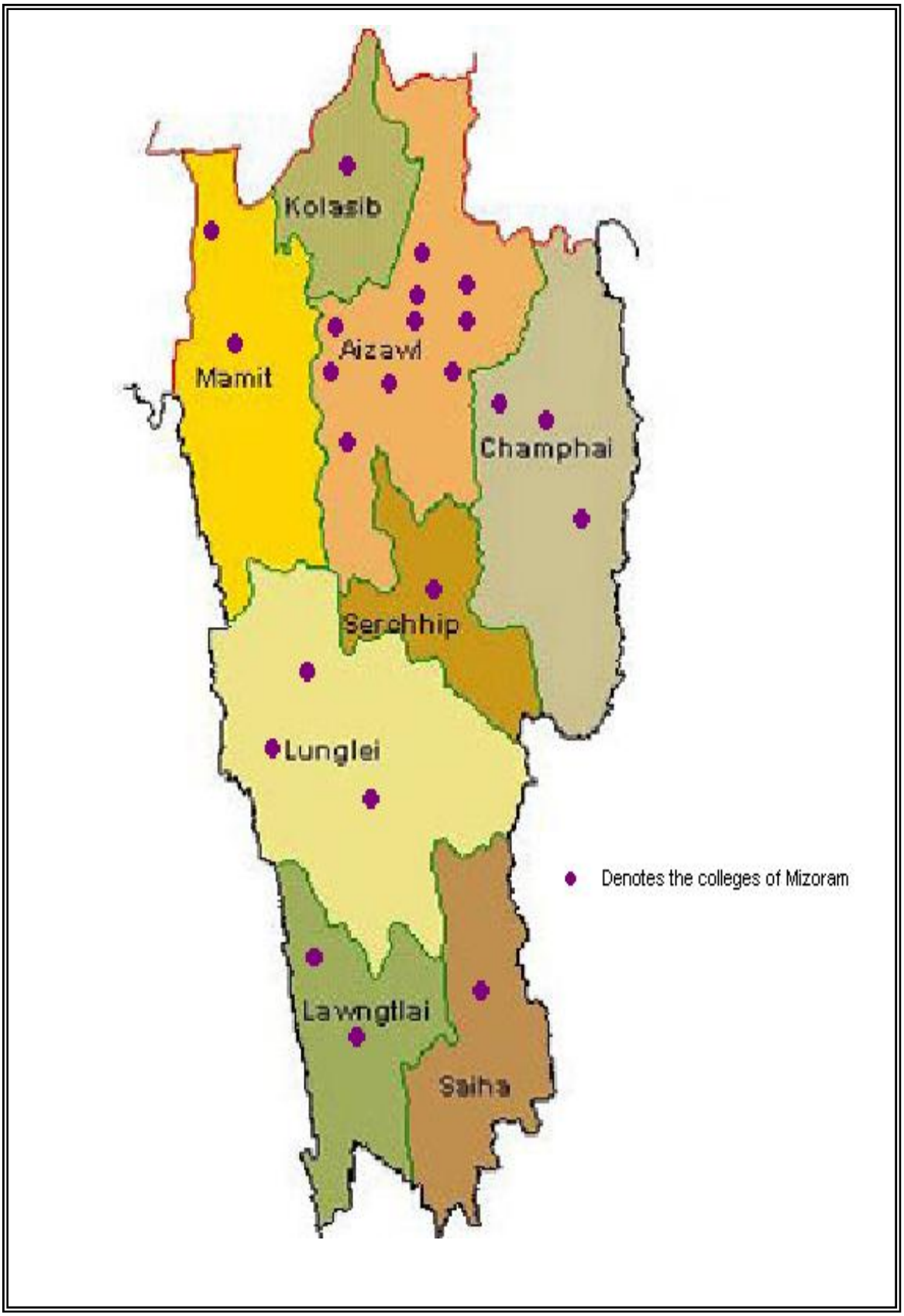
The colleges of Mizoram along with number of teachers employed and student enrollment in district wise are shown below supported with the censoring map highlighted by the exact location of the college. Data relating to the number of teachers available in different colleges are 755(regular employed) in total while the students strength comes to 8331 in all the 24 colleges. The detail has been shown on Table 12.

Table 12: Numbers of teachers and students in colleges of Mizoram

Sl.No	Name of the College	Year of Estt.	No of teachers	No. of student
Aizawl District				
1	College of Teacher Education	1975	15	120
2.	Govt. Aizawl College	1975	59	740
3.	Govt. Aizawl North College	1988	31	468
4.	Govt. Aizawl West College	1990	35	304
5.	Govt. Hrangbana College	1980	56	1416
6.	Govt. J.Thankima College	1992	27	234
7.	Govt. Johnson College	1993	26	122
8.	Govt. Saitual College	1984	26	83
9.	Govt. T. Romana College	1992	33	532
10.	Govt. Zirtiri Residential College	1980	44	413
11.	Mizoram Law College	1983	5	271
12.	Pachhunga University College	1958	86	1420
Lunglei District				
13.	Govt. Lunglei College	1964	37	521
14.	Govt. Hnahthial College	1979	20	70
15.	Govt. J. Buana College	1983	27	268

Champhai District				
16.	Govt. Champhai College	1971	36	186
17.	Govt. Khawzawl College	1985	19	51
Lawngtlai District				
18.	Govt. Lawngtlai College	1980	37	104
19.	Kamalanagar College	1992	20	127
Saiha District				
20.	Govt. Saiha College	1978	24	176
Mamit District				
21.	Govt. Mamit College	1983	19	59
22.	Govt. Zawlnuam College	1986	18	31
Serchhip District				
23.	Govt. Serchhip College	1973	19	193
Kolasip District				
24.	Govt. Kolasip College	1978	36	222
Total			**755**	**8331**

(Source: Report of Higher & Technical Education on 30.september, 2009)



Map-1: Establishment of colleges in different districts of Mizoram

2.7.2 Profiles of the College Library Services in Mizoram

The profiles of college library services in Mizoram have been discussed below.

- **College Library scenario in Mizoram**

Education was started by the two Christian Missionaries, Rev. James Herbert Lorrain (Pu. Buanga) and Dr Frederick W. Savidge (Sap Upa) who have arrived in Mizoram on 11th January, 1894 under the Arthington Aborigines Mission from London. They developed Mizo Alphabets in Roman scripts and started school in 1984 with two students. Mizoram received tremendous blessings through the services of missionaries and now became the second highest literacy percentage of Indian states. The first college in Mizoram was established under the initiatives of the Welsh Missionaries in 1958 at Aizawl under the name of Aijal College (now, Pachhunga University college). The college library started functioning in 1961 with Pu. Lalmakthanga, the pioneer of the library staff in Mizoram, he was working as Librarian-cum-college clerk. PUC library has a rich collection of several foreign documents, rare book collection. Collection was developed by the foreign Christian missionaries to acquired donation from the others and gift of the mother authority. However, in this time, the library was place as a valuable library around the North East India. But unfortunately, accident was occurred into the library building and make burnt, all the valuable documents in this college are missing to that burnt.

Libraries in Mizoram were under the education department until the department was trifurcated into school education, Higher and Technical Education and Art & Culture Departments in 1989. Since then, Art & Culture department had taken over Public libraries and college libraries by Higher & Technical Education department and as such Director become head of the department.

College, at the time of an establishment, is supposed to start functioning of a library automatically. As the head of the college, all responsibilities for the administration of the library rest on him. Some colleges have a library committee and separate library buildings, but some do not. The state government has approved fees to be followed by all the colleges under its jurisdiction and fixed Rs 50/- as library fee per student for one academic session. The state government is not having any separate library budget and therefore, the primary source of finance is student library fees and some financial assistance from UGC or other organization, which differ form library to library. The

jurisdiction of Mizoram University is within the Mizoram state which defines that all the colleges within Mizoram are to be affiliated to the Mizoram University. The colleges affiliated to Mizoram University are given in a table

- **Library Professionals/staffs**

Staffing is one of the important areas of management which is now popularly called as personnel management. Staff of any library can be of four types namely: Professional, semi-professional, non-professional and technical. Unfortunately, neither the UGC nor the state government accorded the required number of professional posts in the college libraries in Mizoram. Thus in short, the areas of staffing can be summed up in following four categories:

- To provide number of qualified persons
- To give job description
- To provide job analysis or evaluation and
- To suggest norms for motivation

While studying the staffing formulas in college libraries it was observed that these formulas suggest only number of persons appointed in libraries but nothing is suggested about the remaining three aspects. Further, the formulas suggested do not satisfy needs of all types of college libraries.

Library staffs in Mizoram colleges are very few in numbers in comparison with other academic libraries of other Indian states but are of hardworking and dynamic in their services. Some of the college libraries are managed by one library staff whereas some have tow or three staffs. Out of the 24 college libraries, only 14 are looking after by a Librarian whereas some are managed by the Deputy Librarian, Library Assistant or a clerk. Besides library staffs are engaged for the other official works in the college office which hamper the services of the library as a whole.

The State Government of Mizoram adopted UGC revision of pay scales for college teachers and other measures with effect from 1986 and thereafter, college librarians were also given this scale of pay and now, 14 (fourteen) college librarians are getting their pay as per UGC scale of pay. This opportunity could happen only because of the opening of the Department of Library & Information Science in Mizoram University in 2002. Till this date 10(ten) working college library staffs were qualified for the post

of college librarian from this department. The staff strength of college library in Mizoram is shown Table-13.

Table 13: List of Library personnel in Colleges of Mizoram

Sl. No	Name of the College	Year of Estd	Professional (qualified)	Semi Professional (q.*/ u.**)	Supporting staff
1	College of Teachers Education, Aizawl	1975	1= Librarian	1= Lib. Asst(q)	1
2	Govt. Aizawl College	1975	1=Librarian	1= Lib. Asst(u)	2
3	Govt. Aizawl North College	1988	1=Librarian	1= Lib. Asst(u)	1
4	Govt. Aizawl West College	1990	1=Librarian	1=lib. Asst(q)	1
5	Govt. Champhai College	1971	1= Dy. Lib	1=Lib. Asst(q) (contract)	1
6	Govt. Hnahthial College	1979	1=Librarian	-	1
7	Govt. Hrangbana College	1980	1= Librarian	1=Lib. Asst(q)	2
8	Govt. J. Buana College,	1983	1=Librarian	-	-
9	Govt. J.Thankima College	1992	1=Librarian	-	1
10	Govt. Johnson College,	1993	1=Dy. Lib	1=Lib. Asst(u)	1
11	Govt. Khawzawl College	1985	-	1=Lib. Asst(u)	-
12	Govt. Kolasib College,	1978	-	1=Lib. Asst(q)	1
13	Govt. Lawngtlai College	1980	-	1=Lib. Asst(u)	-
14	Govt. Lunglei College	1964	1=Dy. Lib	-	-
15	Govt. Mamit College	1983	1=Librarian	1=Lib. Asst(u)	1
16	Govt. Saiha College	1978	-	1=Lib. Asst(u)	1
17	Govt. Saitual College	1984	1=Librarian	1=Lib. Asst(u)	1
18	Govt. Serchhip College	1973	1=Librarian	1=Lib. Asst(q)	1
19	Govt. T. Romana College	1992	1=Librarian	1=Lib. Asst(u)	1
20	Govt. Zawlnuam Colleges	1986	1=Dy. Lib	-	1
21	Govt. Zirtiri Resi.Sc.College	1980	-	1=Lib. Asst(q)	1
22	Kamalanagar College	1992	1=Librarian	-	1
23	Mizoram Law College	1983	1=Librarian	1=Lib. Asst(u)	1
24	Pachhunga University College	1958	1=Asst. Librarian	2=Prof. Asst(q) 1= SPA	2

NB. *q- Professionally Qualified, **u- Professionally Unqualified

The above table indicates the present status of library staffs in all 24 colleges of Mizoram. It shows that out of 24 colleges, 14 (Fourteen) colleges have permanent Librarian having been professionally qualified in Library and Information science, four colleges run with Deputy Librarian , one college being run by the Asst. Librarian and five colleges are run by the other staffs in the library either by Library Assistant or clerk. The Librarian of the college are assisted by the nine Library assistant who have qualified in the field of library and Information science, 10(ten) library assistant are not having a background of Library science while, other colleges do not provide any supporting staffs by the Government. 24 supporting staff, which including clerk, IV grade, peon, chowkider etc are, supported the librarian and other library staff for fulfilling the better job. It could be visualized from the above table that, 20 colleges out of 24 colleges are being provided with supporting staffs while four colleges are not supported with supporting staffs.

- **Library Hour**

College in Mizoram was generally affiliated permanently to Mizoram University and 22 (twenty two) colleges has already provincialised by the government. Under the study of 24 degree colleges, only 2(two) colleges fall into deficit status. Now, no colleges are run by private or the public may be due to financial problems faced by the private sector. Shortage of budget is also one of the reasons for the weaknesses of Higher education in Mizoram. All the 24 colleges are laying under the jurisdiction of the State Government, Library were opened up to office hour stated by the Government.

- **Collection development of the college library.**

The development of the college library depends upon the growth and development of the collection. It is one of the major factors to ensure library as a growing organism. The fifth law of library science promulgated by Dr. S R Ranganathan states that Library is a growing organism which is a statue of the development parameter of library in the state. The collections of different colleges during last five year are shown in the Table 14.

Table 14: Collection developments in different college Library for last five years

Sl.No	College	Total Books	2005	2006	2007	2008	2009
1	PUC	45389	993	1360	565	1633	692
2	GLC	10707	189	349	244	214	319
3	GCC	11500	258	323	374	291	462
4	GSC	8887	355	375	335	405	395
5	GAC	28369	80	80	80	110	110
6	CTE	9862	994	772	684	954	745
7	GKC	8402	154	161	38	175	204
8	GSHC	14500	415	330	422	355	578
9	GHC	4000	34	26	203	24	17
10	GHBC	21843	817	1000	918	844	832
11	GZRC	6000	740	740	700	710	740
12	GLTC	4500	157	320	310	205	230
13	GJBC	4149	72	72	146	160	19
14	GMC	2200	0	142	0	208	140
15	MLC	7206	180	2091	1226	196	658
16	GSTC	4307	307	340	377	423	334
17	GKZC	5101	100	90	80	110	100
18	GZC	2500	21	15	14	7	6
19	GANC	5222	35	122	444	262	121
20	GAWC	3412	120	254	170	156	102
21	GJTC	3200	100	120	110	150	120
22	GTRC	5360	215	308	472	345	567
23	KMC	2780	41	15	76	244	528
24	GJC	4500	380	470	860	970	1180

- **Technical work implementation**

Technical work which includes classification and cataloguing is essential in the library to arrange the documents in a scientific manner which helps in searching and locating the document which otherwise satisfy the interest of the user. College library in Mizoram are now marching to attain the processing of technical work of their collections. The establishment of Mizoram University gave birth for the awakening of

library services in a scientific manner throughout the state, after the completion of education in Library science where several working staffs acquired the ability and the importance of technical work in the library. They adopted classification work in their own library and classified the document according to the classification scheme of Dewey Decimal Classification (DDC). Some colleges are using the latest edition of DDC, while some use 19th edition of the scheme. The present status of the technical work apply in the college of Mizoram are given by Table 15.

Table-15: Status of Technical processing in college libraries of Mizoram

Sl.No	Name of the College	Year of Estd	Classification	Cataloguing	Use of Format
1	College of Teachers Education, Aizawl	1975	DDC	Ledger	-
2	Govt. Aizawl College Aizawl	1975	DDC	Card	AACR-2
3	Govt. Aizawl North College, Aizawl	1988	DDC	Nil	Nil
4	Govt. Aizawl West College, Aizawl	1990	DDC	Nil	Nil
5	Govt. Champhai College, Champhai	1971	DDC	Nil	Nil
6	Govt. Hnahthial College Hnahthial.	1979	DDC		
7	Govt. Hrangbana College, Aizawl	1980	DDC	Card	AACR-2
8	Govt. J. Buana College, Lunglei	1983	DDC	Nil	Nil
9	Govt. J. Thankima College, Aizawl	1992	DDC	Card	AACR-2
10	Govt. Johnson College, Aizawl	1993	Nil	Nil	Nil
11	Govt. Khawzawl College, Khawzawl	1985	Nil	Nil	Nil
12	Govt. Kolasib College, Kolasib	1978	Nil	Nil	Nil
13	Govt. Lawngtlai College, Lawngtlai	1980	DDC on process	Nil	Nil
14	Govt. Lunglei College, Lunglei	1964	DDC on process	Nil	Nil
15	Govt. Mamit College Mamit	1983	DDC	Nil	Nil
16	Govt. Saiha College, Saiha	1978	Nil	Nil	Nil
17	Govt. Saitual College Saitual	1984	DDC	Card	AACR-2
18	Govt. Serchhip College,	1973	DDC	Card	AACR-2

	Serchhip				
19	Govt. T. Romana College, Aizawl	1992	DDC	Ledger	-
20	Govt. Zawlnuam Colleges, Zawlnuam	1986	Nil	Ledger	-
21	Govt. Zirtiri Resi. Sc. College, Aizawl	1980	DDC	Nil	Nil
22	Kamalanagar College, Chawngte	1992	Nil	Nil	Nil
23	Mizoram Law College	1983	DDC	Card	AACR-2
24	Pachhunga University College, Aizawl	1958	DDC	Card	AACR-2

- **Access System**

Most of the college libraries in Mizoram follow the open access system while some college adopt close access system and apply the system of keeping the books inside a glassware and handmade wooden shelves.. In the open access system, books are allowed to be handled by the students under strict vigilance.

- **Library Finance**

The main sources of finance for the college libraries are the budget proposed from the college which is a meager portion of the allotment. In Mizoram, Higher & Technical Education Department received a share of Rs. 5328.75 lakhs(2010-12 State budget) from the total budget allocation of the state out of which, 90% of the budgets are meant for the salaries of the staff remaining thereby, only 10% for the development of the college. Apart from the budgetary allocation, the college does not receive any supplementary allocation in a year. Again, the college authorities allocate only 3%-5% of the remaining college budgets are allocated to the Library. No additional fund is year marked for developing the library attached in the college. However, colleges having a permanent affiliation to the University and recognized by the UGC under the provision 2(f) & 12B receive UGC grants which happen to be the chief source of finance for the college to develop the library. UGC also allow special grants to the college recognized under 2(f) & 12B for renovation of library building, purchase of books and journals. Besides, the grant and annual budget of the college library student's contributions of Rs 75-100 per head for one session as library fee constitute also a major source of revenue for the college library. The rules of the tax of overdue are quite different from one another which differ depending upon the status of colleges. Generally, the colleges of Mizoram use a revenue charge from the users 50

paise – Rs 1 for one day. During 10th Plan of the UGC merged scheme (2007-2012), some colleges received the UGC grant and were allocated Rs.72 lakhs for construction of library building, and purchase of books and journals. Hardly, any special grant was provided by the State Government. However, the State Government allocates grant to the colleges under district wise basis.

- **Library Committee at college level:**

Some college libraries have the library committee of their own which is represented by the subject experts for the different subjects and others and some college libraries are not having any library committee. Book selection, ordering of books etc. are being done through negotiation and the consideration of Principal is accorded for the college libraries having no library committee. Some colleges however, have established library committee only by name which is used for only for the recognition of national accreditation agencies. College libraries having library committee used to be convened two or three times in a year for smooth functioning of the library being chaired by the Principal of the college. The committee formulates guidelines, rules, regulations, book selection procedure and blue prints for the future development of the library. Further, the committee is empowered to decide to purchase the equipments required to be procured for the library. The constitution of the library committee is likely to be same as colleges in Mizoram. The line-ups of the committee are:

a.	Principal	-	Ex-officio chairman
b.	Librarian	-	Secretary
c.	Members	-	Representative/HOD of each department of the college

- **Book Selection Procedure** -

Faculties of the respective department put-forth the proposal to the Principal of the college to purchase books relevant to their subject according to the syllabus for approval. The Principal of the college in consultation with the library committee approved the list of the books submitted by the respective department subject to availability of the funds. The librarian thereafter, places orders with the firms as per allocation of the grants for supply of books to the library. The local booksellers are given priority as the amount for book allocation is a meager one. The librarian of the college takes the sole responsibility of acquiring of the books, checking, and other

technical processing of the documents. How ever, some books are purchased without applying proper order system.

- **ICT infrastructure in college library**

ICT applications in libraries seem to be very slow due to the lack of information literacy, shortage of funds and grants, and lack of sufficient staffs. The librarians in Mizoram colleges are generally capable enough for the applying new innovations in the system the library. However, some of the college librarians are not used to the ICT applications and its utility. Those who are not comfortable enough to apply ICT in the libraries like to process and maintain the services of library by using traditional method. The Govt. has, however has made the provision free internet connection, for the users which constitute faculties and the students. Mention made be made that, 12 colleges have received a grant from UGC for developing e-resources through networking. Grant is allocated to the college library to make available the student of the benefits of UGC-Network-resource centre. Data reveals that, 5 (Five) colleges have the resource centres in the library while other colleges maintain separate section for resource centre.

2.7.3 Mizoram College Library Association (MCLA):

- Before 2006 library services in the Mizoram colleges were very poor with regard to the status and standard due to the neglecting attitude of the State Government. The establishment of LIS education in Mizoram University opened up tremendous strategic plan and encouraged the working librarian to establish their status. A joint working committee, to establish the rights of the librarians of the college libraries was formulated through an association named as Mizoram College Library Association (MCLA) in 3rd March, 2006. Accordingly, due to the initiatives of the association, five Library assistants of different colleges were up-grated to the Librarian as per the UGC norms. Further, the association submitted some of the recommendations for upgrading the position and status of the college library staffs.

2.8 Role of Government Agencies and Commissions for library services

The libraries are the integrated wing of the education system and can not be separated from the each other and further, libraries are the hub of academic system and today, it is recognised as the heart of educational institutions. The progress and development of

a country mostly depend on the libraries especially in academic field. In India, there is no better arrangement and system of libraries in comparison with some other countries like USSR, USA, UK, France and Germany, etc. Therefore, efforts have been made since very beginning to constitute various committees and commissions time and again for the betterment of academic libraries in India. Role of some of the commissions have been discussed below.

- **Hunter Commission (1882)-**

Hunter commission was set up in India in 1882 during British period for the improvement of academic libraries in the country. This commission reported that the students showed their interest for books prescribed for the course and have no interest in other books to enrich new ideas on global knowledge. Being compelled by the situation and taking the interest of the students into account, the commission suggested for establishing the libraries in schools and colleges only so that the students can take the maximum use of the books for their study.

- **Indian University Commission (1902)**

Indian University Commission (IUC) was set up in 1902 with the effort of the-then Viceroy of India Lord Curzon with regard to the academic libraries in the country. This commission also focussed for proper organisation and healthy condition of academic libraries in the country for progress and development.

- **Saddler Commission (1917)**

With an aim to bringing improvement in the educational system of India, Saddler commission was set up in 1917. This commission recognised the library as one of the indispensable organ of the University and forced to give rank of its librarian also. It also viewed that a librarian is not less than a professor in any case in the university and he should be treated equivalent to the professor in his rank, scale, post, services, etc.

- **Radhakrishanan Committee (1948)**

After Independence, a committee under the chairmanship of Dr. R. Radhakrishanan, the great evolutionist, was set up in 1948 which was also called University Education Commission. The committee reported so many concrete suggestions regarding the future development of academic libraries in India. The actual process for the development of the University libraries in India can be said to have been set in motion

with the appointment of the University Education Commission and its recommendations, such as, annual grants, open access system, working hours, organization of the library, staff, steps to make students book conscious and the need to give grants to teachers to by books.

The Committee also with a view to accelerate the ideas for the development and progress of higher education in the country gave extension and empowered UGC to deal with in all academic matters. Incidentally, Dr. C.D Deshmukh became the first chairman of UGC. Since then, UGC has been working as an autonomous institution and doing well for the development of colleges, universities and their libraries of the country.

- **Secondary Education Commission (1953)**

The commission was set up for doing efforts for the extension and developments of secondary education in 1953 in India. The commission accepted the important of the libraries in secondary schools.

- **Advisory Committee (1958)**

The Government of India set up in 1957 an Advisory Committee under the chairmanship of Dr. K.P Sinha to give suggestions and advices regarding the development of academic libraries and this committee is also recognised as Sinha Committee which studied all the suggestions given by all other earlier committees and commissions. The committee recommended in its report in 1958 to extend more financial support for the development of libraries with regard to built healthy collection development and infrastructures.

- **Kothari Commission (1964)**

In 1964, the Government of India under the chairmanship of Dr. D.S Kothari set up another commission to submit suggestions for improvement of the library services in academic institutions. The Commission submitted its report which was quite different from the previous commission reports as it recommended the provision for spending Rs 25 per student and Rs 500 per teacher in the university level..

- **New Educational Policy (1986)**

The Government of India accepted new education policy in 1986. It is regretted that no provisions were made for the development of libraries in this policy. In this situation, this is only the responsibility of UGC in India to think and support to the libraries of the country.

- **University Grants Commission (1953)**

The development in the field of education in India only has been with the establishment of University Grants Commission (UGC) in 1953. The UGC, apart from the other issues with regard to the educational systems in India primarily focussed for the development of the libraries for the growth and development of education. It recommended for giving regular and extra grant for the books, periodicals, infrastructure, buildings, and staff in the libraries of colleges and universities. With the initiation of the UGC, the libraries both the Colleges and Universities could find a place duly recognised by the academic institutions and it could be recognised at par with the other academic department of the institutions.

2.8.1 Role of UGC in Libraries

The University Grants Commission in India has a very positive and potential role for the growth and development of academic libraries as it has recognised the libraries as the nerve centre for educational development and research. From time and again it is engaged in developing various mechanisms to promote the libraries. Since 1987, UGC has started distribution of financial assistance to colleges for the purchase of computers. Earlier the grant support was limited to Rs 1 lakh to each college which registered under 2(f) & 12 B for the purchase of computers such as of two PC/XTs, one printer, one stabilizer and one AC. Later the commission has been increased financial assistance to 1.25 lakhs.

The major plan of the commission is to generate awareness about the use of computers for administrative/examination work etc. The requesting of financial assistance for purchase of mini-computer is send to the commission according to the performa/guideline. (see appendix) The request is to be forwarded through the Registrar of the concerned University, or Director of College Development Council. Such proposals received by the UGC will be placed before the sub-committee constituted by Computer Development Committee in which one representative from

the Department of Electronics is also included. On the recommendation of the sub-committee financial assistance to colleges is provided for the purchase of mini computer system.

- **UGC and Library Committee:** A committee under the chairmanship of Dr. S R Ranganathan was set up in 1957 for the development of libraries in higher education in the country and the committee suggested positive measures for the development of libraries. The committee after surveying the then situations of the college and university libraries India submitted report in 1961 with concrete and positive suggestions for the development of the libraries.

- **UGC and Academic Libraries:** The UGC on recommendation of the Ranganathan's Committee took positive attitude by allotting exorbitant amount for the development of the university libraries especially which however, expanded to the territory of the college library. Mention may be made that, the UGC emphasize inputting a separate budget to the provision in the Five Year Plans of the country.

- **UGC and Library Science Training:** UGC treated that the only well educated and trained library staffs can serve the readers in better ways. So, it constituted some committees in this regard to survey the various courses of library science running in various universities and other academic institutions. These committees suggested the rules for admissions, qualifications, syllabus, subjects, process, etc. including professional training courses. A standing committee for this purpose was also set up in 1974.

- **UGC and National Information Centres:** UGC has also established and sponsored 5 (five) National Information Centres (NIC) in various regions of the country such as, Delhi, Mumbai, Calcutta, Varanasi and Bangalore to supply the current information to the scientists engaged in research and development for the progress of the country.

- **UGC and Reprographic Service:** In the VI Five Year Plan of the country, UGC has done the provision of providing reprographic services to save the time of research scientists engaged in doing their research in academic libraries. For this purpose it allowed to purchase Photostat and electrostat machines for the libraries.

- **UGC and Computers:** Like other advanced and developed countries, India has also recognised the utility of computers in the libraries for providing better library services. The working efficiency of the libraries is increased by the application of computers in providing library services. For this purpose, UGC has provided at least one computer and created one post of Information scientist for handling it in each and every college and university library of the country.

- **Establishment of INFLIBNET:** UGC has established a National Information Network named Information and Library Network (INFLIBNET) in 1986 at Ahmedabad with an aim to provide information communication among the libraries of all the universities, autonomous institutions to promote research and development.

2.9 Modernization of College Library in Mizoram

Modernization of college libraries has become necessity in view of providing authenticated, timely and instant service to the user's community in an efficient way. Modernization of College Libraries is in this respect happens to be the only solution. But, modernization does not imply to the idea of computerization only. Further, apart from induction of computers in the college libraries, modern management procedures and techniques, system analysis and design. etc. is also equally essential to be implemented to provide effective and efficient services to the user communities.

Information explosion and publication deluge have tremendously transferred the ecology of book world and reading habits of people. To cope with world and changing trend and media of information, libraries need to collect all types of recorded sources of information through audio-visual and microforms in addition to print media. The use of communication technology and computers are equally important for both resource sharing, resource mobilization, repackaging of information, data mining and house keeping operations. It is the call of the hour that the College libraries must keep themselves abreast with these modern developments.

To keep pace with the fast changing modern time, the college libraries also need re-organization. The applications of computers and telecommunication technologies are the required parameter in modernization for information retrieval which has become essential for the user groups. The problems associated with computerization should be identified. Objectives are defined with the resources and needs. A well organized

information system needs grounded to academic communities. In this the resources of libraries will be used in an effective way.

2.9.1 Modernization

The term modernization does not denote any philosophy or movement, but it only symbolizes a process of change. Infact, Modernization is understood as a process which indicates the adoption of the modern ways of lives and values. The term was being used previously to refer only to change in economy and its related effect on social values and practices.

Today the term, Modernization is understood as an attempt on the part of the people, particularly those who are custom-bound, to adopt themselves to the present time, conditions, styles and ways in general. It indicates a change in peoples food habits, dress habits, tastes etc. It is also described as a 'Social change involving the elements of science and technology'. The scientific and technological inventions have brought about a remarkable change in the system of social relationship and installed new technologies in the place of traditional ones.

Modernization is a complex set of changes that take place in almost in every part of society as it attempts to be industrialized. Modernization involves ongoing changes in a society's economy, politics, education, traditions or religion. However, the basic process in modernization is the application of modern source to human affairs.

Modernization helps in knowing the way in which new structure arise to assume new functions, how new occupations emerge, how new complex educational institutions develop and so on. Lerner explains that modernization process involves the replacement of a sacred revelation by secular enlightenment in the guidance of human affairs.

2.9.2 Strategic plan for modernizing college library of Mizoram-

Modernization is important in any field. In order to provide fastest, economic and reliable library and information service, the libraries should try to introduce some relevant application in information technology for satisfying the user's needs. College students belonging to Mizoram are now entered into the knowledge society and they want a very fast and update information to compete other students in all over the

country. To be successful in competition, the library plays a significant role to strengthen their ability and knowledge. Therefore, it has become primary function of the library to extend services to the students during their study so that they can meet all challenges in their life. Further, it also should provide guidelines to them so as to go for international study.

Modernization in college libraries requires the following indispensable initial components.

► **Hardware:**

Hardware is the collection of physically existing parts of a computer and computer equipments. To accomplish a task it requires input which is taken from input unit. The processing part is griped by Central Processing Unit (CPU).

The following hardware should be taken up for modernization or to automated library of Mizoram according to the needs.-

Pentium IV system (minimum 2)

256MB RAM

CD-ROM drive

DVD-ROM drive

Hard-disk (2GB)

Display card, monitor, and modem

► **Software**

Software is a set of computer programmes with instructions to perform various functions which require the compatibility of the hardware part of the computer. It also enhances various functions in the computer.

Types of software:

There are primarily two types of software such as,

- System Software
- Application Software

System software- Its includes the management software of computer resources such as processing time, storage and memory, printers, terminals, communication links and all the peripheral equipment that surrounds a Central Processing Unit (CPU).

Application software- It refers to programmes that are written for or by a user in order to accomplish a specific task. There are various special software programme written to apply for a specific application.

Keeping in view the affordability of college libraries, the following software may be utilized for library automation.

a) CDS/ISIS (Computerized Documentation Service/Integrated Sets of Information System)

CDS/ISIS developed by UNESCO is a micro-computer based software package, written in Pascal language designed specifically for managing information storage and retrieval system. It has all the facilities to support the library and information usage. CDS/ISIS is a database with files of related data. Even though it deals with only text it does more that just text processing. The system is menu driven, so needs no special training for users of the package. CDS/ISIS has been designed specially for the computerized management and structured textual non-numeric databases. In the Library and Information work, we most often deal with the bibliographic databases. A bibliographic database can be a library catalogue or a database of dissertations and theses, or a database of research papers published in technical journals or conference etc. A database is a set of inter-related files. Files are comprised of records in Bibliographic Database and are referred as Bibliographic Records.

A bibliographic record consists of fields like Title, Author(s), ISBN, Imprint, etc. Bibliographic Records will have long textual fields with the length ranging from a few characters. Some files will have sub-fields viz, the field imprint contains the sub-fields like, place, publisher, Year of publication etc. similarly, and the author can contain last name and first name. Some other fields Place, Publisher and year of publication can contain last name and first name.

CDS/ISIS remembers each database field with its tag numbers which is a unique number value in the range of 1-32767 given by the user at the time of creation of database. CDS/ISIS automatically creates a serial number to each database record as and when it is created and this is called as Master File Number (MFN) and can be used as a field of the record for all practical purpose.

CDS/ISIS allows to:

- ☼ Define database containing the required data elements.
- ☼ Enter/Edit/Modify records into the given database
- ☼ Creating and maintaining first access index files from specified fields and sub fields
- ☼ Retrieve records by their contents through and efficient search language
- ☼ Display records according to requirements
- ☼ Sorting and Printing services of the records
- ☼ Exchange records with other by export/import utility in ISO 2709 format.

b) SOUL (Software for University Libraries)

Software for University Libraries (SOUL) is a state-of-the-art integrated library management software designed and developed by the INFLIBNET Centre based on requirements of college and university libraries. It is user-friendly software developed to work under client-server environment. The software is compliant to international standards for bibliographic formats, networking and circulation protocols. After a comprehensive study, discussions and deliberations with the senior professionals of the country, the software designed to automate all house keeping operations in library. The software is suitable not only for the academic libraries, but also for all types and sizes of libraries, even school libraries. The first version of software i.e. SOUL 1.0 was released during CALIBER 2000. The database of the SOUL 1.0 is designed on MS-SQL and is compatible with MS SQL Server 7.0 or higher. The latest version of the software i.e. SOUL 2.0 is now in operation in most of the university and college libraries. Mention may be made that, as of 31st May 2010 (www.inflibnet.ac.in) the 2016 institutions in India have installed SOUL. The database for new version of SOUL is designed for latest version of MS-SQL and My-SQL (or any other popular RDBMS). SOUL 2.0 is compliant to international standards such as MARC 21 bibliographic format, Unicode based Universal Character Sets for multilingual bibliographic records and NCIP 2.0 based protocols for electronic surveillance and control.

► **Man-Power Planning**

Man-power planning constitutes one of the important components of any libraries. Professional staffs at different level and with requisite qualification and aptitudes are the need of the hour.

For College libraries minimum two personnel of the Librarian must be trained for the automation purpose. Man-power planning include determining the staff required, selection and recruitment, appropriate placement, promotion, provision of opportunities for maximum individuals contribution under desirable working relationship and condition.

The need for man-power planning requires no emphasis as the efficiency and effectiveness of the libraries and information centers largely depend on the academic and professional competencies of the staffs.

► **Retro-conversion**

Retro-conversion is the process of converting the existing manual catalogue of a library into a Machine Readable format adopting specified standard which has been recognized as a major and important job in automated library services.

2.9.3 Computerization of House Keeping Operations.

Computer is being used in several libraries either partially for data storage and retrieval or fully covering entire library operations. It has been experienced that even partial use is helpful to a great extent with the help of a micro computer. Starting can be made with any library Software. Data storage and retrieval operation will help in operating books and giving reference, bibliographic and CAS services. Activities can be expanded at a later stage as per the need and resources available.

Success on computerization can be achieved with proper and comprehensive planning, keeping in view the objectives of automation, financial and man-power support available. This requires internal and external management support. Cost factor is also a major component of planning. Planning should be in view of perspective requirements. Staff and financial support should be on a regular basis. Computerization can be planned particularly even for one aspect i.e. information storage and retrieval to start with. It is not all essential to have all facilities at college level like OPAC, Internet, and CD-ROM systems.etc.

The house keeping operation enables to define the operating environment of the library, to maintain various authority files and to execute some essential follow up

works in the system. House Keeping Operations include the following function of the library.

- Acquisition
- Classification
- Cataloguing
- Indexes and Thesauri
- Circulation
- Stock-taking
- Serial Control

Acquisition

Acquisition system refers to book ordering systems. Many times the acquisition system is integrated with accessioning, cataloguing, generating list of addition etc. The main function is concerned with ordering of new books.

A computer based acquisition system involves at least two files. The main file contains the recorder of all current orders. The second file contains the name and addresses of the book seller used by the library. The purpose of the second file is to save having to specify the full details of the book seller with cash order, so that a code number (Vendor code) can be used on the order record.

Before the creation of the current order file, it is essential to create vendor file with assigned codes. The vendor file should generally have vendor code number, vendor name, address, telephone number, cable/gram, currency accepted etc.

A user file is essential because the user number is to be recorded in the order file. Whenever the document is received form the vendor, the user is to be posted with this information. The user file generally consists of user number, user name, user address, user contact number.

For all the systems developed in India, selection is done normally by going though a various bibliographical sources. In countries where centralized services are available, the MARC records generated by these agencies are being used for book selection.

When selection is done normally, the bibliographical entries of the input for ordering should be standardized, so that the same data can be used to prepare catalogue entries,

entries for addition list and to create a central database for online and retrospective searches. When selection is done using MARC tapes, this transaction is not needed as the entries are in a standard format. In India all the acquisition system have to be input in a standard format. It is advantageous to follow MARC standard in order to have compatibility with international systems.

- **Classification**

Classification of documents involves three distinct major processes. The first two processes relate to defining a structure of categories and determining a basis for the classification decision which are usually performed by a classificationist, while the third process of classifying documents into categories.

The computer programmer performs the second and third process. The first set of programmer attempts to detect a pattern among the documents and then select and weight a subset of words to form a basis for the classification decision. These classification programmes are used only when the system is initiated or reversed, whereas the second set of programs is used periodically to classify new documents. Further the classifier programs can also provide feedback to the classificationist for modifications and additions to the original schedule.

- **Cataloguing**

A large number of book catalogues were produced in the US in the 1940's using unit record machines. In a unit record system, the cataloguing information is keypunched and the punched cards are then sorted into a desired filling sequence using the sorters. Sorted cards are then processed using the tabulators to obtain either book catalogues or card catalogue.

MARC tapes are used for various purposes. It is used for compilation of bibliographies. It is also used in book selection and acquisition including for preparation of local catalogues and National Union Catalogues. MARC is also useful for SDI services and resource sharing.

◙ Indexes and Thesauri

Index

Index provides various access points through which a user can identify the document of his interest. More over, indexing is a technique or a complex of technique of preparing an index. Index is a method of document representation, the ultimate aim of which is to provide access to the users through the description used. Sometimes it is difficult to represent a document in a single term. In such a case, more than one form has to be used. These index terms are arranged in a more searchable order. This ordering involves a definite syntax, semantics and orthography.

Thesauri

In any indexing language the actual term used is the vocabulary of the language and its control are important considerations. Pre-coordinated systems providing alphabetical subject indexes realized early the need for control in the use of words. Here the instrument of control was the list of subject headings. However, with the introduction of frost coordinate systems, wherein the terms used for denoting composite subjects were completely disconnected and kept separately in the file, the needs for some control of vocabulary was felt. The new style list of accepted index terms with indications of different types of relationships can be called a Thesauri.

◙ Circulation Systems

The basic feature of a computer based circulation system are- charging and discharging, overdue control, and reserves and associated file maintenance activities.

◙ Stock taking

Stock taking is an inspection to of the physical verification of the documents purchased by the library. It reveals the actual availability of documents in the library including loss. Many methods can be applied in stock staking such as,

- ❖ Taking by separate register with accession number.
- ❖ Preparing separate sheets containing accession number.
- ❖ By Numerical counting.
- ❖ Through Shelf list cards.
- ❖ With the help of accession register.
- ❖ By ratification and verification.
- ❖ By book cards. and

- ❖ Through computers.

- ◙ **Serial Control Systems-**

According to Lucy Tedd(Tedd;1985) computers are used to control the following functions of the serial system-

Bibliographic: List of serial holdings are produced and this is fairly a simple system to design and implement and many libraries have experimented with the use of computers to control this function because it can be implemented independently of other house keeping procedures.

Accession: This includes selection, ordering, and checking-in, renewal of subscriptions and senging of claim notices when issues are not received. Most system uses the computer to assist rather than to control this function.

Inventory: This includes the binding and circulation control of the issues of a serial.

2.9.4 Computerized library and information service:

Information service provides exact information to user including laying emphasis on providing information in anticipation. The following library and information services are important for providing the right information.

- ✠ **Database Service**

Computerized library requires creation of database. Organized data in a coherent way for a specific format is an important service features. There are three types of databases. They are:

- Bibliographic Database
- Full-Text Database
- Factual Database

Bibliographic database provides details of books, journals, etc such as name of author, title of the article, title of the journals, issue number, volume number, year of publication.etc., with little abstract.

Full-text database relates text in full. i.e., the whole pages of books or journals are provided. E-Journal is one of the examples of full-text database.

Factual database provides the required facts and figure about certain groups or organization.

- **Current Awareness Service (CAS)**

Current Awareness means knowledge regarding recent development relating to matters of special interest to an individual. CAS is a device for information storage and retrieval system through which the users of information can be informed promptly as soon as possible after publication. In CAS the information is communicated to user by different methods like-telephone call, bulletin boards, display and view data, message through messenger or post etc. The main objective of CAS is to provide latest development information to users in the areas of their interest.

CAS can be categorized in to two types, such as, such as,

a. Direct Service

It is the instant services which are directed towards individuals or group of users which include communication of information to individuals or groups through telephone, message sent on notification form, routing of (or automatic loan) and other documents.

b. Indirect Service-It includes the services which are offered to the users though documentation prepared through accession list, bibliographies, indexing and abstracting services, literature services, table of content of periodicals. Etc.

CAS is the befitting way to bring the resources of the library to the notice of its users. CAS generated by an external agency includes the list of primary sources of information, which are not available in the libraries. However, the libraries can possess document of such service prepared by the external agency and the same can be provided to the users on request. Further, the libraries also can supply the photocopies of such materials or the document to the other libraries on users' request through inter-library loan. An effective CAS serves as the best media for the publicity of a library.

2.10 Conclusion

Most of the college libraries covered under study with the existing collection development try to provide effective services to its clienteles and meet the varied demands of the users. Collection development along with its proper management is the primary function of a college library. In order to build up a good development in a college library adequate funds are required with computers to manage the library effectively. Book selection needs to be a joint responsibility of librarian and the faculties of the colleges.

The college libraries require making the provision of maximum utilization of resources of the library. Apart from other essential services, reference and information services need to be strengthened. However, reprographic services have been started in some college libraries. Each college should have a reprographic machine for providing effective reprographic services to the users.

No library is self sufficient and therefore, the college libraries regionally require to be grouped though networking so as to share resources of each library with other. They should also require to establish linkage with other libraries especially libraries attached to institutes of higher education which incidentally happen to be the norms and standard of the UGC. Now, college library of the state used to be funded adequately both from UGC and Donor for its development in terms of building, infrastructure, equipments, computers etc..

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Chapter – 3

Information Needs for the College Library Users

3.1 Introduction

There is confusion about the concept of information use. This confusion is mainly due to the failure of the researchers in the users studies to distinguish between information use, need, demand, wants and requirements. The reason for this failure lies in the troublesome concept of information. To overcome this difficulty attempts have been made to distinguish between data, information and knowledge. The definition of information emphasises as both commodity and process and thus, information as a commodity has to be made useful and be allowed to be put into action. This conversion of information into usable form involves acquisition of the external world or event and world, transmission, processing, utilization and transfer.

Information is one of several basic resources that are needed and utilized by human beings for their development and prosperity. The exact nature of information is not easy to describe. Perhaps the most explicit definition in the literature defines information as recorded experience that is used in decision making. Information has now become a vital resource. The world has now moved from the industrial revolution into the information revolution. The dependency on information in every sphere of intellectual activity has increased day by day. Technological advances have made information a new basic resource of matter and energy.

Information is an essential need for all human endeavors in the present day complex society. It improves the quality of man, which helps in improvement of mankind's social, economic, cultural, and scientific and technological as well as national development. For this it is inevitable to provide the right information to the right user at the right time in the right form. User is the last recipient of the information in the communication process performed by the libraries and information centers. The user is also known as patron, client and member etc. The types of the user vary from age-to-age, place-to-place and library to library. It can be further classified as user and non-user. The communication process of the libraries and information centers is supposed to act as affective agency for the communication of timely, relevant and comprehensive information. For this, they should have sufficient relevant collection that should have been arranged in proper manner, so that it can be retrieved and disseminated at the right time. For proper collection, proper arrangement, proper retrieval, and proper dissemination of information, a library should have competent

and experienced staff. Last but not the least users of information agencies are also interested and trained in gathering information, so that they can utilize the information very effectively and efficiently. The education and training of users is an important factor in the effective use of available information.

In the modern times the information agencies no longer afford to remain on the past information handling process. In the changing dimensions every aspect of information agency not only calls for automated service, but also the change of their traditional role of being storehouse of books into effective service information agencies.

The information technology controls the problem of information explosion quite conveniently. There is a great change in the man's hunger for information. The emphasis of information seeking behavior is laid on information storage, information processing, information handling, and information transfer and information retrieval techniques. There have also been changes in the user education from those of the past. Earlier information agencies were mostly interested in issuing and returning of books and other reading materials. But now, the information agencies are interested in procuring information in various (documentary and non-documentary) forms and disseminating it by giving proper education to their users.

Information is recorded or communicated knowledge gained by men through experience, observations and experiments. It has been growing phenomena and ever increasing volume and rate, particularly since the dawn of the 20th century. Webster's third international dictionary defined information as:

- Facts or figures ready for communication or use as distinguished from those incorporated in a formally organised branch of knowledge.
- The process by which the form of an object of knowledge is impressed upon the apprehending mind so as to bring about the state of knowing.

Porat (1977;108-113) found that the total information activity accounted in 1967 for 46% of the gross national product and that over 53% of all labour income in that year was earned by information worker. He has classified the information worker into three categories such as

➔ Knowledge producers: including scientist, mathematicians, statisticians, research workers, draftsmen, computer programmers, financial specialists, accountants, bank and financial managers

- ➔ Knowledge distributors: which include teachers, coaches, librarians, archivists, writers, artists, entertainers, editors and reporters, authors, public relations people, radio and television announcers.
- ➔ Market search and co-ordination specialists where the basic nature of information is clouded by the fact that the word is used in a variety of different context as
  - ❖ Information as a commodity
  - ❖ Information as energy
  - ❖ Information as communication
  - ❖ Information as facts
  - ❖ Information as data
  - ❖ Information as knowledge

In order to measure the effectiveness of information needs to define the objective for which information is being provided. Stipulate the unit of information for measurement. Information can be categorised on the basis of its use and purpose for which it is used. Shera (1972) has categorized information into six types as,

- ♦ Conceptual Information
- ♦ Empirical Information
- ♦ Procedural Information
- ♦ Stimulatory Information
- ♦ Policy information
- ♦ Directive Information

Although the concept of information remains vague, it can be perceived as something between data, knowledge, which is communicated or received concerning a particular fact or circumstance in order to reduce the user's uncertainty by meeting their needs.

To create information awareness and to promote the use of information in the College, it is necessary to know the needs of users. Generally, in College of Mizoram the users are Teachers, Students and the Staffs. The main aim for acquiring information is on the basis of the Students needs. Syllabus based information, or the text collection are important for the college student, besides the syllabus based collection, students need to update the knowledge towards for helping the Subject ability and growing the experience in the application of the learning. Current information make the willingness of the student in the college, current information contained by magazine

are also important for satisfying the users need. In a computerized library the college provide the users for better services resembling computer cataloguing as an easy searching the books of location. Libraries in the 21st have started all out efforts to make information available though web OPAC. Further, the uses of library consortium have increased the utility volume of the library. The present age has been recognised as the age of information explosion which have resulted in escalating the growth rate of micro-documents vis-à-vis the information need of users which have become varied and multidimensional. The information use and user needs both are directly concerned with users. The users are the ultimate recipients of information in the communication cycle. A user may belong to a user group with identifiable interests and environment. The individual as a user may differ with regard to:

a. Attitudes, Believes, Values;
b. Goals;
c. Capabilities;
d. Communication Attitudes;
e. Experience and Habit; and
f. Cultural Background.

The information viewpoint of the users are varies accordingly to the intended use. Although, the users in a particular group who working together might have a common viewpoints often share with the same priorities in the value of information. The dimension use of information is subjected to priorities and intended of the user groups, there may be difference in the attitude towards the use of information. Another dimension of the information use is the purpose for which it is being used i.e. (research, planning, or problem solving). Information priorities of a user is the function of intended use at a given time and not dependent on the users discipline. For example a person may be a researcher today, a planner next day, an information expert for another day.

3.2 Information Needs

The concept of information need is making out from the type of the users otherwise the course offered for the institution. The objectives of studying information needs for college students and uses are:

- The explanation of observed phenomena of information use or expressed need; or better yet.
- The prediction of instance of information use; or still better.
- The control, and thereby improvement of the utilization of information through manipulation of essential conditions.

This implies a fairly accurate assessment of information needs of users which form the primary basis for all information activities. The information need of an user, however, can be sequenced into the following categories.

- ♥ Factors that generate differential information needs and
- ♥ Types of information needs

Perhaps the most important factor influencing the scientist or technologist needs is the type of information needs which has been categorised according to the substance versus channel dimension. The investigation of information need has presented seemingly intractable problems. The progress towards some theoretical understanding of the concept of information need has been slow. There is problem of the conceptualisation of the term information need and difficulty of separating the concept from want, expressed demand, requirements, satisfied demand etc.

The information needs of the users have to be satisfied by the libraries attached to the institution or college and information centres through their services. The information needs are related to:

- ∇ Subject or the content which presupposes that any and or all information about the requested subject will somehow satisfy the information needs and,
- ∇ Approach which is rather different and can be called a situational approach. This signifies the user's want of information on a certain subject. Here, satisfaction level is concerned according to his/her want of information provided by the library. This further, specifies the intrinsic characteristic of information, whatever the subject may be.

3.2 1 Nature of Information need

The need for information is a factual situation in which, there exists an inseparable interconnection with information and need. Information originates and is generated because there exists a need or an interest. The content of information is of primary concern. The Information objectively necessary for realising a function is the

objective information. The need for information with specific content is an objective demand of the user. If an individual is in need of specific information for realising specific tasks, then the need for a information is an objective information need i.e. qualitatively, and quantitatively determined information needed by an individual for solving an objectively assigned task. Since any individual already has certain qualitatively determined information that may be used in solving the tasks, then hi information need ahs already been satisfied to a certain degree. However, the individual may bring forth new tasks which are to be fulfilled or the fulfilment of which is to be aimed at, the information acquired so far will never fully suffice. There will always remain a need resulting from the difference between the objective need and that part of it that has already been satisfied. Thus satisfying the information need always means satisfying that need which has not yet been satisfied.

3.2 2 Clarification of Information need

To give a clear definition of information need should require a definition of the term need. Moreover the dictionary meaning of the closely related terms like requirement, want, demand has to be analysed in order to have a true perspective of the information need. Before the terminological clarification is attempted, it may be emphasised that information need exits objectively, that is they are oriented towards reality, practice and task.

The meaning of the various related terms mentioned by the dictionary are

- ♣ Need- want of something, which one cannot well do without.
- ♣ Want- a state or fact of being without or having an insufficient quantity, absence or deficiency of necessities.
- ♣ Requirement- a need, a thing needed; a necessary condition
- ♣ Demand- to require, asking for what is due; asking for something

Line (1974; 87pp) has made an attempt to define these terms as under:

Need: It requires for an individual to have for his work, research, learning, recreation etc. In the case of a research, required information would further accelerate his field of study. There may be an implied value judgement in the way, the term is used. A need may or may not be identified as a want but, it is a potential demand.

Want: What an individual would like to have, whether or not the want is actually translated in to a demand on the library. Individuals may need

an item which they may not want, or want an item they do not need. A want, like a need is also a probable demand.

Requirement: It means need or wants and or demanded and can therefore be usefully employed to cover all three categories.

Demand: What an individual asks for; more precisely a request for an item of information believed to be wanted. Individuals may demand information; they do not need and certainly need or want information they do not demand. Demand is partly dependent on expectation, which in turn depends partly on existing provision of library or information services. A demand is a potential use.

Use: What an individual actually uses. A use may be a satisfied demand, or it may be the result of browsing or accident. A use usually represents a need of some kind. Use can be partial indicators of demand, demand of wants, and want of needs.

The comment of Roberts (1975; 308-313p) on the above draft definitions is worth recording as the requirement may mean a need or a want or a demand. A need may or may not want a want may or may not be a need. Both a want and a need may be appropriate, or in-appropriate, to an individual information situation and may or may not be expressed in some consequent forma of demand action.

He has suggested that the term requirement is not a comprehensive term and he has suggested another term in its place and coined as 'total potential demand'. His clearly mentioned that total potential demand as the sum of all individual and group demands that could be made upon the materials, services and personnel of a library. Potential demand may result in demand action, or may not, it may be voiced, or it may not be; it may be appropriate or it may not; it may be perceived or it may not. In practice total potential demand is hardly likely to be capable of precise measurement. The difference between the meaning of need and want is akin to ought to have and would like to have.

Leupolt (1983;7-8pp) has differentiated between information need and information requirement. He contends that the following cases are observed.

* Individual information requirements may more or less exceed the respective information need.

* The ideal case would be if the individual information requirement coincided with the information need. However it is not likely to occur very frequently in reality. Since the information requirement deviate to some extent from the respective information need.
* It will happen very rarely, however, that the information requirements given at a specified time point will be smaller than the information need necessary for solving the task.

3.2.3 Identification of Information Need

According to Girja Kumar (1990; 257p) the information need may be expressed as input-process-output mode. The basic components of the system are classified into three broad activities like (a) Problem, (b) Problem solving process and (c) solution. The problem is analysed to determine information needs. It is indicative of the uncertainty in knowledge. Solution results in resolving of the situation by filling the gap in the knowledge. The illustration models of showing identification of information needs are discussed in the following Figure-1

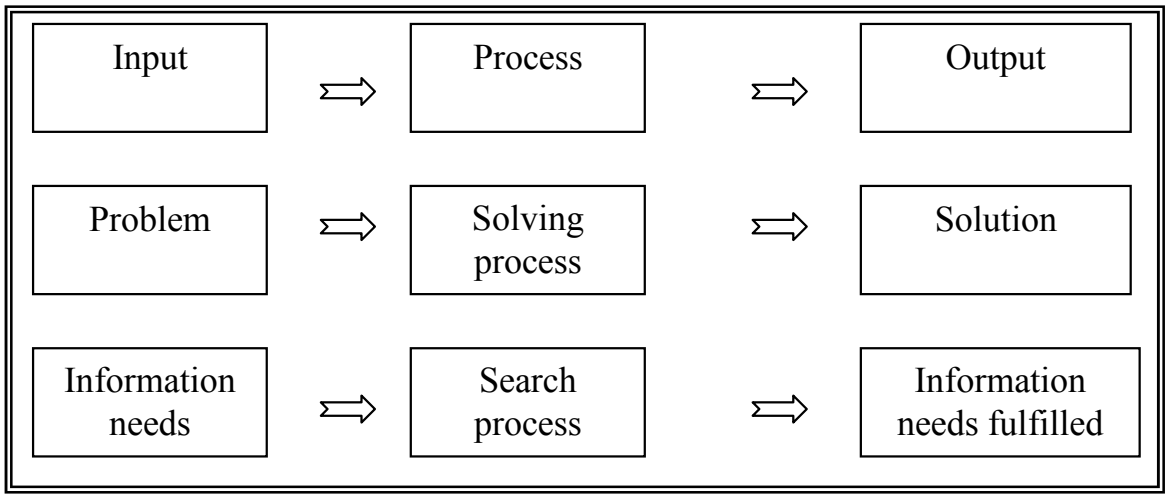


Fig-1: Identification of Information needs

Information needs can be divided into the following categories

- Social or Pragmatic Information Needs- Information required to cope with day to day life.
- Recreation information needs- information satisfying the recreational and cultural interests of an individual
- Professional information needs- information required to operate competently within a business or professional environment.

- ♦ Educational Information needs- information required to satisfy academic requirement at an institution.

The concept of need is not yet clear, as Britain (1970; p1) points out that an information need may refer to the:

- o need expressed by the user; or
- o need that a user cannot express: or
- o present or immediate need; or
- o future or deferred or potential need

Paisley (1968; 1-30pp) observed are affected by a variety of factors, which are as under

- The range of information services available
- The uses to which information will be put to use.
- The background, motivation, and professional orientation, and other individual characteristics of the user
- The social, political and economic systems surrounding the user
- The consequences of information use.

3.3 Information Seeking Behaviour

In order to satisfy the information needs, the user actively undergoes the information seeking process. The attempt of the user in obtaining the needed information results from the recognition of some need, perceived by the user. The nature of information seeking behaviour in information exchange process has been discussed by Wilson (1981; 3-15pp) as under which has been placed in the Figure -2

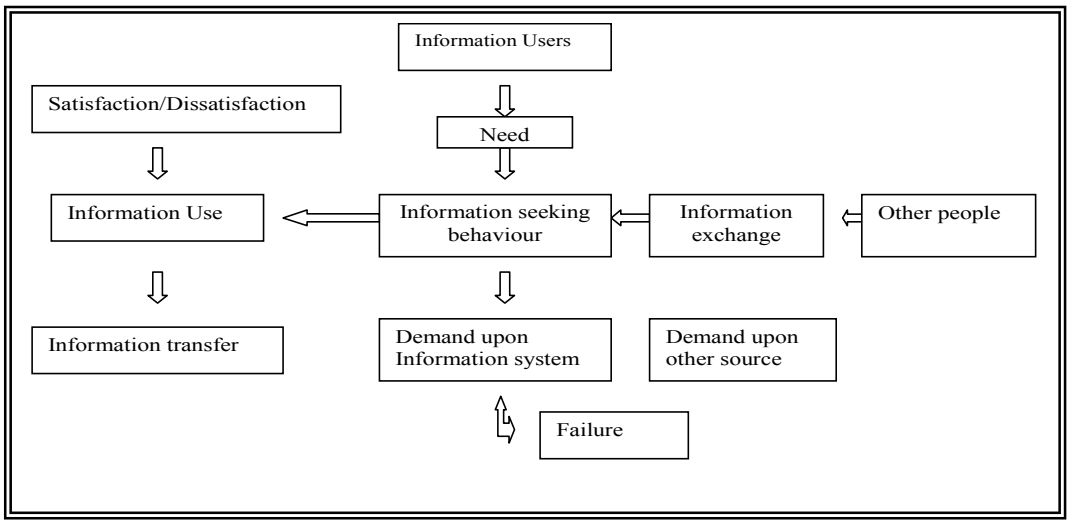


Fig-2: Information seeking behaviour pattern

3.4 User Education

In every institution there is a need to train the student, staffs and the members for regular and rational use of vast information resources available in their library. User education is an essential part of general education. The ability and skill for using library, which are provided in the academic institution, serve one's needs beyond the formal education. Consequent upon the scientific and technical revolution, a new alarming situation in information gamut has been created.

The specific objective of user education is to create an awareness and understanding of the basic relevant library and information sources and services, to bridge the gap between the potential user and the education, to enhance user's ability to select appropriate information sources and systems for their specific information needs. The information literacy forms the basis for life long learning. It is common to all disciplines, to all learning requirements and to all levels of education. It enables the user to master the content on their investigation and thus become more self-directed and assume rater control over their own learning. Information literate individual is able to:

- ⊕ Determine the extent of information needed.
- ⊕ Assess the needed information effectively
- ⊕ Evaluate information and its sources critically
- ⊕ Incorporate selected information into one's knowledge base
- ⊕ Use information effectively and accomplish a specific purpose, and
- ⊕ Understand the economic, legal and social issues surrounding the use of information and access and use information ethically and legally.

Dr. S.R.Ranganathan (1961; 27p) has clearly mentioned in his book Reference Service as to why reference service (user education) is needed. It includes:

- → Need for introducing a human agency to redeem everything else by putting them to active user.
- → Books (reading materials) are after all artificial entities. Appreciation of their value does not come naturally. It has to be induced deliberately.
- → Artificiality of every system for arranging information in the library and information centres (i.e. classification, cataloguing, indexing and abstracting etc.).

→ Need of personal initiation of users.

→ The psychological needs of every person differ.

→ User education or reference service is also required for maintenance of democracy, national development and national values.

3.4.1 Need of User Education in the age of Information Technology.

➲ **Network literacy for library users**

The academic institutions have accepted programmed instruction or computer-aided instruction (CAI) as a method of teaching. This now being, used by several libraries and information centers. Most of the CAI is prepackaged and thus learning time for providing user education is forced to concentrate on the essentials. CAI programs take care of library instruction program on their own.

Computer can be used in a number of ways to assist user:

- As a training device in which computer acts as links between the instruction program and the student.
- As an interface between the user and the real online/offline systems. A computer is used to simplify the search procedure and process for the user.
- To provide practice on a real online/offline systems using a subset of a database or several databases.
- By providing diagnostic messages and responding to the help command during searching.

➲ **Advantages of Computer Aided Instructions**

There are several advantages to use the CAI for educating the users:

- CAI provides one to one interaction with the user, as well as instantaneous response to the answers selected and allows users to proceed on their own
- CAI is particularly useful in subjects that require library staff can devote more time to their library routine.
- CAI can be used diagnostically and once user problem has been identified, it can then focus in the problem areas.
- It assists the users to make their query on their own.
- These CAI programs are user-friendly so that user can carry out their search using several easy methods.
- For online information retrieval it has automatic log on procedure.

- Storage of search output on desks to allow editing or reformatting to meet individual requirement.

Currently, in the age of information technology various new disciplines are emerging. New methods of information storage and techniques for information searching and retrieval have been developed and are working well in the midst of information technology. The techniques, however, requires to be make known to the target audience and hence, user education program is indispensable to let them be aware of available sources, devices employed in the library along with the knowledge to use them effectively. Now, time has come when information professionals have to concentrate in the area of user education and also in the area perspective information technology so that user can use the libraries and to maximum extent and get the information in a satisfied manner.

User education is a powerful unifying force linking together the vast resources of information. User education brings immediate qualitative improvement and yields best returns to investment in education. It helps to individual's self development. It is the education that helps in the growth and development of nation and economic growth.

It is rather difficult to find an explicit definition for the term user education. There exist a large amount of literature but explicit and comprehensive definition of the term user education is yet to be identified. There is no common consensus on the definition of user education which comes across in the professional literature. To highlight some of them,

- Jacques Tocatalian, Director, General Information Programme of UNESCO has defined user education and training in a generic way to include any effort or programme which guide and instruct existing and potential users, individually or collectively, with the objectives of facilitating:
    - The recognition of their own information needs:
    - The formulation of these needs;
    - The effective and efficient user of information services; and
    - The assessments of these services.
- According to Fleming : User education can be defined as various programmes of instruction, education and exploration provided by libraries to users to enable

them to make more effective, efficient and independent user of the information services, resources and services to which these libraries provide access.

- ⇨ Fjallbrant and Malley (1984) who have done a great deal of study and work in the field of user education say that User education is concerned with the whole information and communication process and one part of this involves the total interaction of the user with the library. This should be a continuous process starting with schools and public libraries with the possibility of extension into academic and specialized libraries.
- ⇨ Neelameghan, who has been associated with the General information Programme of UNESCO observed that the terms user education, user orientation, user assistance are often used interchangeably. But he suggested better to keep the differences in mind. He further observed that user orientation and user assistance activities relate to a specific information system or service, while user education connotes a more general educational activity not confined to a particular information system. User assistance usually refers to helping the individual user rather than a group.

After observing a number of definitions, it is seen that there is no precise or specific definition for user education. The term user education is used in this paper to include any effort to guide/assist the user of any library or any information system using computers for storage and retrieval of information. Thus it encompasses the terms, Library Orientation, User Awareness, Initiation, Library Assistance, Library Instruction, User Sensitization, Bibliographic Instruction, Literature Search Training, Reference Service, and Interest Profiling.

➲ Development

The beginning of user education could be identified with reference service started as purely personalized service which led to library orientation. Ranganathan (1961; 21p) coined the term as initiation of freshman. This was followed by the bibliographic instructions. Stevenson viewed that, bibliographic instruction is an introduction to the user of the information resources available in the particular subject disciplines and the techniques of making use of those resources.

User Education is the progeny of protest of the Western college going class during the 1960s against the traditional methods of teaching confined to classroom. The

librarians, particularly the college librarians in USA, were quick enough to rise to the occasion. This phenomenon of librarians helping the readers to educate themselves through the medium of library came to be known as User Education. Having originated in times of protest, User Education needs to find rationale for its existence in times of peace. It was argued therefore, that, the proliferation of literature in the present century has raised fundamental methodological questions one of which is the relevance of documents. Indeed the entire gamut how information is communicated, analyzed and digested in different subject fields needs to be kept under constant examination. Otherwise, there is a great danger of information that is not socially relevant smothering the mass of young students, including researchers. It is only the subject oriented professional librarian that can save the day. User Education thus acquired a firm foothold having started on a sloppy track.

However, the need for making User Education course related, demonstrated and graduated comes out clearly in a Monteith/Earlharm Report(Kirk,1974;p8) which is more theorizing.

The report makes 4(four) level categorization of User Education as given below:

1) Orientation
2) Bibliographic instruction;
3) Course in library research; and
4) Senior seminar.

Similarly, it does six phases listing of library skills, viz, awareness and knowledge of:

1) general types of reference sources;
2) indexing and abstracting periodicals
3) library catalogues;
4) principles of knowledge organization;
5) search strategy; and
6) Subject analysis.

Louis Shores (1954; 206p) may be called the think tank of User Education. In his concept of Library college, the librarians are assigned the role of instructor in the process of course related bibliographic instruction; the faculty members are expected to play a similar role of counselor to the individual student; the students have to do their self study within the precincts of the library. The essence of Library College philosophy is; active student involvement through commitment to the principle of full

personal responsibility for his own education, goal selection, self evaluation and character development.

Guiding the users in exploiting library resources is an essential function of librarianship and is known as user education. Resources of the library are put to maximum use by user education. Every library should provide user education to its users by helping the users to get the right information, at the right time. User education indirectly helps in rekindling creativity of individuals, paving way for the economic progress of the country.

In the Information age, it is essential for libraries/information centres to process, catalogue, and classify information in minute details for library users. The user should know, what information he can avail from the library. If the user does not know about the library's information storage and retrieval mechanism, he will not be to retrieve the information

Fjallbrant and Malley (1984) has mentioned that user education is concerned with the whole information and communication process and one part of this involves the total interaction of the user with the library. This should be a continuous process starting with school and public libraries and with possibility of extension into academic and specialized libraries.

User education helps scholars to select right kind of information in a short span of time. Guiding the users, in exploiting library resources is an essential function of librarianship or information work. User Education should be imparted to help the users.

User education is nothing but educating the library user regarding the usage of the library. Enormous amount of money is being spent to collect library resources.The very idea of collecting such huge resource is to make these available to the users of the library in his academic or philosophical pursuit. The library should make every effort to make its resource reach its intended user, so as to put it to maximum use.

User education can be as simple as introducing a stranger to the library, like giving instruction in the use of encyclopedias, bibliographies, electronic media etc.

➲ **Need for end user training**

User education and training is essential to put library resources and services to efficient and effective use. It helps to publicize a library's resources and services and communicate with the end users. It also helps the library and information professionals in getting users feedback. Indirectly, it provides an opportunity to build and further improve the image of a library. Above all user education and training is the best way to implement the philosophy propounded by five laws of library science by Dr. S.R.Ranganathan. Otherwise, there is no place for fixed and static structures and mechanisms. Library and information resources and services must be flexible and dynamic, because the professionals are required to work as facilitators to the end users in catering to their information needs. As such, they must be equipped with professional competencies, which include a solid professional knowledge base, pertinent skills and positive attitude. Only this way they can meet the challenges of the networked environment satisfy the growing, diversifying and demanding universe of the users. User has their own set of values in relation to access, concerned with identifiable values such as need, Immediacy, level, quality, use, currency and perceived end use or value. Value can range from expected or wanted change, or to commodity/market values. As such, the library and information professionals must follow the golden principle of customer creating value satisfaction. They should add value to their resources and services on regular basis. Only this way they can build and develop their image. Information professional's basic responsibility is to satisfy the end users.

The need for user education and training has become more urgent because in the network environment are heading towards fee based library and information services. This is because huge amounts of money are involved in establishing and developing the infrastructures for enabling an existing library to become a gateway, as well as an active partner of a library and information network. Otherwise also, today it is very difficult to sustain the traditional just- in -case paradigm, as in the face of declining budgets it is very difficult for a library to be self sufficient. Therefore, there is a trend towards just in time paradigm of developing library collections. In simple words, users are moving from ownership model to buying access to external information. Commercial vendors and bibliographic utilities, such as, OCLC are playing a pivotal role in this regard. But huge costs are involved in accessing and retrieving that

information which is not internal and lying elsewhere across the globe. The communication charges involved in accessing this information from a developing country like India are not within the economic limits of every institution. Moreover, users are heading towards the end user model of accessing the networked information. In this context, it becomes very essential to develop online search skills among the end users. The best thing for done the aspired searcher is to provide them with strategies rather than detailed recipe like instructions for every tool. This strategic approach seeks to help the users analyze their queries; help the users grasp the basic types and principles of internet search tools; and determine which type of tools might provide the most likely starting point for their type of question. The premise behind this approach is to help users master various Web conventions, and differentiate amongst the various types of tools subject lists, word searchable indexes, searchable newsgroup archives they will be able to adapt as new tools appear and current tools change.

➲ **Concept of End-user Training:**

Developments in computers, microelectronics and communication technology have radically changed the library and information environment. Traditional libraries were dominated by print-based publications and the access mechanisms were also by and large manual. Today with the convergence of information and communication technologies there is a sea change in the library scenario. There is a paradigm shift from stand-alone libraries to library and information networks from print based publications to formless data; from intermediary to end user model. As such, libraries should not work as just in case store houses of books, rather theses should be just in time gateways to pertinent information, whereas library and information professionals should play the role of gatekeepers. One stop shopping centers or information gateways like bulb, available via the internet, can provide the end users with a seamless connection to the internet based resources and services. Moreover, we are surrounded by automated, digital and virtual libraries as well as by data networks, specialized networks and library networks. Multimedia and the internet have further made the job of library and information professionals more challenging. The development of technology makes direct access to information easier for service users and while information skills are required to collector and present that information, there is likely to be less of a role in the future for information workers as

intermediaries between shift in the power balance between the information worker and the user with the users being empowered in terms of their access to information. In fact, there is a paradigm shift from parent child relationship between information provider and user to adult relationship. As such, the real job should be to empower the end users by developing network professionals in this regard should be that of facilitators and instructors.

A major aim of user education is therefore to widen the use of a range of library resources which will enable academics to improve their teaching and research and achieved better results in their work. In the print based environment it comprises of library instruction, bibliographic, instruction and user education programmes. Initiation of users, lectures to library users, library tours, pamphlets and brochures, audio-visual aids and in few cases user education programmes were the main tools and techniques to enhance user's awareness and instruct them with the objective of enabling them to make efficient and effective use of library recourses and services in meeting their information needs. These tools and techniques now need be supplemented in the changing environment. Keeping in view the information technology based developments; end user training should be the focus of user education. It is very important for rendering an information need of the users.

3.4. 2 User education and User studies: Renaissance in college Librarianship

Three distinct phrases are discernible in the development of college librarianship. The first phase declared that the librarian in a subjugated role in the teaching process, with his activities restricted to providing the prescribed reading material to the users in the libraries. The second phase was characterized by a more or less equal sharing of responsibility between the College teachers and the librarian. While the teacher dealt with the 'WHAT' aspect of knowledge, the librarian took care of the 'WHERE' aspect. The salient feature of the third phase is the user education in college library environment in which the library replaces the classroom as the place of learning and the librarian substitutes the teacher as the done the mantle of tutor librarian.

However, Philosophy of user education differs from other works in two respects. One, while their other books are more or less based on the works of SR Ranganathan; secondly, the book is marked by a substantial amount of conceptualization in a field

which is strong on practice, extremely weak in theory. Conceptualization is said to be the road to institutionalization of a subject.

☯ **Scope:** Ranganathan in his fourth law has emphasized the user study as most relevant. User studies are conducted almost a routine in many countries. The survey results of such studies in India indicate that most of the users depend on current information by browsing and scanning current issues of primary periodicals and secondary periodicals. Environmental scientists depend mostly on reference books in library. Scientist preferred publication in high standing journals, choice of Indian periodicals for publications was ranked last. Users were found to overcome language barriers in various ways but were unaware of indexes of translations. The users have taken steps to solve their informational problems disregarding what the librarians are doing for them. An experience of these studies was that the librarians did not respond properly and adequately to the surveys.

User studies have attained such importance because of the urge of the Fourth Law and also its corollary. They are in a way contemporary response to fulfill the requirements of the Fourth Law. It would be recalled that the law reads "Save the time of the reader" and the corollary is "Save the time of library staff". User's requirements of the Second Law. "Every reader his book", which when paraphrased would read every information user his/her required information.

As is known, interest in user's studies continued unabated and by 1960s most of the important contributions were made in the information rich countries. In the absence of credibility of libraries among the users, especially in the developing countries, user awareness becomes an essential component of user education. It aims to increase user awareness of the library as a source of information and as an agency to which users may turn for assistance with their information needs. To meet the individual research requirements of user, interest profiling becomes essential for specialists.

3.4.3 Philosophy of User Education in College

User education in college is another form of college user Reference Service which consists of two functions, viz. information and instruction and that both are complementary to each other, and also that User education is but only the instruction part of Reference service. The authors, while conceding that of Reference service is

the precursor User education, hold that the two functions of Reference services enumerated above are not complementary to each other but function at cross purposes. While Reference Service is subjective because of its stress on personalized service, instruction has objective connotations because it encourages the user to independent study. The one emphasizes maximum personal service, the other recommends minimum personal service.

User education, as understood today, is constituted of four components, viz. User Awareness, Library Orientation, Bibliographic Instruction and Interest Profiling. User Awareness is meant to increase awareness of users about the library as a primary source of information and as an agency to which users may turn for assistance with their information needs. Library Orientation for college library users is provided through connected tours, tapes, slides and printed guides. Bibliographic Instruction (Kirk, 1975; p23.) includes:

- ♣ A general orientation to available facilities and resources,
- ♣ The teaching of basic research skills and strategies, and
- ♣ The teaching of the organization of the literature in various disciplines, as well as the basic reference tools in each discipline.

Lastly, interest profiling is concerned with concept formulation and involves:

(a) drawing concept maps
(b) coding profile terms
(c) formulating search expressions, and
(d) Preparation of profile sheets.

User education has yet to achieve a degree of stability, clarity, and organization so as to be counted as a well organized body of conceptual knowledge with its own identity. And further it is too premature to talk of conceptual or general theory framework for User education. To talk of a system of concepts of User education is no more than an exercise in futility. Till such time as User education, is able to evolve its own principles and methodology.

Lastly, a case is made for linking User education to an understanding on the part of librarians of the information needs and information seeking behaviour of his users. They rightly point out that to think of educating users without comprehending their information needs is an exercise in futility.

3.4.4 Dimensions of User education

User education has a wide range of dimensions which may be extended to Reference service. Library Awareness, learning Packages and Library Pathfinders,.etc. User education primarily focuses at providing advice and instructions about the use of the library to the users whether individually or collectively, in both formal and informal manner. Every product, for attaining popularity, requires some marketing techniques. While the physical outlay of the library and its services, display of most popular material and other such techniques can attract the users temporarily, user education is still necessary as it acquaints the user with the information processing techniques used and the information services available in the library. It acquaints users with some basic elements of the library and librarianship. User education, if designed and conducted properly, can be very profitable in various ways:

- ☆ **Promotion of Information Use**: User education leads to the satisfaction of the librarians by increasing the use of the available information services. Studies reveal that in the absence of such an instruction, libraries may not be utilized at all or remain under utilized.
- ☆ **Stress:** The stress, now a days is shifting from the conservation and storage of information to the transfer of information. The transfer of information being a complex process, user education becomes necessary for its optimum utilization. It enables the users to identify and formulate their needs and to match them with the library resources. User, if properly educated, can also make an evaluation of the resources and service available in the redesigning of these services according to their needs or make an adjustment between the two.
- ☆ **Close Relationship between Librarians and Users**: Through user education, librarians and the users come in direct contact, enabling the librarian to understand the latter's needs better. The librarian in that case by understanding the actual requirements of the users can design and provide the information services oriented towards user needs, ant the user by getting his required information without wasting his time, can utilize it to better purpose.
- ☆ **Bridging of Gap between Users and Information**: User education brings the users and information closer to each other, ultimately reducing the role of an intermediary i.e. the librarian. The time saved by the librarian as an

intermediary can be utilized in search and provision of more information, thus increasing the pace of research.

- ☆ **Implementation of Laws of Library Science***:* User education puts in practice four out of the five laws of library science enunciated by Prof. S.R. Ranganathan. By introducing the users to the information available, user education satisfies the first law of library science i.e. (1) Books are for use. By bridging the gap between the user and the information, it satisfies the second and third Laws, which are and (2) Every reader his book; and (3) Every book its reader and by reducing the role of an intermediary, it satisfies the fourth law i.e (4) Save the time of the reader.
- ☆ **Appreciation for Librarians**: Librarians can earn more appreciation from the user for the work done, if the user knows the technicalities and complexities involved in the process of information transfer.

3.4.5 Types of User Education programmes:

The user education programmes generally are of two types which was suitable for the college library users for to orient and aware the benefits of library. These programme eliminate the college library users for their academic purpose.

- ⇔ **Orientation Programmes**: This is concerned with introducing the user to the general techniques of library usage and services available in libraries and, in particular, to the organization, services, and layout of one particular library. The usual methods employed include talks by the librarian, library tours, audio visual presentation, printed library guides, displays and exhibitions.
- ⇔ **Bibliographic instruction**: This includes discussion of the scope of a search, location of an introduction to the subject, bibliographic review articles, training journals article, current awareness services, other information services (reports, patents, thesis etc) and location of relevant organizations or people. Citation practices and personal index keeping, report writing etc, scientific communication services are included if appropriate. This programme is imparted prior to the student starting a project or long essay
- ⇔ **Aims and objectives of user education***:* A statement of aims and objectives forms an integral part of planning a course of user education. According to the UNISIST proposals:-

The general aim of user education should be – to reach a situation, at each stage in the progress of science and in the development of information technology, when most if not all scientist recognized their information needs clearly and can assess, the strength and weaknesses of existing and experimental services.

The general objective of bibliographic instruction is stated to be:
A student, by the time he/she completes a programme of undergraduate studies should be able to make efficient and effective use of available library resources and personnel in the identification and procurement of material to meet his/her information need.

3.5 Categories of Information Users in college library

The target group of user need be identified to consider the training requirement for each group. The following categorization concerned mainly with user of Science & Technology information but also applicable to other information users.

- Specific specialists create the information and use information as the basic upon which to build up their own contribution. Any individual scientist has the problem of attempting to learn what is already known, where it has appeared and how to obtain the source material. Numerous tools and services exit to help him in his search, but does he know how to derive full benefit from them? Once he has located the information, he faces another major problem- that of judging the value of this information. Has this information been superseded by more recent information. Does it contain errors. Has it been evaluated? Are there any critical reviews on the subject.
- Engineers and technologist, use information as an aid to the interpretation of data of new equipment, or to help solve a technological problem. The industrial information user generally encounters problems when seeking information, eg. the proprietary nature of such information, the reluctance of competitive enterprises to share information, the cost of information system & services, the cost of information system and services, the information gathering habits of industrial makers, and the very fact that informal sources of information (visit by technical representatives, industrial sales literature) are as important as the formal information system.

- ⊃ Administrator, planners and policymakers, needs technical information repackaged in a different fashion to help them make decisions. Perhaps the major difficulty here is that many problems are not understood well enough by decision makers to know which kind of information they actually need. Even when the kind of information needed is identified, it may be very difficult to locate. Management Information Systems (MIS) are especially designed for that purpose.
- ⊃ Non-technical users also needs Science & Technology information appropriately interpreted and made available, in order to understand the society he lives in. Such information is generally interpreted and disseminated by newspapers, magazines, books, radio and television, etc.
    - Apart from these broad groups, there are such large and important groups as teachers and students. These may comprise many levels such as :

(a) Academic staff (Undergraduate, Graduate, Post –Graduate)
(b) Post- Graduate doing research
(c) Post-Graduate (studying)
(d) Post-Graduate
(e) Undergraduates
(f) School children.

Other groups may be identified as entrepreneurs, artisans, farmers, extension personnel etc.

3.5.1 Training Programmes : Planning and Organization.

According to the UNESCO handbook (1977), the reasons for training the users are two fold: Firstly, the sheer bulk of printed matter being produced today causes considerable problems for user and acquaintance with techniques for the selection and distillation for their material is important to avoid narrowing of the user's appreciation of relevance and Secondly, the educational networks of most countries today do not develop the ability of intelligent reading from an early age and do not emphasize the use of the printed word as a primary source of knowledge.

The literature on the subject of user training emphasize mainly training in the use of scientific , technical and economic literature for university graduates and is mostly of

a descriptive nature. But the problem of training has to be tackled long before the user is a scientist or an engineer. The child has to be initiated in the art of intelligent discrimination and conscious use of printed material from a tender age .This alone can raise the standard of general education, stimulate intellectual curiosity and trained students early in self reliance and independent thinking.

- **Integrated User Instruction**

According to Lester (1979) formal education of library users (a) should not be carried out in isolation, but as an integral part of academic (including school) teaching; (b) should normally be given by the subject lecturer/teachers, and (c) should aim to communicate the importance, or otherwise of libraries within the context of a general study of communication and information. Co-operation between the subject lecturers and librarians has been recommended by many to improve the quality of the user education. Such co-operation is being called integrated library instruction.

- **Teaching methods of user education**

It is an application of available teaching methods in information agencies for user education and it also varies from library to library and from reader to reader. It also depends on the library staff as to which particular teaching method or group of teaching methods is used for training of their readers to use the available resources effectively. It is that the library staffs have knowledge, skill and ability to understand the needs of the users and then apply the methods for teaching, accordingly.

It is clear that the process of teaching changes from learner to learner. This learning process can be affected by a variety of factors. The following factors can be considered in relation to the program of user education:

- **Motivation:** Instruction should be given at a point of high motivation as for example when a user wants to assemble information in connection with a particular project.
- **Activity:** Active work on a problem. Learning-by-doing is likely to more effective than simply being told how to do a particular piece of work.
- **Understanding:** Library education will be more effective if the user understands what he is doing and why he is doing it i.e., if new facts can be related to existing knowledge.
- **Feedback:** Feed back information on the progress being made should be available to the user.

In addition to the above, the following factors affecting the neuropsychological sensory input should also be considered:

- Visual or auditory stimulation.
- Controlling the rate of flow of information.
- Interaction between student and teacher.
- The following functions of the user education must be considered at the time of choosing the method of instruction/teaching:
- Educating users as to the user of the library.
- Acquainting the users with the holdings of the library.
- Whatever the method is being applied to educate users, it must be able to:
- Familiarize the users with the tools and dives user by the library.
- Encourage the independent user of library,
- Impart education to users to use the library effectively.

According to Nancy Fjallbrant (1976; 225p) teaching methods for user education can be classified as:

- Teaching methods for library instruction
- Teaching methods for individual instruction
- Teaching methods for group or individual instruction or both.

It is difficult to lay hands upon anyone method of user education as a comprehensive one. The earlier practice or group instruction is rapidly losing its significance and giving place to individual attention. User education can no longer confine itself to undergraduates. It establishes its necessity, with equal importance, to post-graduate students and research scholars.

3.5.2 User education and Training

- The establishment of the UNISIST programme within UNESCO as an inter-Governmental progamme to stimulate and guide voluntary cooperation in the flow of S & T information at the national, regional and international levels, and the launching of national information systems, such as NISSAT in India has focused attention on the need for training users in the effective use of information.
- The UNESCO General information Programme has been making organized efforts to promote user education and training programmes through organizing seminars, workshops, and developing tools, publications and guidelines. The

'UNISIST Guide for Teachers' and the 'Guidelines fro Developing & Implementing a National Plan for Training in Information Use,' are the two very useful publications.

- Several countries, particularly USA and UK, have made organized efforts in promoting programme for educating and training information users and extensive literature in the field is available to guide the formulation of such programmes in India.
- Despite India being one of the foremost countries to launch the national information system (NISSAT), no organized efforts have been made as yet to conduct training programmes for information users. A few voluntary programme and some in house training courses have been in vogue. The UNISIST workshop (1975) served to focus attention on the training of information users.
- This brings to the fore the need to formulate urgently a National plan for developing an integrated programme of educating and training the information users. In terms of the UNISIST Guidelines, the National Focal Point (NEP) may initiate formulation of a National plan by constituting a planning group to identify the goal, collect all relevant data, specify objective and design action plans for implementation.
- The isolated voluntary programmes may be brought together and organized under the auspices of professional organizations like IASLIC and ILA. They may also take steps to organize workshops for training of suitable library information personnel for conducting user training programmes and to promote preparation of slides and other instruction aids on a co operative basis.

3.5.3 Constraints

Some of the constraints and problems identified in the planning of an organized user education programme are:

- ⇨ Absence of an overall national information policy resulting there by, inadequate, uneven and uncoordinated library & information systems at various levels.

- ⇨ Failure of the education policy to support adequate library facilities in schools & colleges, and absence of organized public library system, resulting in failure to inculcate library user habit from an early age.
- ⇨ Lack of trained and committed personnel to conduct training programmes at different levels.
- ⇨ Social and organizational inhibitions causing natural resistance to change by rural communities and small scale industry sector and even by large organizations to innovations. Apathy, conservatism and ignorance, causing natural resistance, mark a vast majority of illiterate and semi literate inhabitants.
- ⇨ Financial constraints not only to support a wide network of library system, but also effective user education programmes.

3.5.4 Strategy of User Education

- → The prime strategy of user education in India need to be directed at creating and improving the awareness of the value of information in specialized fields, educating system and in everyday life. The prime target groups would be planner, policymakers, managers, educational and other administrators and teachers. The purpose would be to gain support for providing major resources and investments for the growth and development of library and information systems at all levels. This may be achieved through organizing seminars and panel discussions, and compiling case studies how timely provision of information proved highly rewarding for national projects and lack of it resulted in failures.
- → The second important strategy would involve integration of the library and information service with the education/learning process. This would involve education and training in the value and use of information at the primary, secondary and higher education levels as well as closely associating the user training programmes with specific and specialized learning projects. The Academic library is increasingly assuming the role of a 'Learning Resource Centre,' where if functions as a dynamic education system supplementary to class teaching. This would involve a change of attitudes on the part of teachers and educational administrators.

→ The third strategy would aim at imparting training to different groups of users engaged in research, development, and vocational activities, to enable them to assess their information needs and make best use of the existing resources and services.

→ Lastly, programmes may be designed for the layman, particularly, the vast community of semi-literate and illiterate persons to motivate them to seek information connected with their everyday life and avocations. This would involve not only different methods of providing library services, but also different approach to user education, which could more usefully be directed at the persons playing the link role, such as extension workers, contact persons and mass media personnel.

→ Organization of User education programme would necessitate training of library & information personnel to conduct the training personnel to conduct the training courses effectively. This could be achieved through (1) incorporation of user education in LIS programmes/curricula (2) conducting workshops and summer schools to training existing LIS personnel.

→ Some of the approaches emphasized for effective and successful user education programmes are:

(a) The student or user would learn seeking information better as part and parcel of his subject study or research, motivated by a genuine need and urge, and this could be achieved by integrating teaching use of information by integrating teaching use of information in the education programme at different levels.

(b) People learn best both by doing and by discovering by themselves and hence theoretical instruction should be followed by various types of practical sessions.

(c) The LIS should be responsive to user requirements, behaviors and preferences, adopting marketing and consumer awareness techniques through sustained promotional activities and build up users' confidence and acceptance of the value and importance of the library, as well as maintain user's interest in the system.

(d) Positive attitudes are vital and hence commitment from authorities, teaching academies or research leaders need be built up by greater interaction and contacts; as also committed, enthusiastic and well qualified

library & information personnel are to provide essential effective service to users, gain their confidence and interest and thereby enhance the credibility of the LIS.

3.5.5 Coverage of Programme.

- **International scene**

At the UNISIST Seminar held in Rome in 1976, it was recommended that the national policy on user education should be formulated as an integral part of the national information policy and in correlation with the national education policy UNESCO, under the auspices of UNISIST, brought out a guide for teachers in 1971. Ten years later, it published a guide lines which prepared for the development and implementation, a national plan for training and education in information use. In pursuance of theses recommendations made by UNISIST and UNESCO, and based on various user studies and surveys, user education programmes have already been designed and administered in a number of countries.

- **National scene**

In India too, user education programmes at few libraries engaged in the scientific research have been conducted. Indian National Scientific Documentation Centre (INSDOC), Delhi and Documentation, Research and Training Centre (DRTC), Bangalore has conducted some workshops and seminars on user education. Indian Agricultural Research Institute (IARI) is conducting a course on Library use, reference, compilation, scientific paper writhing and proof correction, still much remains to be done more so because the problem in India is a little different from other countries. The inculcation of reading habits and the development of library sense amongst the users is the basic requirement for achieving our objectives of user education in India. It calls for the incorporation of user education in the prescribed syllabus at the school and college level, and a national level programme of training and education in library and information use. Once the need for user education is accepted, different methods of teaching including of course those enumerated in methodology would require to be examined.

User surveys and studies have also been conducted in various libraries in India. But nothing concrete has come up. Urgent attention of the authorities concerned is required for a well organized user education programme in all types of libraries

academic, public or special, for the effective utilization of resources and information services, with a provision for regular evaluation and redesigning of the programme according to the changing needs of the users.

There has been, as a result, a growing enthusiasm in favor of library and information computerization (since the mid-1980s). There has been growing recognition on the part of the policy makers and others that information is an essential resource and input for socio-economic development of the country. Though user of computers in the libraries is just catching up in India, there is hardly any attempt towards user's education for computerized information retrieval (CIR), or if such attempts have been made, no literature is readily available. The University Grants Commission, having realized the importance of user education in the libraries and information centers, is encouraging through financial support, conducting seminars, workshops, etc. on the theme of user education. Which they are emphasized the need for computerization in a libraries and information centres.

In spite of the fact that library computerization is catching up quite fast now, there is hardly any literature dealing with actual experience in user education for computerized information retrieval in India. Perhaps the important aspect is that there is an understanding of the importance of the training of the users in the time to come to increase the level of information awareness.

3.5.6 Promoters of the programmes

Though individual's role in conceiving ideas is crucial, institutional support in giving them shape is equally, perhaps more, important. The council on Library Resources and the Association of College and Research Libraries in the USA, and the British Library Research and Development Department and the Centre for Research in User Studies in UK, has been the main promoters of User Education programmes in their respective countries. A brief description of some of the projects launched sponsored by these institution is given below.

- **Library Outreach Orientation Programme**

The objectives of this programme, financed by council on Library Resources, are to

- assure every student at University of the opportunity to understand basic library resources and heir uses in the facilitation of his or her learning

- explore methods for achieving the greatest understanding of basic library resources;
- assist the university's teaching faculty in understanding the contributions librarians are prepared to make to the students' learning and to encourage cooperation to achieve this goal; and
- Demonstrate the role librarians can play in motivation students.

➢ **Project LOEX (Library Orientation Exchange)**

Based at the Centre of Educational Research, Eastern Michigan University, this project functions as a clearinghouse for academic library orientation and instruction information and materials, with the purpose of facilitating communication among libraries with instructional programmes, of assisting libraries interested; developing such programmes and of aiding librarians in their research endeavors.

➢ **Traveling workshop Experiment (TWE)**

TWE was instituted in 1975 at the New Castle upon Tyne Polytechnic with the support of British Library Research & Development Department. A Traveling workshop experiment package is a multi media and multi purpose learning package consisting of the bibliographical organization of the literature of each subject area; with instructions on the user of literature. Its components include subject handbooks which provide instruction in finding information about literature search through bibliographic tools and finally by designing exercises for obtaining proficiency in the use of information tools. The subject handbook is intended to be experimentation in self instruction and in self evaluation.

The learning packages, such that and it was provided opportunity for their own pace and in their time. For a country like India, with meager educational expansion despite physical and financial constraints; they offer a great variety of learning experiences; and they allow their users to learn at resources, vast area and abundant population, learning packages may be of immense value.

➢ **Programmed Logic for Automatic Teaching Operation (PLATO)**

This is one of the several computer Aided Instruction (CPI) programmes, developed at the University of Illinois, Biology Library. This may be called the computerized counterpart of TWE. A PLATO programme is implemented in two phases. Phase I

consists of self paced library orientation and instruction utilizing audio visual tapes. Phase II employs computer assisted instruction and is of relevance for advanced level.

- **Library Pathfinders Tracer Bullets**

A Library Pathfinder (called Tracer Bullets in the Library of Congress Context), is a compact guide to the basic sources of information specific to the user's immediate needs. It is a step by step instructional tool that will, if followed, place before the user those items that the most skilled reference librarian would suggest as basic to an initial investigation of the topic. A pathfinder may consist of:

- Scope note/definition;
- Subject heading;
- frequently cited texts;
- call numbers;
- relevant reference works;
- bibliographies; and
- Titles of important periodicals relevant to the topic.

- **Programme evaluation**

Some evaluation techniques for redesigning of user education programmes in the light of the user's changing needs devised and practiced by a few librarians in their institutions. The following two models used for the evaluation of the library user education programme are the learning Resources Centre (LRC) of the Dorser Institute of Higher Education.

- **Objective Based Model:** It aims to judge the success of the course and to find out the extent to which the objectives have been achieved after the course is over. It is a product oriented and not the process oriented model.
- **Illuminative Model:** these attempts to illuminate all aspects of the course from everybody's point of view i.e. students, academic staff and the librarian. It is considered as more practicable as it possesses the adaptability to suit different situations.

3.5.7 Computerized Information Service

The past two decades have witnessed two extra-ordinary phenomena. One is the development of hitherto inconceivable technologies and their extremely rapid growth in the areas of computers and telecommunications. The other, the almost exponential

growth in the quantum of information generated, which at the same time is growing day by day. Taken together, these two phenomena have ushered in a virtual revolution in information processing and its communication. This in turn has led to some fundamental changes in the structure and operations of libraries including of services rendered through computer. In this age of information technology, the entire gamut of activities involved in the information processing, storage and retrieval have undergone radical changes.

User Education is technology-oriented, so that it is more suited to countries with a large base in Science and Technology. It is largely the result of innovation, and that the traditional societies are slow to react to innovations. As such might be introduced in less developed countries to the extent those countries are amenable to Science and Technology and are in a position to relate it to the development process. Its application also presumes the following attitudinal change among students, teachers and librarians.

- Understanding the User's of a library and discussing the various factors affecting human relations in interaction with users in libraries.
- Libraries are social institutions where interaction with the users is their important dimension.
- Enumerating and discussing the factors that affect human relations in interaction with users in libraries.

Capabilities of computers

Computers are being used in the libraries for both house keeping activities and information storage, retrieval and reproduction functions, which include acquisition of documents, serials control, circulation control, indexing, abstracting, compilation work, technical work, technical processing, etc. Computers have the capability to do these operations with great speed and accuracy. The basic advantage of computerization is that, once information is fed in the machine readable form, checked and verified, it can be stored indefinitely and manipulated at will form output in a large number of desired sequences or approaches. For example, the data input into computer in the acquisition department may be used by the cataloguing department with necessary modifications. Different types of services may also be provided using the same data with the help of computer which also provides access to

automated library system, local, national and international databases, online public access catalogues (OPACs), optical digital disks, interactive video storage of databases, document ordering systems, electronic journals, electronic bulletin boards, electronic-mail, etc'.

- **Terms in computerized information retrieval**

Database may generally be taken to mean a machine-readable collection of information and may contain numerical or bibliographical information. Bibliographic database is composed of reference to literature, Online system is one in which the user is in direct contact with the central processing unit of the computer using a terminal. The magnetic disks and users of the system are able to type-in search inquiries and receive immediate responses in the form of citations or abstracts of current literature. If the user desires, it is possible to have a print out of the responses. CD-ROM (Compact Disc-Read only Memory)is an excellent storage medium and can be used together with widely available low-cost micro-op personal computers to provide relatively powerful distributed storage and processing devices, which are not dependent on telecommunication system. OPAC (Online Public Access Catalogue) provides public enquiry terminals thereby bringing about considerable improvements for the user with regard to searching for literature, particularly the one available in book or monograph form.

Electronic journal allows local access to full text documents meaning thereby that users will potentially be able to obtain vast quantities of information directly from a personal computer. Electronic mail, or Email, a relatively new form of communication, provides a semi formal method of direct communication from one computer terminal to another, and where the recipient does not have to be at the receiving terminal. To be able to use any such information system successfully the users should:

- be aware of what the information services can do ;
- identify their information needs ;
- communicate them to information staff and discuss them with the staff;
- give feedback to the service ;
- keep information staff aware of their changing subject interest ;
- Involve their service in projects which have information implications.

To be able to achieve any or all of the above, users need to be trained accordingly. Any type of training, assistance, awareness service imparted to users of libraries/ information centers, in groups or to individuals, at any stage of the information services to enable them to retrieve the desired information effectively is 'User Education'.

3.5.8 Evaluation of user education programme

Evaluation is increasingly seen as essential element of any systematic user education programme. It is concerned with the collection and analysis of information about the input, in terms of educational potential, variables effecting the educational process, and the end product or output. The purpose of evaluation is to collect and analyses information that can be used for rational education decision making. Thus evaluation can be used for decision about whether to continue or terminate a given course, about the modification of an existing programme, or about the adoption of an innovation.

Formation evaluation: It is carried out during the development of a course or programme and provides direct feedback about the functioning of the different parts of the programme, thereby giving information which can be used to modify/improve the education process.

Summative evaluation: It is concerned with the evaluation of the education programme as a final product, providing information about the overall worth of a given course, to help in the decision as to whether or not the course should be continued.

Evaluation Method

The methods of evaluation include:

- Psychometric was based on tests of knowledge or to provide objective information it could be used in assessing the efficiency of a given educational programme or of teachers.
- Sociological is used in the study of changes in the structure of an organization or the roles of the participants in an educational programme or a specific institution. This type of evaluation makes use of interview and questionnaires, and also participant observation.
- Illuminati or Responsive emphasizes participant observation and interviews as a means to obtaining an overall view of educational programme. Data are

collected from a number of sources and attention is concentrated on what happens in response to an innovative or established procedure.

The users of information are an integral part of and the final link in the information transfer chain. The national information policy should take cognizance of the need for orientation of various categories of users in the effective utilization of library and information services. Increasing stress is being laid on introducing such orientation from early childhood, by integrating the user education programme into the overall syllabi of school and college education system. Several guidelines and models are now available from UNESCO and other bodies for formulating, planning and organizing the user training programmes. The Department of Science and Technology should take suitable steps to formulate an integrated plan for developing and implementing the user training programme in implementing the user training programme in India in concert with other national bodies.

Arrangement on shelf is the first principle any one could present in a comprehensive manner. The orientation or educational model should be designed in such a manner that it should avoid communication barrier such as some psychological complexity, linguistic barriers and social barriers. Science and Technology users today demonstrate adoptability to understand the complexity involved in organization of the libraries or information system. Any user who has just entered the library for the first time is likely to be bewildered by its huge building and enormity of its collection. It may take days for him to know the procedure of borrowing materials of his interest. Research students will be in for big trouble if they do not know the availability of reference books and electronic documents in the subject of their research interest. A researcher may spend months together in gathering references in his subject field only to discover in the end that a CD-ROM of bibliography in his subject is available in the library. A proper user education can certainly avert such huge wastage in terms of money, man power and time. Even for an ordinary citizen it is a good habit to visit the library often to know the vast amount of literature available. More the library usage, more knowledgeable the human being becomes and one will be in a position to contribute to the development of the community.

User Education can be given through lecture method, on the visits to the library, by using audio-visual materials or through computer assisted instructions. The point to be noted down is that very few libraries impart user education to their clients. The result is that many of the resources of libraries are under utilized. As a direct consequence of under utilization, creativity of individuals has taken a back seat. This has resulted in the under development of the country with very few inventions coming from its researchers.

The resources of the library are put into maximum use by the provision of user education. User education also gives a boost to the creativity of the individuals. The individual can work with his optimum energy and will be at the creative best. By helping the reader gather proper relevant information through user education, the library itself becomes nodal agency in the creation of more information. Proper user education helps in better utilization of time and the time thus saved can be made used of for other creative avocations. Every institution, be it a school or a research institute should make it mandatory on the part of its library authority to provide user education. The winners in the information age are those who gather, analyze and distribute to their organization or to themselves relevant information most efficiently. The capability of a country is being measured by the capacity of its people to receive distribute and use information to gain competitive advantage. Already information index is being used to measure the economic status of a country.

The educational and social structure of a country must prepare its people to understand the benefits of information and help them to use information efficiently. Government has a key role to play in the matters connected to information provision, creation and distribution. Those governments that do not provide leadership in information provision will not progress economically.

The government should not be complacent as far as the issue connected to the information dissemination is concerned .It is high time that the government should have a well defined information policy. The government should take notes of the importance of the contributions of the librarians and information scientist to the upliftment of the society and should accord due status to them. An organization of the lines of Indian Council Of Medical Research (ICMR) or Indian Council Of Agriculture Research (ICAR) has to be set up to maintain standards in library

practices .The government should realize the importance of information provision, at least now to gain economic advantage around the globe .

3.5.9 User Studies

Studies of user needs, information seeking behaviour, patterns of user and non use of information are very important of the design and development of effective user training programmes. The UNESCO has brought out the 'UNISIST Guidelines on studies of information users', which will be helpful in carrying out the user studies for various user groups. The national sector of information centers, other national bodies and professional associations, may promote such studies. Some of the model programmes presented at the present IASLIC Seminar have referred to the user surveys carried out.

- **Types of user studies programmes**

Studies of user needs, information seeking behaviour, patterns of use and non-use of information are very important for the design and development of effective user training programmes. Apart from the general approaches of users to information identified by several studies, specific surveys need be carried out in a particular environment to serve as the basis for developing suitable training programmes.

- **Aims and objectives of user studies:**

A statement of aims and objectives forms an integral part of planning a course of user studies. According to the UNISIST proposals, the general aim of user studies should be reach a situation, at each stage in the progress of science and in the development of information technology, when most if not all scientist recognized their information needs clearly and can assess, the strength and weaknesses of existing and experimental services. Further, the general objectives of bibliographic instruction are stated to be, a student who after completion of undergraduate studies should be able to make efficient and effective use of available library resources and personnel in the identification and procurement of material to meet his/her information need. However, UNESCO has provided detailed guidelines on setting up objectives for specific courses.

- **Design and conduct of courses in Library user programme**

The user education & training programmes are generally of two types:

(i) Library Orientation Course lays emphasis on familiarizing the user community with a particular collection and informs them of the services available, with the objective of promoting better use of the collection and the services of the library;

(ii) User education course involves bibliographic instruction with emphasis on the exposition of the nature and structure of the literature of a subject, the variety of bibliography tools and their characteristics, with the objective of enhancing the ability of the users to assess their information resources and services.

- The UNISIST Manual provides useful guidelines in the design and conduct of user training courses. Some of the voluntary programmes and in house training courses designed and conducted by certain institutions and individuals and a few models worked out on the basis of user surveys have been presented in the IASLIC Conference.
- The general objective of the user education courses is to equip the actual user of information with the necessary skill to enable them to find out with minimum of effort the relevant information from the available sources of information, in the face of growing complexities of information handling tools. Another objective of User programme may be to 'turn the potential users into actual users and into the beneficiaries of the system and thereby create and sustain effective demand for library and information services. Other general objectives identified are: (i) enabling users to identify their specific information needs in relation to specific situations encountered. (ii) Capacity to evaluate and productively utilize obtained information and (iii) competence in expressing and preparing information reports for use of others.
- Methods of instruction used include lectures supported by write ups and handouts. Audio visual aids, like slides & transparencies: tape slide demonstrations, such as TWE, Excerpta Medica and Index Medicus kits have also been used. More of practical training is emphasized by many. Computer aided instruction has been commended as more effective for teaching use of on line systems. Co-operative production of teaching aids has been proposed to save time and labor.
- The categories of users and the levels of training in an academic institution have been identified as:

(i) Teaching staff

(ii) Research scholars

(iii) Post graduates and

(iv) Under graduate students.

Orientation for undergraduates, detailed instruction for postgraduates, and training & extended course for teachers, scholars and technologists has been proposed as a minimum programme. Exposure may be applied below the college level. In special scientific/technological/industrial organization, the users have been categorized as (i) scientific & technical, (ii) research personnel, (iii) managers & administrators, (iv) Trainees and (v) non technical, with orientation for the technical personnel and trainees and bibliographic instruction for research scientists/engineers. Individual guidance to research workers and the users in industrial institutions in commended.

- The faculty for courses conducted in specific institutions comprise outside experts supported by the librarian of information officer of the host institution in several programmes. Some people hold the view that the programmes can be administered better by people primarily trained in science and having an interest in information seeking, with support from library & information personnel. A closer working relationship between librarian rains and teaching faculty or subjects specialists is recommended to make user education programmes successful.
- The venue of training course has been suggested to be either classroom or the library, or both. In the context of users in rural areas, the programme need be carried out on door to door basis or organized at market or community centres.
- The duration of the course is recommended 3 – 7 days depending upon the training.

3.6 Needs of Information technology

Information Technology is the main sources of information in nowadays. It is a reliable resource to equip the academic purpose through internet and with the help of technological aspect. Computers and other peripheral rendered the information needs of the college students and teachers by the innovating new type of technique provide by the technological issues. Human social systems exist because of the ability of human beings to record their experiences and communicate them to the posterity. Libraries are essential part of this social communication process because they store

and disseminate the accumulated thoughts of humanity. A modem library preserves the recorded human knowledge for use. Use of the collection is the basic aim of a modern library, which means, libraries exist because there are library users. Libraries, therefore, are social institutions, where interaction with the users is their most important dimension. It is very important for an organization to cope with the problems of relationship. This becomes more important for those organizations that are dependent on the public for their survival. A great deal of money is being spent on the establishment and maintenance of libraries. The valuable collections of a library are vital for the present and the future progress of humanity. To encourage people to use the library more often and to encourage new users, the user's visit to the library has to be a pleasant experience. The librarian and his staff should work toward maintaining good and cordial relations with the users. A prompt and efficient service cheerfully carried out is sufficient to establish and maintain a good relationship and would bring popularity, prominence and prestige to a library.

☒ Features of the needs of Information Technology

The main features of recent development in information technology can be summed up as follows:

- Increased computer power leading to speedier and cheaper computer processing;
- Cheaper data storage – form example optical storage media;
- Digitization of information – text, graphics, photographs, speech, sound, video, etc.;
- Better data transfer between different systems and media;
- Improved telecommunications, such as ISDN, with greatly increased capacity for data transmission;
- Decreased size of equipment;
- Increased reliability of hardware and software.

These have led to the development of international, national and local online systems, automated library systems, public access catalogues (OPACS), the electronic journal, electronic knowledge banks and expert systems, CD-ROM (Compact Disk Read-Only-Memory), optical digital disks, and interactive video for storage of databases, journals, reference publications and picture databanks. There has been a very considerable increase in the amount of information available in the form of full text

documents, bibliographical references, factual and numerical data and, at the same time, an increase in the complexity in information handling and storage systems. Any systems are beginning to exist in parallel paper based media and documents stored in digital form either locally, in online full text stores, or on optical media. This point to an increased need to teach information users how to select and use the most suitable tools for their information needs.

Online Public Access Catalogues (OPACs) or public enquiry terminals have brought about considerable improvements for the user with regard to searching for literature, particularly that available in book or monograph form. OPACs need a simple and straightforward user interface in order to be easy to user for inexperienced library patrons. At the same time they must be based upon fairly sophisticated search techniques in order to be able to deal with the complex library catalogue files. Computerized library catalogues are based on the standardized MARC record. Today many OPACs unfortunately do not fully exploit the information stored in the record, but only allow users three types of access: author, title and subject and show considerable resemblance to the library card catalogue entry.

How does the development of library automation and OPACs affect user education programme. Frances Nowakowski (1988) has recently compiled an annotated bibliography on Bibliographic Instruction for Online Public Access Catalogues. This is divided into four parts:

- Bibliographic instruction for OPACs in general:
- Specific systems:
- Survey result affecting bibliographic instruction:
- Survey instruments. The bibliography includes both theoretical and practical papers and aims to provide a useful resources list for those designing user education programmes in relation to the OPAC.

3.6.1 Bibliographic Database- Local, National, International

More than 5,000 publicly available online databases are running on host computers on over 509 information retrieval system. The relative complexity of the first information systems led to a situation where the one-time or infrequent end-user often asked for help from an intermediary or information specialist with systems knowledge. More

and more end users are, however, learning to carry out their own online information searches. This is partly the result of improvements in hardware and software and partly due to the problems of describing exactly the information required to an intermediary the search negotiation process no one can judge the relevance of possibly interest of information as well as the user.

Even given the current disparity between systems and databases, it is possible to train end users to carry out their own searches, providing this is limited to one host system and a small number of databases. There are a number of tools available for this purpose; general manuals or textbooks, documentation produced by the systems' operators, video films and computer based simulations or CAI (Computer Assisted Learning) programmes and emulation programmes (Fjallbrant, 1988).
User education about online searching is concerned with:

- Orientation about what online search facilities are available, to what extent users can obtain access to such systems (either with the help of an intermediary or themselves), where searching can be carried out and how much it will cost.
- Instruction in how to prepare and carry out searches.

The following factors have contributed to easier online searching for end users; the vast increase in the number of personal computers; improved telecommunications hardware and software; and the development of user friendly communication programmes which enable the end user to prepare a search offline, taking as much time as necessary and being able to correct misspellings and typing errors. User friendly systems have been developed by a number of systems operators. This interface provides an easy menu driven user access to databases on the specific host system.

One problem for the end user is that, if searching is carried out at infrequent intervals, it is possible that the search commands fell unfamiliar. One way to overcome this is to make user of refresher training in the form of simulation programmes in which the user practices offline on a simulation of the online system. a number of simulation programmes are available.

Videotext databases

Videotext is the name for screen based systems that make user of the telephone and television sets. View data (sometimes simply called videotext) is a computer based interactive service which uses the public telephone network to transmit information and the TV-screen as a play device. Example of view data are British Telecom's Prestel service, established in 1979, Bildshirmtet (BTX) in West Germany, Teildon in California, the Pronto home banking system of the Chemical Bank in New York, and the Tele Tel system of France.

It is impossible to access large database vendors through videotext. Example are The Source, originally a consumer orientated system which has moved into business information, and Dow Jones with an almost exclusively business focus. Searching is menu driven. In Britain a number of agriculture organizations have been made user friendly for inexperienced users, but the menu driven searching is time consuming (and therefore fairly expensive). Searchers used to the traditional command driven online services often experience frustration in videotext searching.

Videotext services can also be used for inter-library lending transmissions, as well as access to databases. A short demonstration of available videotext services and locally databases would be of interest in a user education programme.

3.6.2 Optical Storage of Information

Recent developments in optical technology have provided a cheap storage medium for information. At the beginning of the seventies, Philips introduced an optical video system laser vision disc. These contained video pictures encoded in analogue form on a 30 cm optical disc. The first discs were intended for entertainment and the pictures were stored in a straight sequence through the 54,000 tracks in Constant Linear Velocity (CLV) format. Later, storage in the Constant Angular Velocity (CAV) format was introduced, with one picture per track. This allows a unique address for each frame and the possibility of searching and rapid access. This meant that the laser discs could be used for educational and training purposes and for storage of picture libraries or art collections. Laser discs can be used to introduce users to picture databases.

Compact discs are a type of digital optical disc which is 12 cms in diameter. Compact discs are the result of cooperation between Philips (optical storage technology) and

Sony (error correction coding) which started in 1979 and led to a commercial product the Compact Audio disc in 1983. CD-ROM stands for Compact Disc- Read Only Memory and is a further development of the CD-Audios. The disc can store 550,000,000 bytes of information. The CD-ROM disc is, therefore, an excellent storage medium and can be used together with widely available low-cost micro-or personal computers to provide relatively powerful distributed storage and processing devices, which are not dependent on telecommunication systems. Material that has been created electronically such as databases can be saved and distributed in this form. Databases in CD-ROM form can be used with advantage to provide end user access to databases. They allow the user to work at their own speed without having to worry about telecommunication connects charge or costs for host computer time. They eliminate telecommunication faults, which can be a problem with online searching. The 1990 edition of CD-ROMs in print has over 600 entries of commercially available CD-ROMs. These include many databases and reference tools such as encyclopedias.

3.6.3 Document Ordering and Delivery

It is not possible, by means of the online systems described above, to obtain bibliographic reference within a matter of hours. Obtaining the corresponding documents can, however, take from a few days to several weeks. It is very important, in user education, to describe the document ordering and delivery service, so that the user is aware of the options and costs involved. For both users and librarians it is important to make a good choice of document supply system and balance these factors.

The typical requirements of the end user with regard to full text documents may be summed up as follows: The right information, at the right time and for a reasonable cost. This is based on:

- A straightforward system – for the requested documents.
- High chance of satisfaction for the requested documents.
- A reliable system.
- Reasonable speed of supply with the possibility of fast transmission for urgently required documents.
- Low costs.
- The facility to access content, quality and cost before ordering.

- Document output in a form that will permit the reproduction of text, diagrams, photographs and formulae.

Speed of delivery from a document supplier or library can be much improved by tele fax transmission or by satellite transmission of documents. The latter is particularly important in countries which have rather poor terrestrial telecommunication lines, or where such lines can be disrupted by earthquakes, landslides etc. Tele fax is based on digital transmission over a digital in high quality copies (300 lines per inch) at a speed of about 16 secs per A4 page. The user of fax transmission should lead to a rapid, reliable and cost effective document delivery service in countries where ISDN networks are available.

3.6.4 Electronic Publishing including Full Text Databases

In the last ten years a number of technologies have been developed which allow local access to full text documents. This means that users will potentially be able to obtain vast quantities of information directly from a personal computer. This access can be achieved in many forms; full text online databases, electronic journals and newsletters, CD-ROM, digital audio tape, laser cards or smart cards. The development of user friendly gateways will make it easier for users to locate and order comments directly from suppliers. Cheaper storage and telecommunications will facilitate the transmission of full text documents, as mentioned above. CD-ROM provides a medium suitable for the publication of reference works such as encyclopedias and dictionaries, patents and standards, textbooks, technical documentation, full text journals, and referral databases such as those corresponding to secondary publications. In particular CD-ROM has many advantages for the production of reference works, which do not require continuous updating. It has some disadvantages as a medium for referral databases and learned journals in that the publication pattern is serially dynamic and there will be problems in updating.

CD-ROM can be used for full text journal publishing, which could potentially greatly improve document access.

Construction of Personal Databases

An increasing number of library users now have access to a terminal or personal computer. These can be used to store references in a personal reference system. This involves the design and construction of a small database system. An advanced user

education course could well include the design and use of a computerized personal reference system. The course could, for example, start by briefly describing what is meant by a database, and data management systems. This could be followed by guidelines for the structure of a bibliographic database and examples of software for personal reference systems. Students would preferably be given the practical opportunity to design and use their own personal reference file.

3.6.5 Use of Electronic Mail

A relatively new form of communication is electronic mail. It provides a semi formal method of direct communication which can be extremely useful in that it is quick and relative cheap. There are a variety of E-mail services available:

- Public Access System. A number of these are provided by the United Kingdom – Telecom Gold, Sweden – Tele box.
- Services available for the use of specific user groups, such as academic and research workers. Examples are ALANET a service for libraries, based on Dial COM software, provided by the American Library Association, and Avocet used as a link between people working in vocational education. In the United Kingdom there is the COPOST Network started by the Council of Polytechnic Libraries, but now extended to university and national libraries.
- Many firms provide private E-mail systems to link their employees based on one or more sites.

One particularly interesting aspect of electronic mail is that it can be used to provide electronic conferencing facilities between users interested in a specific field or topic. This allows the users to exchange news and views and to seek advice from others with similar interests. Examples of such conferencing systems are COM developed by the Stockholm University computing centre QZ and the Britain CIX (Comp link Information Exchange) system.

The topic of electronic mail provides and interesting example of changes in the pattern of communication between workers and practitioners, and such merits inclusion in a general introduction at a practical level in advanced courses, where the following factors can be considered:

- To select a suitable e-mail service for the needs
- To communicate with the needs

- Type of materials wish to send/receive-mail, diagrams, etc.
- Systems need
- Hardware availability
- System user friendly
- Gateways to other systems
- Cost benefit (Hardware, software, E-mail service fee, communications charges, training costs, documentation).

3.7 Factors for the change of Information needs in College Library

There are several factors that influence the nature of human relations that operate in a library that have a direct or indirect impact in rendering effective library services especially in the college environment. Theses factors could be philosophical, psychological, social cultural, economic, intellectual or organizational.

Philosophical Factors

College libraries are no more mere storehouses of books; the modern concept of library is that of a service institution. The operating philosophy of modern librarianship begins with user. Technological changes have brought about a change in the resources of the library as well as the techniques of information storage and retrieval practiced in the libraries. However, even today, the basic philosophy of librarianship to serve the users remains the same.

The First Law of Library Science reveals much of the philosophy of librarianship. In Ranganathan's first law of Library Science and user interfaces, Ranganathan's philosophy was to look upon the reader as God visiting the library, which means libraries should be user need based. Whatever may be the environment, the basic aim of the libraries should be to serve the users. In other words there should be total humanization of information services in the libraries. Library in accordance with five laws was implies that each and every one, irrespective of his/her position or status in society, rich or poor, scholar or illiterate, urban or rural dweller, ill or healthy, must be provided with information he/she needs. These implications do not change with the application of information and Communications Technologies (ICTs) to information systems and services. In fact, the implications deserve serious considerations in an Information Technology (IT) environment so as to ensure that users are able to derive

optimum benefits from IT and cope with the limitations and the social, cultural and management aspects of IT

The aim, therefore, even for the new library professionals of this age of information technology, is to co-ordinate their efforts to offer a total and full service to their users. Their goal is to make an effort towards personalized and prompt attention to the retrieval and delivery of information into the hands of the users even in the present information technology environment. It is the duty of all the librarians to respect the intellectual freedom of the users. They must help the users in exercising their right to have access to the library's collection and thus help them in their search for the truth.

For developing healthy human relations with their users, librarians have to remember the philosophy of librarianship. The philosophy of librarianship advocates access to all information in an unbiased fashion. At the same time librarians also have to involve themselves with problems and successes of their users.

- **Psychological Factors**

The way an individual views the nature of another individual relates to the psychological factors in interaction. The forming of opinions or impressions about others is one of the major topics of social psychology, and is called interpersonal perception. The individual in the library could be the librarian, library staff or the users. The interpersonal dealings among the library staff or between the staff and the users have a strong psychological dimension. Interpersonal communication involves a numberless of inputs. These include the self one brings, expectations of various kinds, the self fulfilling prophecy, what the speaker said, what the speaker thinks he said, what the listener thinks the speaker said non verbal aspects, and overall circumstances.

A whole range of human emotions and physical condition like sadness, happiness, anger, anxiety, magnanimity, greed, open-mindedness, close-mindedness and like can have and effect on the outcome and that might result from communication between individuals. The way a tire person would react to another person's greeting would be different from the one he would, when he is fresh. This may invoke unfriendly reaction in the other person that might not have been the intention of the first.

Therefore, the point is the behavior of individuals may not always be consistent; the state of mind of an individual characterizes his/her behavior in interpersonal transactions. Non-verbal communication has a very important place in interpersonal communication because it reveals the psychology of the person that she may find hard to conceal. Non verbal message may sometimes contradict the verbal message. It is far more important to be aware of and tie into what is being said none verbally than what is being repeated verbally.

However, the users would approach less a reference librarian who appears to be too busy with papers cluttered around the desk than a reference librarian who appears less busy and relaxed. A clean and neat physical surrounding is congenial for reference enquiry. Studies regarding the body language of reference librarians have shown that: User's prefer librarian's approachable mode arms relaxed, frequent eye contact, greeting with simile, hands unoccupied, and appropriate hand gesture contrarily preoccupation's mode arms across chest, frowning hands busy with work conveys an unfriendly message to the library users. Such non spoken communication has an impact on user's satisfaction using library services. By observing the users non verbal communications like body movements and gesticulations the reference librarian can determine whether or not he could identify the actual need of the user. At the same time a reference librarian has to be careful to see that they should not make the user fell miserable. Therefore, understanding the human nature is very important for successful communication. To understand human nature one should have an insight into other people. To achieve insight one requires a good degree of sophistication, a generous spirit, a balanced view an open heart, and the discipline of an educated mind. Theodore Roosevelt, the American President, who as by nature very bossy, knew that the most important single ingredient in the formula of success knows how to get with people.

- **Socio-cultural Factors**

The focus on human relations is one of the important features of life in today's world. The task of getting on with each other has become very difficult in modern life. Racial tensions, cultural tensions, ethnic tensions, and religious tensions are mounting day by day. These problems of racial and cultural relations are not distant from day living and such conflicts are a part of daily life. It can cross national boundaries although it is

often within it. People being culture bound look with suspicion at people belonging to other cultures, especially if they do not speak the same language. Therefore, it is very important to establish a two way communication between people so that there is no misunderstanding resulting in mistrust. It means, in a human organization like a library, where the librarian and library staff constantly interacts with the user, they require constant adjustments to each other's attitudes, appearances, speech, etc, which may be different because of their cultural backgrounds. Lack of such adjustments may sometimes result in barriers that get in the way of interpersonal communications in the college libraries. Barriers such as personal dislikes, attitudes, appearances and speech can effect communication. Therefore, social interaction skills are needed by the librarians to communicate effectively with the user community. The librarian and his staff should have the ability to give convincing responses to their users. They should know what is the appropriate thing to say in a particular situation. They should be polite, socially apt, friendly and welcoming.

- **Economic Factors**

Sometimes good human relations in college libraries may not be possible because of inelastic budgets and rigid finances .To provide better services and better facilities to the users , the libraries need easy finances. College libraries can establish excellent relations with users if they do the literature search and start a project for the students and teachers.

One may argue that automation of libraries and introduction of information technology can help tremendously in providing immediate access to information.

Adequacy or lack of physical facilities in the library is directly related to user satisfaction or dissatisfaction. Unfortunately, physical facilities in the library which are so important to a user are the most neglected library subsystems especially in view of accessibility and ease of use.

- **Intellectual factors**

College librarians not only required professional skills regarding information organization and dissemination but also sound intellectual capabilities.

- **Organizational factors**

Organizations are made up of people and their interpersonal relationships. For good human relations between the college library staff and users the nature of relations

between the staff themselves and their relationship with the organization is important. Satisfies library staff with a sense of achievement will interact better with their users. Information seeking behavior of the individuals is an important item in getting information relevant to their needs. Such a big area such as Science and Technology depends on the intellectual and educational factors the user might have undergone. The profession of the users also has the major say in their information seeking a teacher or an academician would usually express his need in an expressible form whereas a student would express the same in a very cloudy fashion.

Therefore, a need of discussion and presentation of alternatives are to reduce the requirements for a very kind of relevant answer. The college librarian is supposed to be acting like a reference librarian. Reference librarian for the interviewer is the main source for drawing out the correct information to its precise expression. In order to reduce the time of search, the library and the information profession have developed several techniques to identity the pattern of information seeking and to provide a back up documentation service.

3.7.1 User training for rendering their information needs.

- **Organization of the library**

  Training of users would have to be indirect and many times, it should be self learning type. For example, an organization chart would tell about the lay out of the library.

  - The directions in the chart would show the pathway, bay guides, shelf guides and labels would tell the reader to move towards his topic.
  - The classified arrangement of documents on the shelf would broaden or narrow down the subjects spread in the minds of the reader. It would also tell a reader what is the lateral hierarchy of the subjects he is interred. Thus, the very organization of a library provides an approach to the user.

- **Training in searching reference sources**

  The search for an information source by browsing in a library is set in an open access system. But search for a bit of information from information source requires a user to know how to select the right source for right information. The knowledge of the contents of the information source in general and the purport of the contents of the document is to be understood. The users are to be told about

the varieties of books one has to study. The search procedure in chemical Abstracts (printed) using eleven different index has to be made aware. The training programme about the information sources utilization has to be designed for specific sources or a group of sources. The basic contents of such a course would be as follows:

- ☼ Type of information sources vis-à-vis their contents nature and depth of information;
- ☼ The layout of text and indexes in each of the difference varieties of information sources and he access point from users' angles;
- ☼ Method of synthesizing the information gathered from several sources;
- ☼ Appreciating the means of the sources contexts of information and the application context of the same;
- ☼ Knowledge of the relations between the primary, secondary and tertiary information sources;
- ☼ Knowledge of the agencies producing such information;
- ☼ Knowledge of the intricate problems in the information industry of a subject nationally and internationally.

This is to tell the users that the information sources although emerge from isolated efforts they get linked into a network in libraries, information centers and other institution. To gain the latest view, it is helpful for each organization to develop a user education kits, based on the information derived from the user studies in each organization.

Training Relation to Information Systems

As the information systems grow in complexity, the number of items stored, the number of access points the users are given as choice, and the procedural strategies form productive retrieval of information from an information store have to be told to users. The course contents of a programme may vary from system to system. However, the basic patterns of items to be included are as follows:

- Information systems: objectives, structure, functions.
- Elements of information input into the system.
- Methods of description of information context and the sources.
- Amount of condensation and ways of condensing information.

- Primary information organization, description and referencing of knowledge.
- Retrieval strategies for the information systems.
- Search strategy guides; search structure; common commands; specific commands; rules of output gathering etc.

Informal education can be covered in part under the public relations and the staff behaviour pattern of the library. Oral communication is one of the best methods of user education. If the library staff has good relations with the users, they can informally acquaint the users with the resources and the information available in the library and the techniques for using them on a casual meeting or at the reference desk. If the user is enquiring about a source of information, then the librarian can inform him about other relevant sources also. Informal education does not require a fixed number of users, a fixed time or place and a laid down syllabus with the teacher.

3.7.2 The challenge of information services to the users

It is evident from the preceding observation that information sources have become more complex and costly. The traditional services, such as reference service, current awareness service and selective dissemination of information need be supplemented by selective elimination of information (SEI) and information evaluation and consolidation service to separate quality information from the junk which is being made available via the internet many times. In this context, the basic challenge is to convince and convert traditional users into the users of the internet based resources and service. Since the new environment is pregnant with many IT related developments, information literacy can contribute in a significant manner to develop IT related competencies among the end users as it includes basic computer, and network literacy. The aim of information literacy is to make information users conversant with and capable of location, retrieving, and making efficient and effective use of required information.

♈ **Users' Approach to Information**

User approach models of information should be so designed that they should avoid communication barrier such as some psychological complexity, linguistic barriers and social barriers.

Information users are today base with several varieties of problems in their search for information. Some of these problems can be stated as follows:

- Increasing haziness or uncertainty of problems in the expression of users information needs.
- There is a vast quantity of information gathered as well as pouring in, to the systems which have their own ways of presentation;
- The mechanics of matching information needs to information sources have been increasingly made efficient; such mechanisms are becoming sophisticated and complex;
- There is therefore a need for training users of information with respect to the way in which information needs are expressed, new methods of searching and manipulating with the mechanism of information retrieval; and
- The modern concepts of user friendliness, user assistance and user education have developed several devices and courses to inculcate in the regular information seekers a methodology for productive approach for information gathering and self documentation.
- Based on the own experience, this paper discusses within which an academic cum research institution can design user training programmes in the field of science and technology.

♈ **Factors affecting User's approach identification:**

The development of user information identification programs depends on the following factors:

- The amount of collection of documents and/or their surrogates in a library or information centre;
- The amount of information technology used in storing, processing and retrieval of information;
- The distance of nearness (proximity) between the actual information needs of users and the relevance of information contained in the documents to the needs of the user.
- The capability of the librarian and information scientist or information specialist in their perception of user's interest, knowledge of contents of

documents available in the library and their ability in matching these two at the critical time.

3.7.3 A modern method to suit the present pressing information needs.

The efforts on the part of information scientists to supply the information to potential user's i.e the various services offered to the users which are primarily user's need – oriented are described in brief with the emphasis on Selective Dissemination (SDI) service. Knowledge is so abundant that unless its flow is channelised, the searcher as well as the disseminator of the information both gets lost in it. The new trends in library services like scanning the literature and providing indexing abstracting services, subject bibliographies and alerting services like Current Awareness Services (CAS) are the useful services catered by the Information scientists to satisfy the ever increasing need for an effective information service. All these services have a passive element try to find orientation whereas Selective Dissemination of Information (SDI) is entirely which provides information to each user on a here it is bases.

3.7.4 Selective Dissemination of Information (SDI) Service.

All the CAS services are aimed at groups of users whereas SDI is also a CAS but it is a personalized service which supplies selected information exactly tailored to meet the specific research needs of each user.

- **Components of SDI**

This personalized service provides information based on current incoming items of information such as periodical articles, technical reports, books, standards etc. The subject content of the document is matched with the subject interest of the user, if there is a match, then the document is retrieved and the user is notified about it. The basic components of any SDI service are:

- Construction of document file or a data base.
- Construction of a user profile.
- Matching strategies and techniques.
- Notification.
- Feed back or user's interaction.

The success of any new scientific venture is dependent on the retrieval and utilization of the results of the earlier ventures. These results should be properly evaluated and systematically compiled to facilitate their easy retrieval for user's benefits. Many

National, International and Private programs are now directed towards increasing the supply of reliable data .But there are a number of barriers which stand between the right data and the right users. Some such identified barriers are listed below:

- ≠ Unawareness.
- ≠ Lack of accessibility.
- ≠ Language and vocabulary confusion.
- ≠ Failure of communication channels.
- ≠ Different needs in different disciplines.
- ≠ Geographical separation.
- ≠ Lack of coordination.

It is obvious that the information scientists engaged in rendering information service have a major role to play in order to overcome all these barriers and reduce problems in data accessibility and dissemination in order to the help the working users scientists.

3.8 Information needs of the College Library Users

In a college library, the users are generally students and the teachers of the respective college. The needs of the students are varied from the teachers in every aspect of the education environment. In the pattern of the education in India, particularly in Mizoram, they adopted a curriculum based education. Syllabus is the main key for the foundation of education in colleges. Instructions for the procedure of colleges in teaching and learning were to follow the syllabus system organized by the concern department. Collections of the library are developed accordingly to the course syllabus offered by the colleges. However, the need of the students more focuses on the syllabus based document. Information needs are classified only on the categories of the users, groups of the users, class of the users and types of the users. The standard of the users are also important for rendering information needs of the users. Information needs of the students and teachers on college library in Mizoram are shown under

3.8.1 Faculty information needs in the college of Mizoram

The table mentioned below are the College library users of 120 selected users especially for faculties of the different colleges covered under study were send a questionnaire and received 103(85.83%) from different colleges in Mizoram to ask

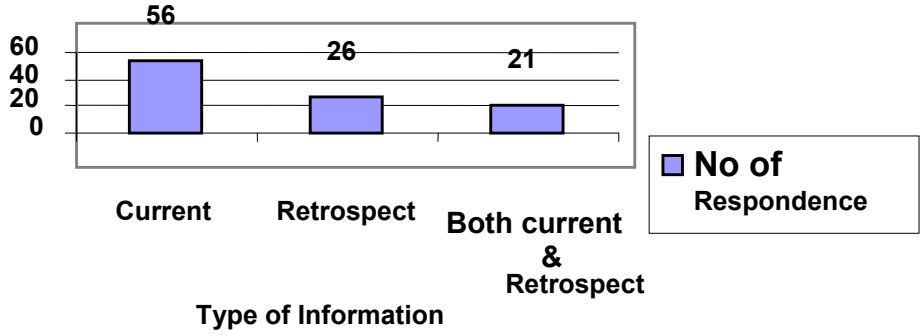
which types of information they search into the library are shown under Table 16 supplemented with Graph 9 for clear understanding.

Table 16: Types of Information needs of college faculties in Mizoram

Sl.No	Types of Information	No of Respondence	Cumulative
1	Current	56	54.36%
2	Retrospect	26	25.24%
3	Both current & Retrospect	21	20.38%
	Total	**103**	**99.98 or 100**

The table shows that out of 103 faculties, most of them need an information regarding to a currently information. 26 faculties needs retrospect content of information, and 21 faculties are associated with both current and retrospect information. Hence, faculties of Mizoram colleges are generally needs current information for updating their academic knowledge and skills.

Graph 9: Faculty Information Needs of college in Mizoram



Faculty document need in the library

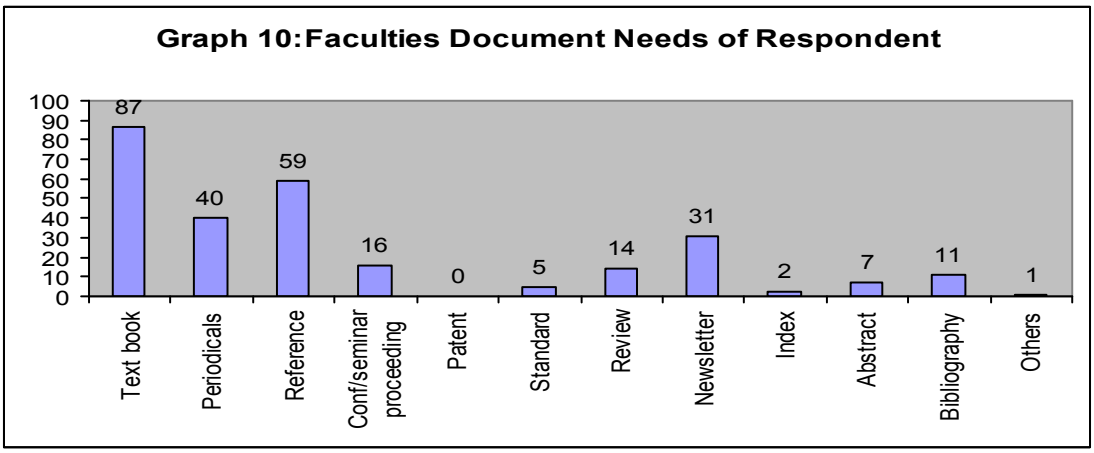
The scholar collected a data from 103 faculties of different colleges to know which types of document are search into the library, it is very helpful for knowing the exact needs of the users. The document needs of faculties are mention under Table 17 with Graph 10 clearly shows that the needs of the faculty in the library.

Table 17: Types of Document Searching for College Faculties in Mizoram

Sl.No	Types of Document	No of Respondent
1	Text book	87

2	Periodicals	40
3	Reference	59
4	Conf/seminar proceeding	16
5	Patent	0
6	Standard	5
7	Review	14
8	Newsletter	31
9	Index	2
10	Abstract	7
11	Bibliography	11
12	Others	1

The table illustrate that most of the faculties are seek the document in the library in a form of documentary source. It is clearly shows that most of the faculties need textbook based documents, and it was followed by reference material. Periodicals and newsletter requirements are the next demand of the faculties, while no faculties are going to consult the patent types of documents.



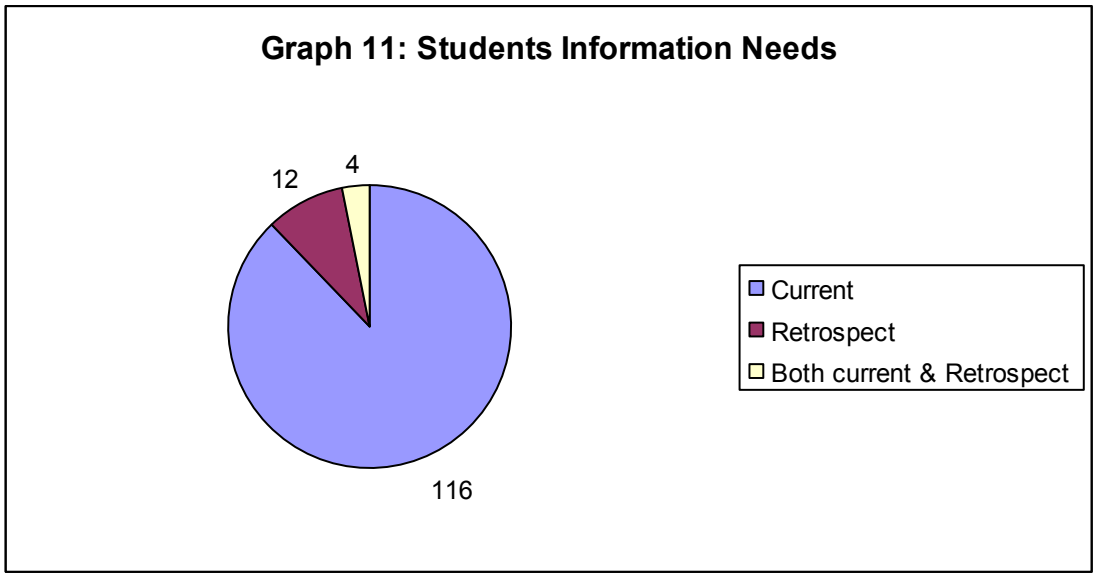
3.8.2 Student Information Needs of college library in Mizoram

The scholars collect a data on the basis of random sampling technique for inquiring the needs of the student, and send a questionnaire to 240 selected students from different colleges. Out of which 240 selected students of 132(55%) are responses. The following Table 18 along with Graph 11 frustrated that the student information needs of college library in Mizoram.

Table 18: Types of Information needs of college student in Mizoram

Sl.No	Types of Information	No of Respondence	Cumulative
1	Current	116	87.87%
2	Retrospect	12	9.09%
3	Both current & Retrospect	4	3.03%
	Total	**132**	**99.99 or 100**

From the view of data, students of Mizoram colleges are makes highly requirement of current approach of information. The demands of current awareness are very high for acquiring a good library services.



- **Students document need in the library**

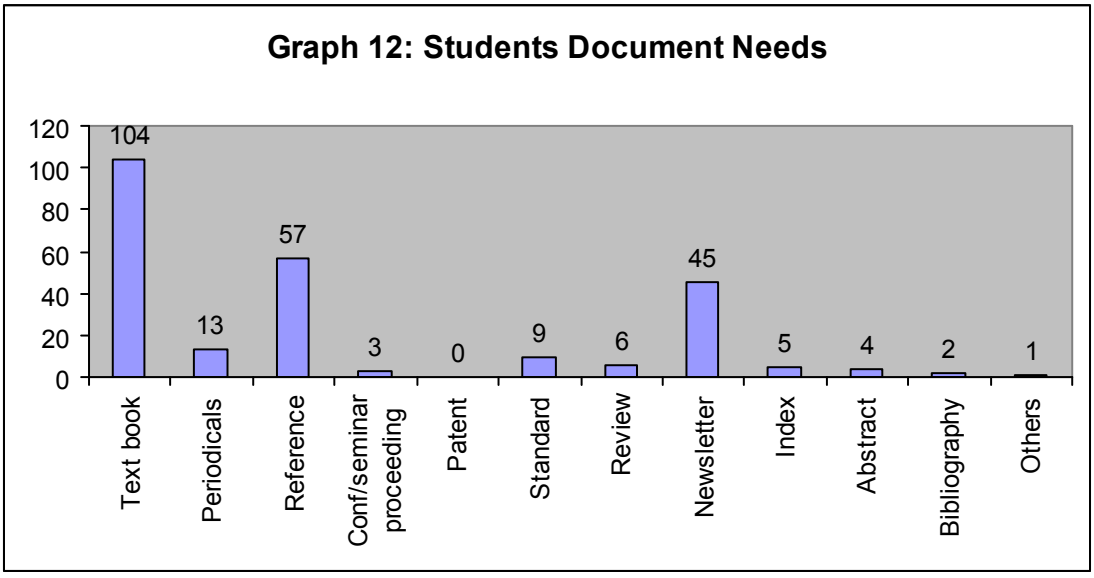
The sample collected from the 132 selected students of different colleges in the state, the scholars examine document needs of the students as per their types searched into the library. Table 19 supplemented with Graph 12 has clearly depicted document needs of the student from the different college.

Table 19: Types of document searching for college students in Mizoram

Sl.No	Types of Document	No of Respondent
1	Text book	104
2	Periodicals	13
3	Reference	57
4	Conf/seminar proceeding	3

5	Patent	0
6	Standard	9
7	Review	6
8	Newsletter	45
9	Index	5
10	Abstract	4
11	Bibliography	2
12	Others	1

Most of the students were searching a text book based documents in the library for updating their academic perspective. It was followed by reference books, and the demands of newsletter documents are so lofty in the present scenario. The college of Mizoram necessary to be maintained more plans, fund, budget for focusing the needs of the students and make it available to the library. The foremost important for selection of books must be a need based collection.



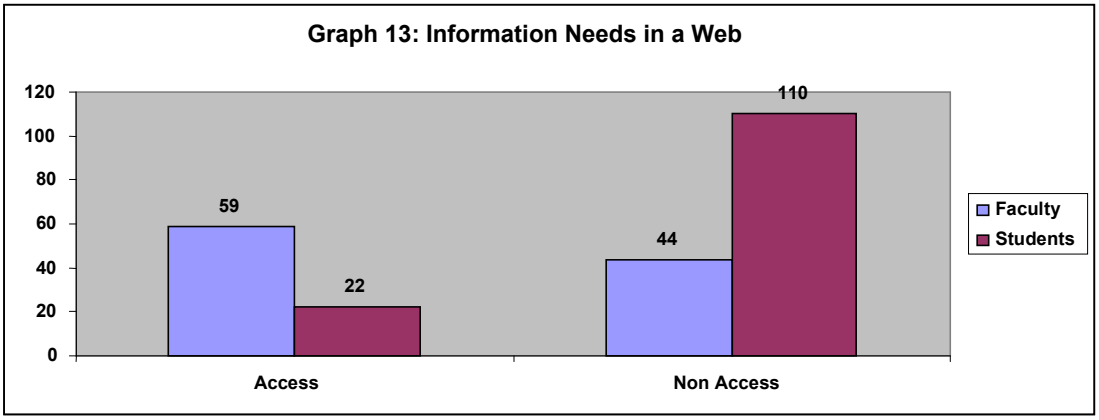
3.8.3 Information needs in a Web

In the colleges in Mizoram, faculties and students are the obvious members of the library; members are allowed to consult and use materials of various forms provide by the library. They can avail the opportunity and utility of the library services and to do so, which may approach an information need in a web through internet to the library and other information centers at any places for different purposes. The actual needs in

a Web through Internet are studies under the selected 132 students and 103 teachers which can be show in Table 20 along with Graph-13 as clear understanding.

Table-20: Information needs in a Web

Categories	Access	Non Access	Total
Faculty	59	44	103
Students	22	110	132



3.9 Conclusion

Users' education promotion, training, programme, is indispensable to promote and use of resources of the library resulting in a national level policy and programme in the instruction of library and information use, and the establishment of an agency at the national level to help and guide the libraries throughout India to organize and conduct user education programmes.

Studies of user needs, information seeking behaviour, patterns of use and non-use of information are very important for the design and development of effective user training programmes. Apart from the general approaches of users to information identified by several studies, specific surveys need be carried out in a particular environment to serve as the basis for developing suitable training programmes.

The need for information in the college libraries is a realistic situation in which, there exists an indivisible interconnection with information and need. Information originates and is generated because there be present a need. The content of

information is of primary concern. The Information objectively necessary for realising a function is the objective information. The need for information with specific content is an objective demand of the user. Although, the needs of college library are consequently on the basis of users demand, users of the colleges are generally students and teachers. Academic perspective are the main insist for the college environment, its required to collect information relating to more academic and knowledge persuasion. If an individual is in need of specific information for realising specific tasks, then the need for an information is an objective information need i.e. qualitatively, and quantitatively determined information needed by an individual for solving an objectively assigned task. In a college library, it is required to get the exact needs of the users individually by using user studies and education. Since any individual already has certain qualitatively single-minded information that may be used for the solution of the tasks, then information need has already been fulfilled to a positive degree. On the other hand, the individual may bring forth new tasks which are to be fulfilled or the fulfilment of which is to be aimed at, the information acquired so far will never fully be adequate. Resulting from the difference between the objective need and that part are always remains needs of it that has already been satisfied. Thus satisfying the information need of the college always means satisfying that need of the users which has not yet been satisfied.

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Chapter – 4

Application of ICT in College Libraries

4.1 Introduction:

The advancement of Science and Technology has made a tremendous improvement and changed almost in all walks of life. Especially, the magnetic word Information Technology has chanted in all corners of the global arena. All out efforts have been made now and then by the scholars, scientists, informational professionals, library professionals etc. to find out the positive impact of Information Communication and Technology (ICT) in different dimensions of library services including digital library, electronic library, virtual library etc. The present discussion focuses about the essential features such as infrastructure, staff support and budgetary aspects are discussed with respect to Indian context generally and Mizoram in particular. ICT has recited in all corners of the global arena and has been incorporated in organizational, managerial, developmental and marketing sectors. The services rendered with the help of ICT are faster and more effective. Moreover, it creates faith and confidence about the products and services of an organization among its customers.

These days the information seems to be everywhere. Web addresses appear on televisions advertisements and billboards. Its incredible growth, spearheaded by the networking technologies, has influenced every walk of life making it imperative for everyone to understand the utility of this global strategic tool. The advancement of ICT has caused a great revolution in the society, allowing people from all over the world to communicate their ideas and feelings in a common language. Today, ICT has become indispensable and has been measured as an essential component for the development of the society. The society growth and development is called social dynamics. The society has developed from Agrarian Society to Industrial Society and then to Post-Industrial Society. The agrarian society is based on agricultural engineering. Industrial society is depended on the industrial products and services or industrial workforce. People became depended on industry. And in Post-industrial society people became depended on the use of Computer. In late 1970's library automation was introduced. This society is known as information society and it gives value and importance to information. Information became the social wealth, power, economy, etc. ICT is the major driving force behind in the information/knowledge society.

The two revolutions - in computers and communications transformed the computers synonymous to Information Technology. The rapid developments in Information Technology brought revolutionary changes in information processing, storage, dissemination and distribution and became a key ingredient in bringing-up great changes in over all aspects of society. Further the advent of low cost computers and easy-to-use word processing software, computer based image processing techniques paved way for 'digitized information' comprising textual to multimedia – data consisting of text, images along with digitized voice and video.

The ease of communication along with the Internet has brought a paradigm shift in information usage from the need to know basis – information available when and where you need it. Digital publishing technologies and global networking have given rise to the development of a wide variety of digital libraries. It is observed that, ten years ago there was the convergence of the human-readable web with increased connectivity. Now, the situation has altered as communication applications have become more pervasive due to broadband connectivity. The world is flattered because of computing and communication technologies.

Dempsey, Lorcan. (2006). Ariadne Issue 46 (http://www.ariadne.ac.uk) has grouped ICT in to five components such as,

i) Infrastructure
ii) Human capacity
iii) Policy environment
iv) Enterprise and
v) Content and applications.

4. 2 ICT and Development

To understand the role of ICT in development, the constituents of development need to be cleared. Rahul De stated that development has to be understood in a holistic manner, where the basic freedoms and capabilities of population are built upon and grown, and this growth has to include all aspects of people and communities, not just capabilities like access to information. Access to markets, adequate health care and education, social support, ability to participate in political agenda setting and access to information about policies and procedures of the government are essential for overall development. Development has to address the needs of the population in a manner

that complements these basic capabilities and builds all of them. The contribution of ICT for development can be analyzed at two different but interrelated levels i.e, output and services. However, to make it more analytical, application of ICT can be discussed in the following ways. .

- In terms of growth, ICT sector refers to output, employment, and export earning etc.,
- The extent of ICT diffusion and use refers to ICT induced development which is developed through enhanced productivity, competitiveness, growth and human welfare. ICT also can be recognized as growth of economy in the society.
- . ICT goods sectors create make and move physical hardware devices that process and display information (computers, consumer electronics, telephones and other appliances).

It also extend its dimensions in the following sectors such as,

- Information content sectors, which create, make and move information.
- Communication network sectors that, provide the enabling infrastructures to support transmission of information between ICT devices.
- Information sector that consists of economic use of ICT devices and information where contents are either for consumption by household users or for production by enterprises in all sectors of the economy.

4.2.1 Potentiality of ICT

The potentiality of ICT is manifested in several ways in bring about development both in economic and social sectors. It also helps in citizen empowerment through delivery of efficient government services. Some examples of the ICT enabled services include:

- Government interfaces for filing tax, billings, statutory record collection, etc. to empower citizens with information leading to transparency.
- . Efficient services for health care, education and disaster mitigation.
- . Access to information on rights and responsibilities for citizen empowerment.
- . Access to vast educational content for improving literacy.
- . Help entrepreneurs in gainful employment and improve their economic condition.

- Efficient disbursement of loans, pensions and maintenance of authentic person and property records.
- Help farmers with value based information to improve their productivity and provide timely information to traders, artisans, fisherman etc.
- Entertainment through broadcasting, gaming and multimedia services at doorsteps in remote areas.
- News delivery, which helps, integrates people in diverse groups and at different places.
- Serve the physically disabled and disadvantaged to enable them take advantages of what technologies have to offer.

The relevant and wide ranges of technologies available to address these services include:

Internet, e-mail, browsing, multimedia, wireless loops, cable TV, Direct-to-Home (DTH) TV entertainment and internet access. Language computing technologies, access devices, network security, open source and shareware software, digital libraries, speech recognition, text-to-speech, smart cards, optical fibers, satellite connectivity, powerful and affordable computing devices and platforms, kiosks, server farms, etc. These technologies have enabled effective e-commerce, e-governance, e learning, and e health and e-entertainment applications the world over including India.

4.2.2 ICT in Indian Scenario

India is the second most populated country with more than one billion population. About 26% people in India live below the poverty line and have no proper electricity, drinking water, and sanitation facilities. India's Gross National Income compared to USA (11012.6$) and Japan (4360.8$) which ranks 1st and 2nd respectively, is 570.8$ which ranks in 12th position in world. India's per capita income is 540$ and ranks 159th position in the globe whereas USA and Japan have 37870$ and 34180$ respectively. According to the India 2006: a reference annual, it has more than 593643 villages and above 72% of the Indian population live in alienated rural areas who earn their livelihood from agriculture. Most of the villages are lacking of proper ICT infrastructure, though India spends 28% of its national capital for ICT. Only 5.63% of the population has access to telephone and less than 1% has a PC. The rural tele-density is also very low compared to the urban areas. A wide rural urban disparity,

which is further aggravated on the regional basis, has created an acute divide in variety of social and economic activities including education. Though education is being provided through millions of schools, 17000 degree as well as post graduate colleges and 342 universities, the present literacy rate is about 65% leaving 35% illiterates with female sharing 53.67% literacy.

Latest world development indicators show that in information society indicators, i.e., computer, Internet, radio, television, newspapers etc. India is far behind compared to the developed nation like, USA and Japan and even some Asian countries. India's position along with that of USA and Japan in information society indicator is depicted in Table 21

Table 21: Comparative study of Information sector

Sl.No.	Information Society Indicator (per 1000)	USA	Japan	India
1	Daily News paper	196	566	60
2	Television	97	99	37
3	Personal Computer	749	542	12
4	Internet Users	630	587	32
5	Schools connected to Internet	99	99	00
6	Broadband Subscribers	129	145	80
7	Internet Bandwidth (bits per capita)	3305	1038	11
8	Application Secure Internet (per million)	783	257	1
9	Price Basket Internet ($ per month)	14.9	21.1	8.7
10	ICT expenditure (GDP %) 9 7.6 3.8	9	7.6	3.8
11	ICT expenditure (per capita $)	3595	2732	24

However, there are some positive aspects which significantly indicate the changing in Indian scenario as, India has made considerable progress in the ICT and the IT infrastructure particularly after the penetration of IT in India. The Tele-density increased from 1.44 % to more than 6%. The cellular mobile sector has also grown exponentially from 1.2 million to more than 19 million subscribers. The rural Tele-density increased from 0.44% to 1.5%. The telecom sector in Indian economy has the largest network after China, USA, Japan and Germany. In rural areas the universal

access to rural telephony is provided through VPT (Village Public Telephone). 87% villages are connected with VPTs. WLL and mobile telephones through BSNL which is a service provider. According to the annual report of DOT, the Internet connection shall increase from 5.45 million (December 2004) to 40 million as of 2010.

India has a large educated English speaking workforce and produces about 350, 000 computer professionals per year. Its IT sector has experienced rapid growth. As per NASSCOM study software exports recorded US$ 17.2 billion in 2004-05. Employment in the sector grew by 30% per year between 1999/2000 to 2003/04. Although, India has its own problems of population, poverty, literacy and education, and the rural-urban divide yet, the IT sector is catching up pace.

4.3 ICT enabled programmes

For the last few years the State Governments, NGOs and some pioneering companies have tried to crack the technology barrier by developing pilot projects to showcase the marvels of IT in a rural setting. Kiosk based approaches delivering e-governance service have received considerable attention and funding. Bhoomi is a kiosk based project of Karnataka and holds millions of records of land ownership. It is widely successful as there are almost 8 lakh people in various talukas of Karnataka that use the system every month. The system called e-seva in the Ranga Reddy district of Andhra Pradesh, including the twin cities of Hyderabad and Secunderabad, is also very successful with thousands of citizens using the system for paying bills, getting motor permits and licenses and for various other government services. There are other successful projects such as CARD (Computer Aided Administration of Registration Department) in Andhra Pradesh; Saurkaryan operational in Port City of Vishakapatnam to facilitate payment of property tax online, view details of schemes and projects of the government and local bodies etc. The information kiosk set up by entrepreneurs with help from Government of Kerela named Akshay Kendras that was first implemented in Mallapuram district with 600 kiosks help citizens make payment of electricity bills, get birth certificates and contact police stations by e-mail. Another project launched by the state government of Kerela is the Friends project which serves more than 13 million people in 12 districts of Kerela.

Another important rural information network project is Gyandoot in Dhar district of Madhya Pradesh, where every village has an information kiosk that provides information on crop, forests, water resources, etc. There are many more e-governance and related projects set up in various states like the UNDP supported Jana Mitra Scheme in Rajasthan, Choice in Chattisgarh, Lokmitra in Himachal Pradesh, Rajnidhi in Rajasthan, Lokvani in U.P., Setu in Maharashtra, Jai Kisan in Uttranchal. There is a community focused projects like CIC project that enables localized governance in North- Eastern states of India through VSAT connectivity to 478 blocks for providing internet access and information relevant to local needs. The government of West Bengal has taken up a project of setting up about 1500 community library and information centers (CLIC) in the villages for providing normal library services relating to career and vocational opportunities. The Ministry of Information Technology has set a target to establish one lakh common services centers across villages where e-governance services will be available by August 2007.

Apart from these there are projects such as ITC's 6000 e- Chaupals covering 35000 villages empowering farmers with value based information on their produce and its marketing. Similar services are offered by Swaminathan Research Foundation, where weather conditions in the sea are obtained from the satellites and are broadcasted to the fisherman community to improve their safety. Other ICT initiatives include the digital library and digitization initiatives. Language computing technologies are being developed to enable large non-English speaking people to effectively use computers in Indian languages. Telemedicine experiments are being carried to help people in North- East region and other remote areas with Tele-education, Tele-consultation and Tele-diagnosis. Mobile digital libraries are being promoted to allow school children in rural areas access internet via VSAT connectivity. Many more projects are in the pipeline.

4.3.1 E-Governance Projects: The Reality

Although, in India the ICT has contributed much to the economic prosperity of urban India yet, it has yet not reaped full benefits in rural areas. Rahul De (2006) states that the overall story of e-governance projects is somewhat dismal because about 85% of these projects in developing countries like India fail. The reason being that whenever the Indian government is involved with delivering projects there are delays, changes

in functionaries, shortages in money, lack of motivation, lack of coordination between departments, projects are tied to election cycles and so on. Hence, there are challenges ahead including: bringing in a positive attitude towards moving to e-governance, educating the bureaucrats about the need for change and imparting training to use technology effectively. Creating a viable coordination between the state and the centre regardless of political reservations by eliminating the state monopoly is also essential. Massive campaign involving the rural people to bring awareness about the advantages of e-governance to the society is required.

4. 4 Key Challenges and Solutions

Despite the developments in the Indian context there are still a number of challenges that need to be attended including providing necessary content for education, literacy, equitable access opportunities for all, enhancing libraries, particularly rural libraries and community centers role. It requires a bending of the powerful ICTs, which are highly flexible and moldable.

a) Improving ICT Infrastructure

Telecommunications and the IT infrastructure is the key to provide universal and affordable access to information to citizens scattered geographically. The challenge that we face in ICT for development is designing and building technologies and networks that are suited for the needs of our citizens. Despite the growth of Internet, India has to provide a robust telecommunication infrastructure with suitable, sufficient and reliable bandwidth for Internet connections alongwith necessary hardware and software. Faster network with sustainable funding for their necessary updating is the need of the hour.

b) Connectivity and Affordability

Access to the Internet as well as the telecommunications is confined mainly to the urban centers in India and the rural areas remain beyond the ambit of new technology. Hence connecting rural areas is a bigger challenge, because subscribers are geographically dispersed, sparsely populated and economically weak. About 4 lakh villages have a mearge population of 1000 or less, therefore it is difficult to provide internet facility to each village. Moreover telecom companies may not venture into remote villages because the purchasing power in the villages is not enough to recover the cost of connecting them. Therefore affordability, ease of deployment and

appropriate organizational innovations are critical to sustainable deployment of telecom systems in India. Some of the issues have been effectively addressed by a radio technology called CorDECT wireless in local loop technology, developed by the IIT, Chennai. This low cost wireless access technology aims at connecting primarily homes and small offices in rural areas and small towns. Another technology project is DakNet in Karnataka, which offers Wi-Fi based broadband linkage where wired communication is not available.

The issue of affordability arises mainly because the prices of hardware and software are high in relation to average income levels of people. Hardware innovations like the 'Simputer' (simple computer developed by IIS, Bangalore) helps to address the issues of affordability and literacy. It offers computing facilities at drastically lower costs and has many advantages, with the most important aspect being that literacy is no longer an impediment for the masses to derive benefits from it, given the simputer's voice output.

c) Equitable Access

One of the foremost things to be done is to provide universal access. It is imperative that any benefits of ICTs are shared equitably by all sections of society. One obvious implication is to make more and more e-governance services available through kiosks, which would save time and costs in terms of a reduced number of visits to the government offices and less corruption. Access to ICTs alone cannot generate the knowledge or redress the social inequalities. This requires meaningful use of ICTs for accessing the contents in local language as well. The access conforms to the following classifications:

I. ***Physical access:*** provide infrastructure and expand applications covering local needs.
II. ***Financial access:*** Suppliers enhance competition; promote investment in village and underdeveloped areas.
III. ***Cognitive access:*** continuous learning to public masses and to promote science and technology policies to promote IT at all levels.
IV. ***Content access:*** Support local content with minimal restrictions.

V. ***Embedded access:*** People should be able to access through computers, mobile phones, landlines, PDAs, touch screen or interactive voice recognition system.

d) e-Literacy

Another attribute of the kiosks that affect their diffusion is the perception that the technology is complex and therefore only the educated people can understand and use it. The very image of a computer which they can use only with the help of an external operator is too complex for them. This situation is expected to get better with the improvement and propagation of the e-literacy skills among the masses. Therefore to reap the fruits of the ICT, it is important that the citizens are provided opportunities to learn and apply a set of literacy skills. A user has to acquire the required competencies for the use of these technologies like reading skills, information handling skills, ability to interpret contents, computer literacy, information literacy and network skills, etc.

e) Local Language and Local Content Development

A related aspect is to design and deliver appropriate and localized content through the kiosks as at present the content provided is mostly standardized content. Serious efforts are needed to make the content relevant and localized to attract a larger number of users. Information network will be meaningful in a rural context only if there are local content. There is a requirement of local language accessible software that caters to the needs of the local citizens. The customization will help the government to know the citizen's need. Government has to ensure that the disadvantaged groups and communities are provided online content and services that are potentially usable e.g, e-seva which is providing information in regional languages. Developments in Open Source Software (OSS) are likely to provide an alternative. Several Indian groups are actively working at localizing OSS to Indian languages including groups like Malayalam Linux and Tamil Linux. Other language computing technology development programmes cover developing and providing software tools for text processing, spreadsheets, messaging, publishing, and text-to-speech and optical character recognition to enable large non-English speaking people effectively use computers in Indian language. Another issue is that of providing dynamic, on demand multimedia content. It is required to develop platforms where concepts can be elucidated in multiple formats such as flash animation, videos, audio

and text, combined with streamlining technology on the web. This is a powerful way of delivering educational and other content on the web.

f) Community Ownership of ICTs

A combination of community owned ICT enterprises and new wave of wireless and related technologies together may offer significant potential to extend networks and offer new services in rural areas. It can greatly reduce costs and maximize the use of value added community resources, enabling the emergence of a new business model that is both more economically sustainable and more empowering than anything else. Pooling users in the form of Tele-centers or community information centers enhances the ICT usage level, but extending the reach of the network serves the key challenge. In India, the Ministry of Information and technology have taken several initiatives for rural development through the community information centers. This is visualized from the CIC project of North-East and Sikkim which has server computer system and clients' computer systems linked to a LAN and connected to VSAT for accessing Internet. The Akshaya project is an interesting amalgam of public, private and community collaboration largely under local community control. The importance of these centers cannot be neglected as they can serve as a basic support services for providing telecommunications services (such as providing telephones, Internet access, fax, e-mail etc.) for the rural masses. It is also necessary that these centers be integrated with the rural library services. Opening up community owned and community controlled centers and strengthening the existing ones is what is required on the part of the rural administration.

g) Strengthening Public and Rural Libraries

Libraries have a long held value of people's universal access to information. These are structurally and programmatically prepared to address the digital divide issues. Public libraries are required to be made more meaningful for the common citizens. These should be equipped to provide access to relevant information with good online content, information databases specifically designed for the rural masses. Public libraries must have reliable and fast internet connectivity, local and wide area networking for serving those who cannot afford online computer access. Such libraries need to take active part in the promotion of information literacy, including ICT and internet skills. A very important reliance to rural development initiatives are

the rural libraries. But the rural libraries in India are a forgotten identity and are suffering from the financial crunches. Though IT was introduced in rural development but these libraries were totally neglected as an asset in the dissemination of information to the rural population. Even the IT policy formulated in year 2000 showed little interest in developing such libraries. The rural administration should explore the tremendous potential of the rural libraries in bridging the digital divide and hence should understand the changing scenario and find better solutions to transform these into valuable centers. However in India, Public information agencies utilizing models of ICTs like information kiosks, Tele-centers, multipurpose community centers and digital villages are being set, without the involvement of libraries, which could have made a useful contribution. Libraries should be centered to the information/knowledge society. The libraries in India should provide the infrastructure for connectivity, technical support, provide major contribution to the content, through digitization programmes, and provide national portals to digitized information resources. If the resources are carefully evaluated, selected and organized, such portals can add a great value by seamlessly integrating rapid and powerful access to huge range of resources. Libraries should have a responsibility to see that their services reflect the needs of the full spectrum of their society. This means that the content provided in digitized form should as far as possible be in the local languages and should be relevant to minorities and disadvantaged groups, including the illiterate and neo-literate. Libraries may be tested with promoting information literacy e.g. by collecting, evaluating and making available literacy materials, developing, piloting and coordinating literacy programmes.

To some extent the libraries have been changing in their role from the storehouses of information to providing access to information. Various digitization initiatives are being undertaken. The government of India with the collaboration of C-DAC (Centre for Development of Advanced Computing) aims at bringing one million books of digital library at the doorsteps of the common citizens. Several projects like the NSDL (National Science Digital Library) and Vidya Vahini projects are under way. Vidya Vahini aims to connect government and government aided secondary schools in India. INFLIBNET, NIC, NISCAIR, NASSDOC, NISSAT, DELNET, UGC, Universities, government bodies and IITs are providing information through e-journals, e-books as well as databases on Internet.

4. 5 ICTs: Broad-based Development-

The variety of technologies incorporated under the term ICT, operate differently and have unique effects based on the manner in which they are used. Nevertheless, their relationships to economic and social development all stem from several basic characteristics related to improved information production and sharing, these include:

(a) Sharing Knowledge

(b) Increasing productivity

(c) Overcoming geography

(d) Openness

The revolution in ICTs has profound implication for economic and social development. The possible inter-linkages between ICT and sectors for broad-based development are shown in Fig 3

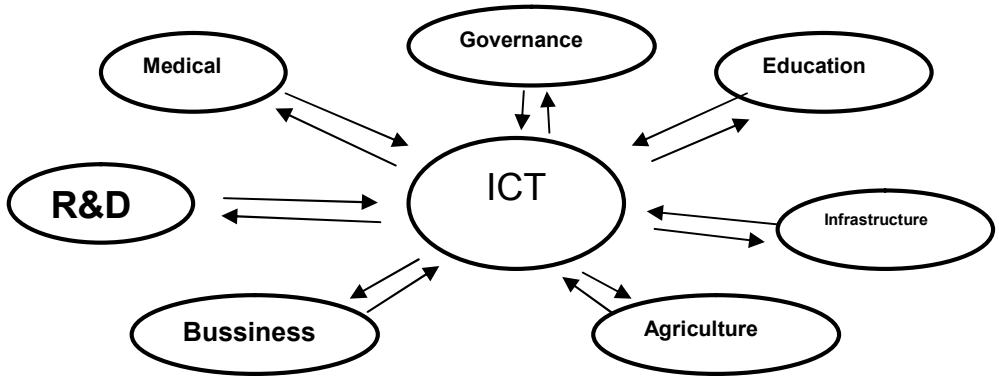

Fig 3. Inter-relationships between ICT and broad-based development.

4.5.1 Role of ICT in different stems

- **ICT in Education:**

Education is something related to curriculum and syllabus, teaching and learning, educational delivery, as well as knowledge and skills. The mode of delivery has taken place differently due to the development of ICT. Educational or instructional technology has been acquiring a high profile in the field of education over several decades: in the 60s and 70s, radio and television; in the 80s and 90s school texts, video, and the computer as an instruction aid; since mid-1990, the computer and CD-ROM dominate the scenario; and in more recent years, the internet, displacing conventional technologies.

E-learning is gaining momentum in university education throughout the world. Currently, a large number of universities world-wide support e-learning in different forms. ICT is increasingly becoming more wide spread throughout University education. World of Universities are turn into the use of ICT and its applications.

Distance education has come as a boon to the people those who have discontinued their studies because of several constraints. Entire Open University system in the country may thus be visualized as a truly open system, linked by a communication network that is without barriers and which makes the resources recorded knowledge open to all. Class shall be conducted by virtual classroom, teleconferencing though satellite communication and Mass media.

- **ICT in Research and Development:**

Research and development means the activities which helps in the promotion of research. The phrase research and development is a creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of human, culture and society, and the use of this stock of knowledge to devise new applications. R&D activities are conducted by specialized units or centers belonging to companies, universities and state agencies. Some of the R&D centers like CSIR, ICAR, ICMR, ICSSR etc. Information plays a vital role in the economic, social, cultural and political life of a nation.

- **ICT in Business and Industries:**

Information has a great importance in the field of business as the level of competition and production process and methods are rapidly increasing. It carries in the field of marketing, where companies always keep an eye on competitors and customers as to keep pace with modern trends and analyst deeply the needs, demands and desires of customers. ICT can transform the content and relations of business today. Due to the ICT revolution, the borders between computing, communications, content databank, devices, partnership and consumer electronics are not clear any more. Good services are delivered by Industry, especially large corporations and multinationals.

- **ICT in Agriculture:**

Communications are integral to knowing what, where, when and how to plant crops. In particular, global positioning-satellites are increasingly being used to map soil productivity in areas as small as two hectares. This data can be instantly fed through a

remote computer which analyst output and can make suggestions regarding which crops to plant and which fertilizer are pesticides might be needed. Similarly, satellite imagery and internet communications can be used to transmit data on emerging crop infestations, track weather patterns and monitor expected yields.

- **ICT in Government:**

The Government has also synchronized its development through ICT. Countries became developed through the use of ICT. The government has its own independent organization through National Informatics Centre (NIC). It has relation to different department of the country creating website, providing information to every person, their programme, different perspective plan and different skills.

Now, we are taking about e-government which applies IT to the process of government functioning to bring about Simple Moral Accountable Responsive and Transport (SMART) governance that works better, is transparent, costless and is capable of fulfilling the citizen's need a never before. Interlink, networking, or e-governance control corruption, policy making, quick decision making, fast communication between Government and Public.

- **ICT in Medical/Health:**

ICT can play an increasingly important role in improving health care delivery to the world's poor. According to the WHO, 40percent of medical systems costs are taken up by the process of exchanging information and these costs can be significantly reduce with the use of ICTs. The information sharing and management functions of ICTs can benefit the health care sector in several important ways like (i)Storage and transmission of data- generally referred to as "telemedicine"(use to transmit medical image, records, diagnoses to remote location to provider). (ii) Surveillance and monitoring- global information systems are a powerful force for coordinating medical health care delivery in areas where disease is out of control. (iii) Publication and dissemination of medical findings- email and medical list serves can deliver recent medical findings to a wide area. With the advance of ICT in medical line, medical transcription is a time and cost saving process for transcribing medical records dictated by doctor and, record are sent through data com lines and send them back electronically for ready to use.

- **ICT in Mass Media:**

With the advent of ICT we can receive information through different channels like video, audio, radio, television, internet, CD, DVD, etc. In early days, new is a text base only. Now, we can get new through text based as well as video based and we can even get it through mobile services as well. This is all due to ICT development which has an impact on mass media and has direct impact on the people. The concept of mass media is complicated in some internet, media as now individuals have a means of potential exposure on a scale comparable to what was previously restricted to select group of mass media producer. Mobile Phone has become one of the important mass media which were introduced in Japan in 1997 but became a mass media only in 1998 when the first downloadable ringing tones were introduced in Finland. Soon most forms, models, and new features and content were introduced. Today the total value of media consumed on mobiles.

- **ICT in Daily life:**

Impact of ICT can also be seen to the common man. IT has developed man into the most enlightened and well informed citizens. ICT has provided available instruments and information, communication and social action channels that can be used to help transmit basic knowledge and inform and educate the population regarding social issues. It aspires to reduce the digital divide and attain a world connected to the network. It has committed a person to lifelong learning and to the building of a new social paradigm with economic justice, equality and well being for all. The Internet has caused a great revolution in the society, allowing people from all over the world to communicate their ideas and feelings. ICT has a great impact on personal development which leads to societal development and form societal development to national and then to global development.

In the modern society, the types of information and the media which present them have become manifold and multifarious, offering men and women a vast selection. Regardless of which group in a human society is discussed, each one bases its action upon current information and rejects and earlier data. ICT have become the basic building blocks of modern society. They infuse the business environment; support the success of Modern Corporations, provide governments with an efficient infrastructure and add value to the processes of learning, and in the organization and management of

learning institution. The very facts that have phenomenally improved productivity by intelligent use of the technology, also risk driving the poor to the periphery, thus creating barriers within and between societies, and could lead to social unrest and tension. ICT disparities usually exacerbate existing disparities based on location such as urban-rural, gender, ethnicity, physical disability, age and especially income level and between rich and poor countries. The revolution in ICTs has profound implication for economic and social development. ICT is the major driving force behind in the information/knowledge society.

4.6 ICT Application in Higher Education:

Universities, Colleges and other institution in the country form the pillar of the attainment of higher education and are aimed at advancement of knowledge and learning though teaching and research. The institution which mentions required stable support from the Government, and others. Besides the educational pattern, application of ICT is deployed for ensuring quality higher education for students and teachers. It is a major driving force to promote excellence in the changing Information Scenario. This new technology is used by the people and supposed to help especially in the areas of education, efficient government administration, and economic development.

The major advantages of such new technology for acquiring quality education are:

- Using new technology we can do a potential change for teaching learning paradigm in a way it is not possible earlier.
- Using new technology the conducting of research facilitated in a coherent way. Building new knowledge on the basis of existing knowledge and collaboration with peers-both essential part of research are possible with a maze of interconnected computers and huge distributed knowledge repositories sitting in different parts of the world in a manner that was even difficult to think before
- Using new technologies higher educational system of the systematic level are significantly impacted both institution and Governance.

4.6.1 ICT based Resources in Higher Education

The important three resources to implement IC T based Higher Education systems are Physical, Human and Financial Resources. Those resources are-

- **Physical Resources:** Physical Resources not only include Building, Furniture and equipment, laboratories and libraries but in today's age of information Communication Technology and their infrastructure are very much essential in the present global scenario for socio-economic and educational development and creation of manpower and fast communication and competition in the global market as well. The successful delivery of the courses offered by Colleges and Universities could only be possible with the help of State of the art technology and infrastructure. Libraries and Laboratories also form part of the infrastructure in strengthening the pillar of higher education of this region. This will go along way in generating ethos to attract students of all India basis and foster national integration and requires a provision of specially tailored development grants for the universities of hill regions by UGC
- **Human Resources:** Human Resources constitute both teaching and non-teaching community, their recruitment and training. Teaching community plays an important role to achieve academic standards of the university. Therefore, teachers need to be up to date and revise the curriculum and syllabus at periodic interval in imparting knowledge and skills to the learners. Equally important is to retain the talented teachers in order to realize the vision of all India character particularly in the distant hill regions. Schemes of financial incentives will help; to fight the prejudice among the highly accomplished professionals. This will further brighten up the prospect of quality education, on par with the best of the universities in the country and for students of the far flung areas.
- **Financial Resources:** Regular flow of finance not only maintains standards of higher education but build up a sound university and higher education system to support physical and telecommunication infrastructure.

4.6.2 Higher Education in North East

As of now, there are more than 300 Universities comprising Central, State, and Deemed in India out of which, 12 Universities and more than 300 Colleges are located in all eight North Eastern States that constitute Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. All the states of North East maintain harmony among each other unlike other states in India because of the close group of society. North East was known previously as seven sisters and has become

eight sisters consequent upon addition of Sikkim in its territory. Department of North Eastern Region (DoNER) and North Eastern Council (NEC) have taken a number of initiatives for the development of higher education needs top most priority at par with other developed states of the country. It is felt that, rich and potential resources are indispensable for the higher learning institutions in Mizoram to develop qualitative delivery of teaching and research with the help of ICT and the libraries can not be excluded.

4.7 Application of ICT in Library

Librarianship in the present scenario is supposed to have changed drastically due to multidimensional requirements of users for interdisciplinary research and availability versatile of resources. The factors affecting such change may be divided into four categories: economics, technological, higher education and organizational (Farley, Broad-Preston and Hayward 1998). The wide spread use of ICT in libraries, and especially the development and access to digital information resources via the Internet, has raised a number of challenges and concerns for librarians. These include the impact of ICT on the role of librarians and the resulting need for new skills and competencies suitable for the digital information environment. According to Chisenga and Rorissa (2001) the role of librarians in the digital information environment is evolving. Librarians are now being expected to possess skills and expertise, in addition to the traditional library and information management skills specifically in the use of ICT, electronic publishing, digital information management and knowledge management. Technological changes have resulted in librarians constantly questioning their future and the competencies they will need to survive professionally (Woodsworth 1997). Job advertisements today give some clues as to the skills required. A study conducted by Zhou (1994) reveals that, librarianship demands computer literacy in academic and public libraries. Mention may be made that, during 1974-1989 computer applications have changed in many aspects the ways by which libraries provide services in USA. As a result, computer literacy has gradually become an important competency for librarians in many positions. Woodsworth (1997) has suggested that technological competencies are the most critical ones for all librarians, even if they obtained their professional credentials as recent as the early 1990s. Basic competencies for librarians must include knowing what the Internet is and is not; evaluating and using hardware, software, and networks; and understanding basic

computer and information science concepts. According to Marmion (1998) the biggest technology challenge facing the library profession today is that of preparing our employees to use technology effectively.

To meet this challenge, libraries must pay much more attention to technology training and computer skills than they traditionally have in the past. Computers, connectivity, and electronic information are redefining the library profession and what librarians do. According to Latham (2000) technical literacy is no longer a specialty but a survival skill for all librarians. While this skill rapidly obtained a name, "computer literacy", little consensus has been developed on precisely what set of abilities it actually represents.

4.7.1 Areas of Computer application in Library

The library computerization usually covers all library house-keeping functions such as acquisition, cataloguing, circulation and serial control.

- **Acquisition**

The acquisition system because of the need to keep a number or rapidly changing files and detailed accounting procedure lend itself to automation. Computerized acquisition system was earlier confined to procedures for ordering receipt and payment of library materials, But now it includes proper management of library funds also. Thus computerized acquisition system will help us to have speedier receipt of materials as well as improved fund control with maximum utilization of our merge financial resources.

- **Cataloguing**

Computerized catalogue can be developed as a bye product of book ordering system. The advantage of computerizing the catalogue in our system is that it provides facility to print book catalogue of various library units with the help of high speed printers and can circulated among other branch libraries.

- **Circulation**

Circulation, as it mainly concerns with the clerical function of keeping track of documents taken out on loan, can be probable functional area fro computerization

- **Serial Control.**

Computerization of serials control system would certainly help us to handle serials more easily, quickly and less expensively. This is particularly relevant in our context

as serials constitute major source of information for library users. As well, the procurement of same journal at various units of the library system also makes the serial control system a priority area for computerization.

Information Services.

The changing concept of the library services provide increasing thrust on the speedy and easier dissemination of required information to the needy users. Thus information storage and retrieval has become the top priority area for library computerization. The product and services that are necessary for speedier dissemination of information are

- A database for catalogue of books and other documents,
- A database for journals and other primary documents with detailed indexing.

The services that can be offered from these databases are; current awareness bulletin covering primary documents, documentation bulletin covering books and other documents and bibliographies and documentation lists on specific topics.

4.7.2 ICT in College Libraries

Libraries which were considered only as the storehouses of Knowledge have got a new outlook in the modern Information Communication Technology era. The library activities carried out in present scenario manually with pain and strain are being carried out smoothly with the help of ICT with greater effectiveness in Mizoram. Library organization, administration and other technical processing have become easier and more quantum of work can be done in a relaxed mode. Therefore, libraries require application of ICT to carry out administrative functions, technical works and user services. University Grants Commission in this regard has contributed a special provision by giving grant to the affiliated college libraries for installation of ICT facilities and generates a digital environment. The Information and Library Network (INFLIBNET) is actively involved in the automation and digitization of college libraries. The support and co-operation by the INFLIBNET in various activities like funding, training, orientation, workshops and publication made the college libraries equipped with all ICT tools for providing a better service to the Users.

4.7.3 ICT infrastructure in Mizoram College Libraries

Lack of financial grant received from the concern department of the state clearly depicted all the 24 college libraries in Mizoram are drawback in the field of ICT infrastructure in the college libraries. A special grant allotted from UGC is the only

hope for rendering the problems. A Table 22 represents the present status of college libraries in Mizoram in the field of ICT infrastructure

Table 22 ICT infrastructures in the colleges of Mizoram

Sl. No	Name of the College	Year of Estd	No. of comp.	Internet facilities	Xerox machine	Printer	Fax/ phone	others
1	Pachhunga University College	1958	5	Yes	1	1	1	1
2	Govt. Lunglei College	1964	1	No	Nil	Nil	Nil	Nil
3	Govt. Champhai College	1971	1	No	Nil	Nil	Nil	Nil
4	Govt. Serchhip College	1973	5	Yes	1	1	1	1
5	Govt. Aizawl College	1975	3	Yes	Nil	1	1	Nil
6	College of Teachers Education, Aizawl	1975	1	No	1	1	Nil	Nil
7	Govt. Kolasib College,	1978	2	No	1	1	1	Nil
8	Govt. Saiha College	1978	Nil	No	Nil	Nil	Nil	Nil
9	Govt. Hnahthial College	1979	1	No	1	1	Nil	Nil
10	Govt. Hrangbana College	1980	7	Yes	1	4	3	2
11	Govt. Zirtiri Resi.Sc.College	1980	1	Yes	1	1	1	Nil
12	Govt. Lawngtlai College	1980	Nil	No	Nil	Nil	Nil	Nil
13	Govt. J. Buana College,	1983	1	Yes	Nil	Nil	Nil	Nil
14	Govt. Mamit College	1983	3	No	Nil	Nil	Nil	Nil
15	Mizoram Law College	1983	1	No	1	Nil	1	Nil
16	Govt. Saitual College	1984	1	Yes	1	1	1	2
17	Govt. Khawzawl College	1985	Nil	Nil	Nil	Nil	Nil	Nil
18	Govt. Zawlnuam Colleges	1986	1	No	Nil	1	1	Nil
19	Govt. Aizawl North College	1988	1	yes	Nil	1	1	Nil
20	Govt. Aizawl West College	1990	6	no	1	1	1	Nil
21	Govt. J.Thankima College	1992	Nil	Nil	Nil	Nil	Nil	Nil
22	Govt. T. Romana College	1992	1	no	Nil	Nil	1	Nil
23	Kamalanagar College	1992	Nil	No	Nil	Nil	Nil	Nil
24	Govt. Johnson College,	1993	1	no	1	1	Nil	1

The table of data shows that the developmental trends of colleges in Mizoram in the field of ICT has mentioned the drawback of the service provide by the library for satisfying the users need. For 20 colleges, i.e. 84% of colleges in Mizoram have an

independent computer for using an automation of library and other library work, rest of the four(4) colleges library has not acquire computers for facilitating a further informative services to the users in a college level. Out of twenty four (24) colleges, only eight (8) 34%from the total number of colleges provide internet services to the users for fulfilling information services though internet facilities. Photocopy services are very essential for disseminating an information to the college library users of which generally the students and teachers, but in this area of the services the scenario of Mizoram Colleges are same to be an unsatisfactory level; eleven (11) out of twenty four (24) colleges 46% are having a facilities of photocopying, rest of the 54% of colleges has been a constant problem for distributing the services. This is a remarkable point for weaknesses of college library services in Mizoram. Thirteen (13) Colleges the percentages of 55% get hold of printer in the library. Telephone and fax machines are the important tools for frustrating a good services in the library especially for the college, in Mizoram there are situate twelve (12) colleges which acquire that facilities, it was a low level of 50% from the above colleges, but more developed than the other colleges. Another five (5) colleges, 21% has acquire scanner and Overhead Projector for rendering an information services to provide an effective services thought ICT infrastructure.

4.8 Changing dimensions of College library services

The implementation of ICT in the libraries has demanded new forms of library services in a college environment to get more user satisfaction. Library Automation and Digital Library services have been developed after the implementation of ICT in the college libraries.

4.8.1 Library Automation in College Libraries

Library automation refers to the use of computers, associated with other peripheral media and consumption of computer products and services in the performance of the library functions and operations. Computers are capable of introducing a great degree of automation in operations, functions since they are electronic, programmable and are capable to control over the processes being performed.

The utilization of computer and related techniques make the provision to provide the right information to right reader at the right time in a right form in a right personal

way. Automation of library activities provides the services very efficiently, rapidly, effectively, adequately and economically. In a college environment a student start taking the advantage of the automation preferring a lack of time consuming. The modem libraries in a College a center facilitates free communication because access to information has become a fundamental right of the clientele.

The automation is economically feasible and technologically required in modem libraries to cope up with the requirements of new knowledge, the enormous increase in the collection of materials, problems of their acquisition, storage, processing, dissemination and transmission of information. The capabilities of computer associated peripheral media and its application in library activities and services led to a highly significant quantitative and qualitative improvement especially in online technology. Information / knowledge itself is of no value. It is the use of information that makes it valuable. The role of computers and their associated peripherals and media are being increasingly used in library and information services for acquisition, storage, manipulating, processing and repackaging, dissemination, transmission, etc..

4.8.2 Factors for Library Automation in College Library

- **Growing Information and Shrinking Space**

The enormous growth of literature, information explosion in each subject area, in number and size has resulted fragmentation of literature and increased specialization in every field of knowledge. Due to this, the quantity, variety and complexity of information are being increased rapidly in every field. Computer application became the only solution to the emerging field as it is capable of storing bulk of information, retrieval of the same.

- **Incensement of Users and organizing the flood of Information**

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

❋ **Price hike of printed and electronic resources and resource sharing**

The rapidly enhancement price of information materials motivated the library and information centers to share their resources. They realize that the only way they could fulfill their client groups is by effective cooperation between libraries, information centers and networks and by sharing of all type of resources.

❋ **Enhancement in budget**

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

4.8.3 Areas and services of library automation

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

💻 **Activities of Library Automation**

The various activities of library automation include the following.

- **Information resource building**

Acquisition of books, monographs, audio-visual, electronic materials such as CD-ROM, maps and so on. There are some specific functions of an acquisition process. Suggestion, recommendations and selection of library collection:

- Duplication checking, library holding checking.
- An vender selection.
- Preparation of order, cancellations of order lists with terms and conditions of the supply. Checking of overdue orders.
- Record of items on order.
- Record of received and non-received items and receipt to the vender.

- Items verification with order file and invoice.
- Inspection of items by the concerned department.
- Prepare for payment after accessioning.
- Prepare budget and maintain accounts and statistics subject wise etc.
- Final report. Items, subjects wise, chronologically, booksellers report etc.

♦ **Data Entry**

Data entry is the primary elements for creation of databases and the database is required for,

- Books
- Clients/members
- Serials
- Audio-Visual
- CD-ROMs
- Gifted Items
- Maps, Reports etc

♦ **Classification and cataloguing**

- Catalogue card production.
- On-line cataloguing.
- Duplication checking of catalogue cards.
- Production of duplicate catalogue cards.
- Preparation of authority file subject heading list.
- Shorting, checking and filing of catalogue cards.
- Automatic generation of added entries (author, title, series etc.). Generation of monthly accession list.
- Developing centralized and on-line cataloguing.

♦ **Circulation control**

- Registration/ cancellation and make bound time for membership.
- Issue, return, renews reservation of documents and produce the slip for proof.
- Charges for late, lost book, binding and production of penalty slip.
- Maintenance of circulation.. Statistics.

- Inter library loan.
- Use of bar code system.
- Report statistics of circulation.

♦ **Serial control**

- Input essential serials data.
- Order list of new serials.
- Mode of payment, prepare for payment.
- Receipt and updating the records.
- Receipt to vendors or publishers.
- Preparing the list of present holding, additions, missing, cancelled serials chronologically, subject-wise etc.
- Renewal and cancellation of present subscriptions.
- Sending reminders and follow-up of missing issues.
- Binding control.
- Accession register of bound serials.
- Prepare budget and maintain accounts statistics such as subject wise, binding etc.

♦ **Documentation and allied services**

- Indexing and abstracting of micro and macro documents. Thesaurus construction.
- Compilation of union catalogue.
- Bibliographic control.
- Current awareness services.
- Literature search.
- Selective dissemination of information.
- News paper clippings.

♦ **Information retrieval**

- Database creation and maintenance, interactive searching, saving of in house as well as external databases.
- Search and print outs of quires against specified requirement.
- Such as about the books (issued, reserved, lost, overdue, weed-out), members- ship, inter library loan, penalty charges, periodicals, newspaper clippings, reports etc.

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

♦ **Communication networks**

Library Cooperation: Cooperative acquisition, cataloguing, and coordinated information services, Resource sharing.

➢ **Access to Database:**

- Information service
- Back up service
- Document delivery

➢ **CD-ROM Services:**

- Information searching
- Text delivery

➢ **Online search:**

- Access to Database
- Downloading

➢ **E-mail:**

- Electronic mailbox Bulletin Boards

➢ **Access to Internet**

- Information superhighway
- Cyberspace
- World Wide Web (WWW)
- DIALOG and other databases.

◆ **Training of the library software**

- Self demonstration programme.
- Help menu and software manual.
- Separate training model for library professional and as well as for users.

◆ **Selection of software**

To offer the complete satisfaction of users and perform the above mentioned library activities and functions, we must select a competent and suitable software which can meet out our requirements or can be developed on contracted basis by any software

company or can be developed by professional of the institution keeping in view the requirements of the library. An increasing numbers of library software companies and their attractive advertisements / propaganda's confused the libraries which software is very much meet with their needs.

Libraries and information centers need to deploy some primary visualization while selecting software for the library and it includes the following,

- Constitutions of automation committee
- Consultation with computer professionals for selecting hardware and software requirement.
- Selecting the areas of library to be automated
- Activities, services to be imparted by the library.
- Selection of vendors
- Deployment of professionals
- Engagement of outsourcing
- Framework of the time limit.
- Budgetary provision.
- Procurement of Infrastructure.

As Library Software selection happens to be a very complicated issue observation of experts and discussions with computer professionals are essential which must be procured by the selection committee and most suitable in regard of flexibility, capacity, expandability, security, economically, user's friendly, module based and updated with the latest technology.

Various library softwares suitable for library automation are, however, discussed below for more clarity.

4.8.4 Library automations software

- **LIBSYS**: LIBSYS is a comprehensive library software package produced by Libsys Corporation, New Delhi. It is a fully integrated multi-user system designed to run on super-micro/mini-computers under UNIX/VMS/LAN platforms. Micro-Libsys, a subset of Libsys is also available for PC's under DOS/XENIX. Libsys is easy to operate and the library staff can begin to use it quickly without any pre-requisite programming/computer skill. Minimal data entry requirements, maximum possible integration of functions and powerful search and query facilities of this package can ensure high productivity. LIBSYS users include National Informatics Centre (NIC),

TIFR, C-DAC, INSDOC, Indian Oil Corporation's Library Division, Government of India's department of Electronics, Library and information service Divisions of Ministry of External Affairs, AIMS, NML, BHEL, IGNOU, DMRL, Planning commission, Parliament etc. It supports almost all library activities relating to Acquisition, Cataloguing, Circulation, Serial control and article alert.

LIBSYS supports its own screen handling and index generation procedures. However, it can be modified to operate on any preferred database such as ORACLE, INGRES, etc. it is user-friendly having features of

- Integrated functions
- Interactive and screen oriented
- Menu driven
- Multi-user capabilities
- Minimum possible data entry
- Powerful data editing facility
- Easily installed
- User defined security
- Database recovery procedure
- Help facility.

♦ **LIBRIS**: LIBRIS is a comprehensive Library Management System optimizing the utilization of library facilities by the members and the management of library functions by the library staff. It covers all the functional areas of a library such as Acquisition, cataloguing, circulation and periodicals: it provides powerful and extensive facilites for online enquiries for books, authors, articles and for efficient distribution of information. Some of the main features of Libris are

- It can be configured and costomise to suit the requirements of any library; Size of the library is no bar or restriction on the functioning of LIBRIS.
- It is user friendly; with an on-the-job training for about 2 to 3 days staff will become well conversant with the facilities and usage of LIBRIS.
- It operates on a hierarchy of hardware and software platforms. Also, it is built in a modular fashion so that enhancement can be made easily depending on the growth plan of the library.

- LIBRIS can be used in single user or multi- user environment

LIBRIS support almost all library activities relating to acquisition, cataloguing, circulation, enquiries, and periodicals. This package have use by State Bank Staff College, Jawaharlal Nehru Technological University, India International Centre, Physical Research Laboratory, Sri Venkiteswara Central Library, and Electronics Corporation of India Limited are some of the institutions used Librys for their library automation.

♦ **CDS/ISIS**: (Computerized Documentation Service/ Integrated Sets of Information System), developed by UNESCO, distributed in India by NISSAT free of cost is menu driven, generalized information system focused for handling non-numerical information of any volume, with special features of advanced programming in PASCAL. It has a version that runs on disk operating system VST, MVS or DOSIVS or IBM 370, 303x. 43xx., its mini-micro version can be run on PDP- II series or on IBM- PC (XT -AT) or compatible microcomputers. A software package like CDS/ISIS can cost Rs 10 to 20 lakh. But CDS/ISIS can be obtained free of cost through NISSAT by University and colleges libraries having required hardware system. It consists of set of programs for setting up information storage and retrieval systems. It is designed specially for computerized management of structured non-numerical databases whose major constituent in text. The major advantage offered by this system is that the same set of computer programs is able to manipulate an unlimited number of databases each of which may consist of completely different data elements. The user is therefore freed from the expensive task having to design and write computer programs each time when a new project requires the use of information retrieval techniques

CDS/ISIS is capable of handling variable field and record lengths which is a major requirement of bibliographic databases. It is of menu driven operation. It can support upto 999field/record. CDS/ISIS has many additional capabilities; like search language, worksheet design for data input and updating, formulation of output and display formats designing and on subfields powerful indexing capabilities handling of repeating groups and multi-lingual menu/ messages for English, French, Italian and Spanish. CDS/ISIS is used at present in many Universities and Research institutions in India.

CDS/ISIS can run on IBM/-PC,PC/XT,PC/AT or compatible micros under MS-DOS operating system. It is also available for PDP need 512 KB Ram, a floppy diskette drive, a hard disk of minimum 20MB, one monochrome or colour monitor and one printer.

♦ **MINISIS**: It is very powerful, comprehensive and easy-to-use software developed by International Development Research Centre (IDRC), Canada to run on HP 3000 family of computers. MINIS IS is compatible to renowned ISIS software which run on IBM 360/370 main frames and conforms to the ISO 2709 and UNIMARC international formats for interchange of library data. HP 3000/37 is the low-end member of the powerful, interactive family of HP 3000 computer system which are ideally suited for information management and transaction proceeding. This system along with the MINSIS software provides very attractive and cost effective solution for the needs of small to medium sized libraries in India.

♦ **SANJAY**: Automated CD/ISIS package for library: With the development of CDS/ISIS capabilities by DESIDOC is being implemented as a model in Technology Bhawan, Library.

♦ **MAITRAYEE**: This software package is an attempt to bring library computerization and networking aspects on and integrated platforms, commissioned by CMC LTD., a Government of India Enterprises, NISSAT, die the complete feasibility study and come out with the well defined functional specification.

♦ **OASIS**: This package has three modules standard, advanced and special, can be operated on any compatible micro computer using MS and PC DOS- 3.1 or higher equipped with 640 of RAM and IBM recommended 80 MB hard disk.

♦ **SOUL:** The SOUL is a state of the art of Library Automation Software designed and developed by the INFLIBNET. To prepare University. To prepare Universities as well as College facing the emerging information society in future, the University Grants Commission (UGC) started the INFLIBNET programme in 1991 with a mandate to create a nationwide network of College, University libraries and research centre in India. It is a major programme towards modernization of libraries and information centre in the country using computer and communication technology for the establishment of a mechanism for information transfer and access to support scholarship, learning and academic pursuits.

SOUL is user-friendly software developed to work under client server environment. Looking at the name of the software, one may think that it is meant for University Libraries only, but in fact it is flexible enough to be used for automating any type or sizes of libraries, hence, Software for Universal Libraries may be matched as its name. All things have positive and negative sides, no Software is perfect. Even SOUL Software, though the developer INFLIBNET is a big and expertise organization in the field, yet, it has some limitations. Hardware lock, which is the checkpoint of security towards duplication and unauthorized user, it always create a problems by the user. Coming to the latest version SOUL 2.0, the system of hardware lock is changed to login name and password system. It is advisable to small library like College Library to use the software because it is cheap.

- **SOUL Version**

The first or the previous version of this software is SOUL 1.0 and it was released on CALIBER 2003. There are such two types of SOUL 1.0 such as NETWORK or Web-based Version, which is mainly for University Library and College. Both these two have facilities of hardware lock to protect the duplicity. The latest version of SOUL 2.0 was released in 2008 on the updating of unused hardware lock. INFLIBNET office will provide special security password to those who purchased SOUL 2.0 itself.

- **Recent Prize and Rates of SOUL**

Rates of SOUL 2.0, AMC and other charges are shown under the Table- 23

Table -23: Recent prize and rates of SOUL

SOUL Version	Price in Rupees
SOUL 2.0 – Full Edition (First copy)	80,000.00
Additional Copies (only for institutions who have already purchased one copy of SOUL 2.0)*	50,000.00
SOUL 2.0 – Limited Edition (Restriction: 50,000 records)	30,000.00
Rates for Annual Maintenance and Others	
SOUL (Network / College Version)	10,000.00
Training charges per person	5,000.00
On-site Installation of Software~	1,000.00

Data Conversion Charges (first 10,000 records)	10,000.00
Data Conversion Charges (next10,000 records and multiple)	5,000.00

At present, College registered under Sec.2(f) and 12B can apply through UGC NERO, Guwahati to INFLIBNET to received SOUL 2.0 at free of Cost.

⅄ Hardware and software requirement for installation of SOUL:

The minimum hardware and software configuration required to use the SOUL is given Table-24

Table-24: Hardware and software requirement for SOUL

Server:	**Client:**
Pentium @233 MHz with 64 MB RAM	Pentium @233 MHz with 32 MB RAM
1.2 GB HDD	1.2GB HDD with 10MB Free space
32 x CDROM Drive	1.44" Floppy Drive
1.44" Floppy Drive	Colour Monitor (SVGA)
Colour Monitor (SVGA)	Ethernet card 10/100 Mbps
Ethernet card 10/100 Mbps	Windows-95 Operating System
Windows-NT Operating System	
MS-SQL Server 6.5	

⅄ Essential Features of SOUL for College Libraries

Following are few of the strong features of SOUL, which should induce librarians to use SOUL in their libraries.

- Windows based user friendly software.
- Well-designed screens, logically arranged functions with extensive help messages make the software user friendly.
- It is based on client server architecture allowing scalability to the users.
- It uses RDBMS to organise and query the data.
- SOUL does not need an extensive training. With very little familiarity, one can begin using it.
- It is specially designed to work in the large academic libraries, capable of handling large number of records.
- It is a multi-user software and there is no limit on simultaneous accesses.
- Supports internationally known standards such as CCF and AACR II. Etc.

- Provides export and import facility and adheres to ISO 2709 format.
- Incorporates all required features to work in a networked environment i.e.. LAN and WAN.
- OPAC is versatile and very user-friendly with all options in-built.
- OPAC is accessible over the web using any GUI based browsers.
- Provides comprehensive list of reports, master databases and authority files.
- Provides facility to create, view and print records in regional languages.
- Functionally it covers every conceivable operation of University library.
- Available at affordable cost.
- SOUL has been fully tested at a number of university libraries and critically evaluated by team of experts and practicing librarians.

The present study makes a special treatment for "Library Automation using SOUL software with special reference to Govt. Hrangbana College Library in which SOUL is using for its in house records and Circulation since 2005. Hence screens of different modules will be displayed from this particular College. The main page of SOUL has been shown in Fig-4

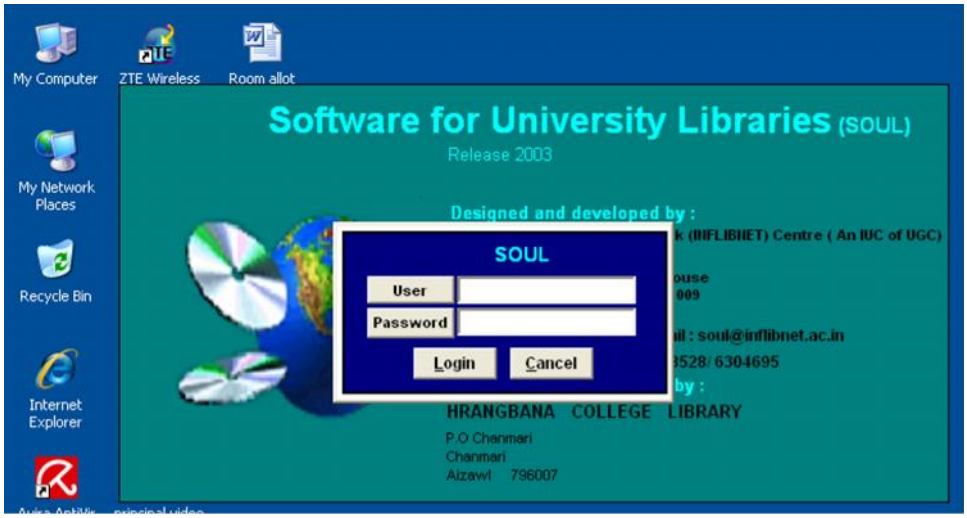

Fig- 4: Main page of SOUL.

➢ **Modules of SOUL:** The SOUL has been divided into following six broad modules as shown in the Fig- 5

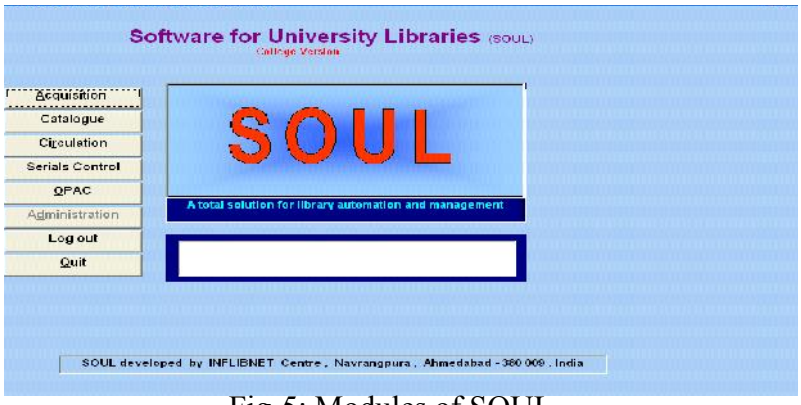

Fig-5: Modules of SOUL

These modules have further been divided into sub-modules looking at the nature of functions handled by various functional divisions in University libraries. Brief description of the same along with first screens has been given in the following:

a) Acquisition Module

This particular module provides facilities to handle work relating to acquisition of reading materials of all types except serials, starting from suggestion / recommendation by faculty till accessioning, invoice processing. Acquisition module comprises following six broad sub-modules as given in the Fig 6.

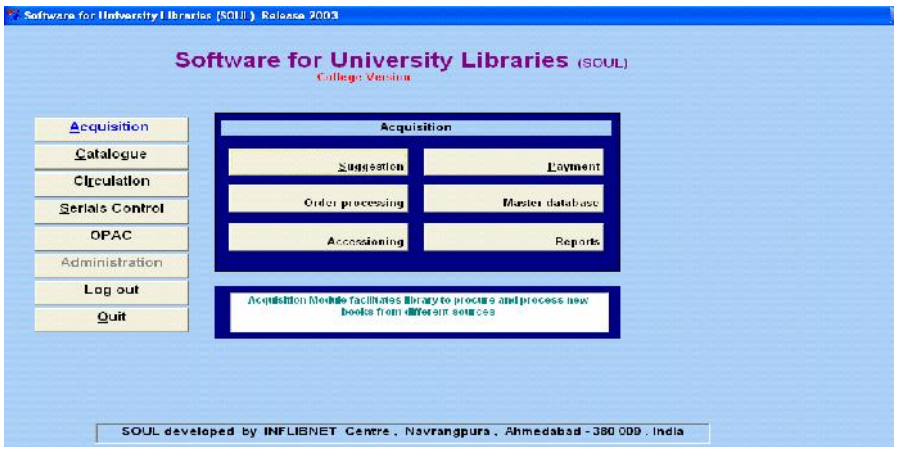

Fig- 6: Acquisition Module of SOUL

b) Cataloguing Module

Catalogue module function begins with selecting the items that have already been accessioned in the previous module and furnishing rest of the information as per AACR-II rules.

Catalogue Process function allows to pick-up the accessioned item, under process, for the cataloguing purpose. Here one can add remaining information as per specified standards, such as additional bibliographical information, subject headings, classification number etc. Editing of existing records for maintaining consistency can also be done here. Catalogue Search enables search of the existing items, its status, identifying duplication etc. for the purpose of day-to-day cataloguing. This is similar to OPAC. user Services sub module has three major functions viz., generating current awareness list (by date, subject etc), compiling of bibliographies with various combinations and alert services to individual users.

Authority File Maintenance includes creation, updating and use of major authority files for names such as publisher, languages, corporate bodies, meetings, authors, physical media, and types of material and also for subject descriptors. Retrospective Conversion has two major functions viz. data entry of old collection with minimum information without going to first sub-module and import and export of data from and to external sources. Reports module allows generation of catalogue cards as per AACR-II, generation of recent editions reports subject and class number wise and other related reports.

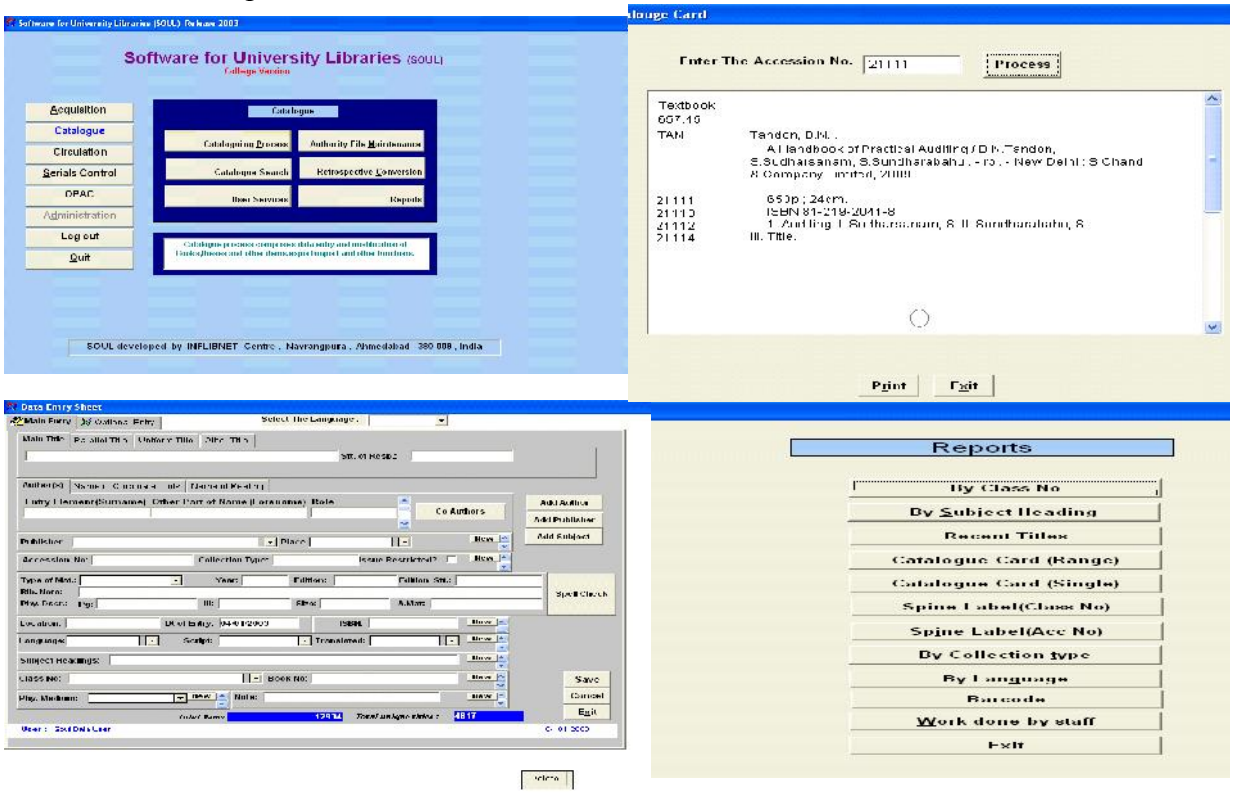

Fig- 7: Cataloguing module of SOUL

c) Circulation Module

Circulation being vital front-end function of any library, sufficient care has been taken in designing this module to achieve transactions within minimum possible time. This module has provision for all possible function handled in a typical academic library, i.e. membership, issues, returns, ILL, reminders, over dues, reservations, recall etc. All these functions have been organised into eight logical sub-modules as given in a Figure.Membership sub-module provides the facility to create all types of member records, assigning unique membership code, borrowing privileges, renewal, issue of no-due certificates, master databases for codes etc, searching the status of membership or an item, suspending the membership and generating related reports. Transactions handle all major functions such as issue, return, renewal, reservation, recall or reminder of an item etc. Transaction is based on Accession number and Member code. Inter Library Loan allows lending of items to specified member library and also borrowing items from other libraries, issues, reminders etc. This sub-module has been developed comprehensively to take care of all the details of user libraries, individuals and items loaned.

Over due collection facilitates collection of overdue charges in full or in part, providing receipts, keeping up-to-date accounting and tallying totals, etc. Using this function one can generate daily, weekly, monthly reports to find out as to how much overdue charges have been collected.

Reminder module handles individual and group reminder generation for all overdue materials. Comprehensive listing of materials that are overdue can also be generated within a specific period giving from and to dates.

Search status enables the library circulation desk staff to check the status of a member or items borrowed by a user and overdue items.

Maintenance is yet another comprehensive sub-module, which covers binding, lost and cost recovery of books, damaged books, withdrawn books etc.

Reports sub-module allows the generation of as many as 16 major reports and with many combinations. All possible reports that a large library expects are provided for.

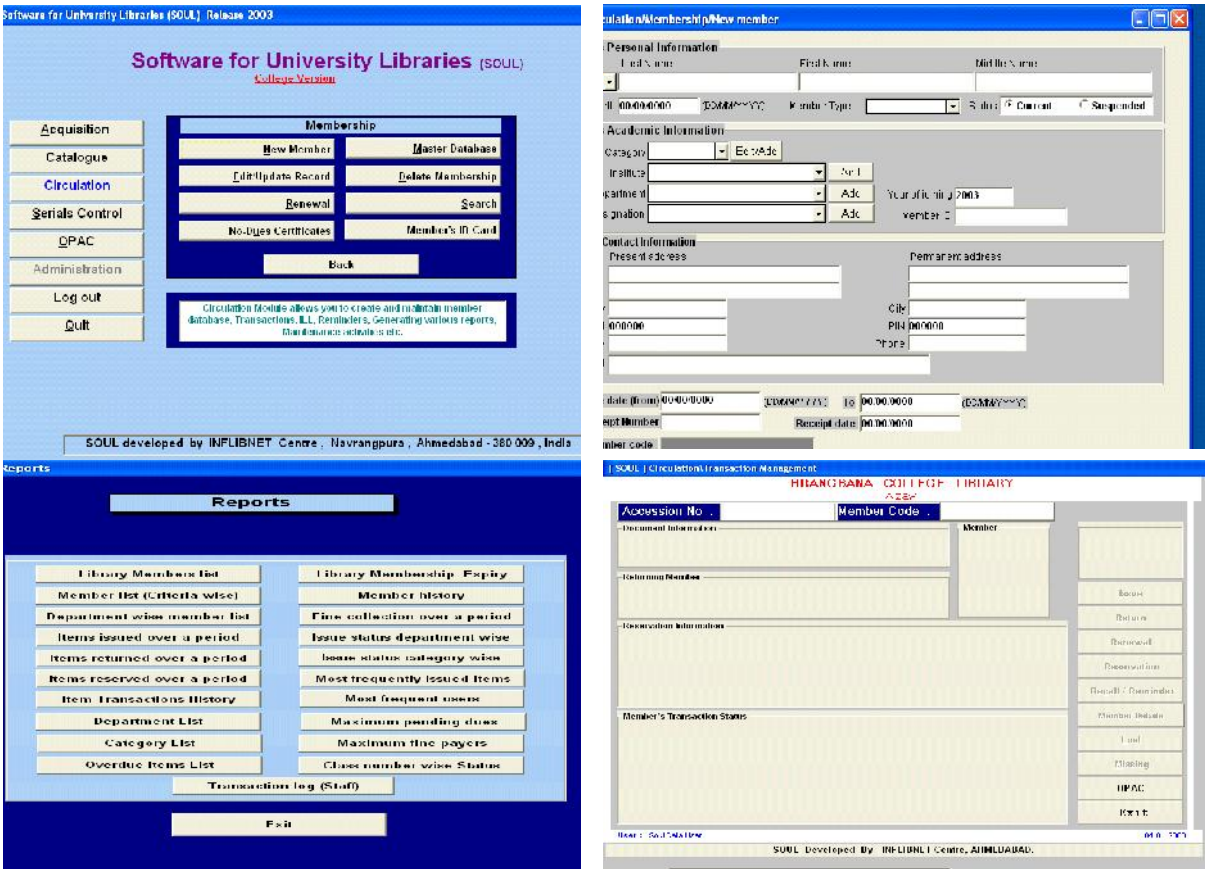

Fig- 8: Circulation modules for SOUL

d) Serials Control Module

This module allows one to create an exclusive database for different serials. All functions starting from suggestions, master databases, subscriptions, checking, payment, reminder, binding title history export/import etc have been covered. For the convenience of users, these functions have been grouped under following logical sub-modules as given in a figure. Suggestion Sub-module enables one to record and keep a track of all the suggestions received for subscribing to serials Subscriptions module takes care of ordering/renewal of serials, follow-up relating to the same, sending reminder, if invoices are not received, generating orders by supplier or publisher are included under this option. Payment function supports processing and recording of all details relating to each invoice, including supplementary invoice such as invoice processing, credit notes processing, reports generation etc. Master Databases option allows creation of large number of frequently used master databases viz. title entry, language, class number, publisher, binder, country, department, currency, frequency,

budget heads, binding type, delivery modes, reports etc. Of these, title entry is main. It is here that the creation of database for each title with bibliographic information begins in the serial module.

Check-in is crucial function to record the receipt of each issue of serial and its accompanying material. Sending reminders for non-receipt of issues or issues that are overdue etc for single or all titles by supplier, publisher etc can be done using this sub-module. Binding supports making sets, generating order, payments, accessioning bound volumes etc. Status search option facilitates one to find out the status of every thing starting from subscription to check-in of issues. Title history is provided to keep record of ceased, suspended, discontinued titles and also title change, splits, mergers along with holdings information for each and every title in the database. Export/Import of data in ISO2709 format is also provided to enable library to transfer the existing records in to SOUL and also contribute data to INFLIBNET union database.Reports are a comprehensive function which has more than 15 built-in reports of all types with different combinations. This adds to the strength of serial module.

Serial module is designed to handle large number of titles, with many options giving maximum flexibility to user libraries.

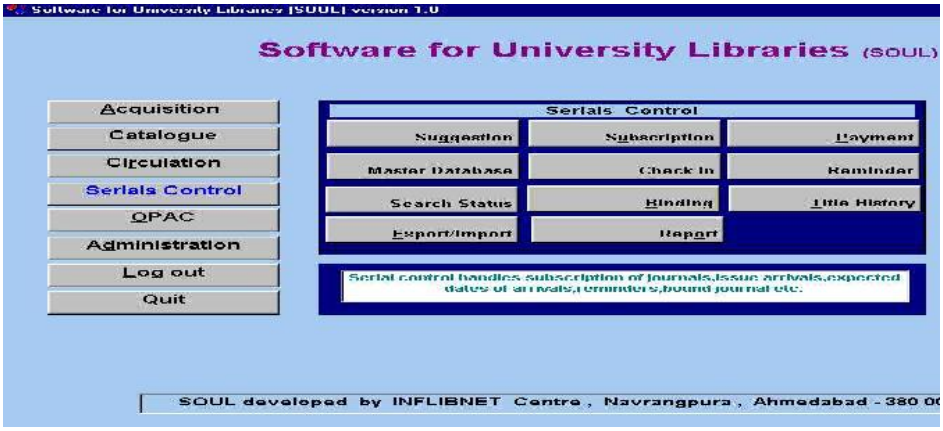

Fig-9: Serials Control of SOUL

e) Online Public Access Catalogue Module (OPAC)

One of the major attractions of SOUL is that it has a powerful Online Public Access Catalogue with a choice of search options and variety of display formats. This powerful, yet easy-to-use and user friendly searching tool allows user to quickly find the materials in the library. From the OPAC platform, it can be searched books by

author, title, publisher etc. I can display the status of particular book whether available or issued. It is possible to know bibliographic detail of a book from OPAC.

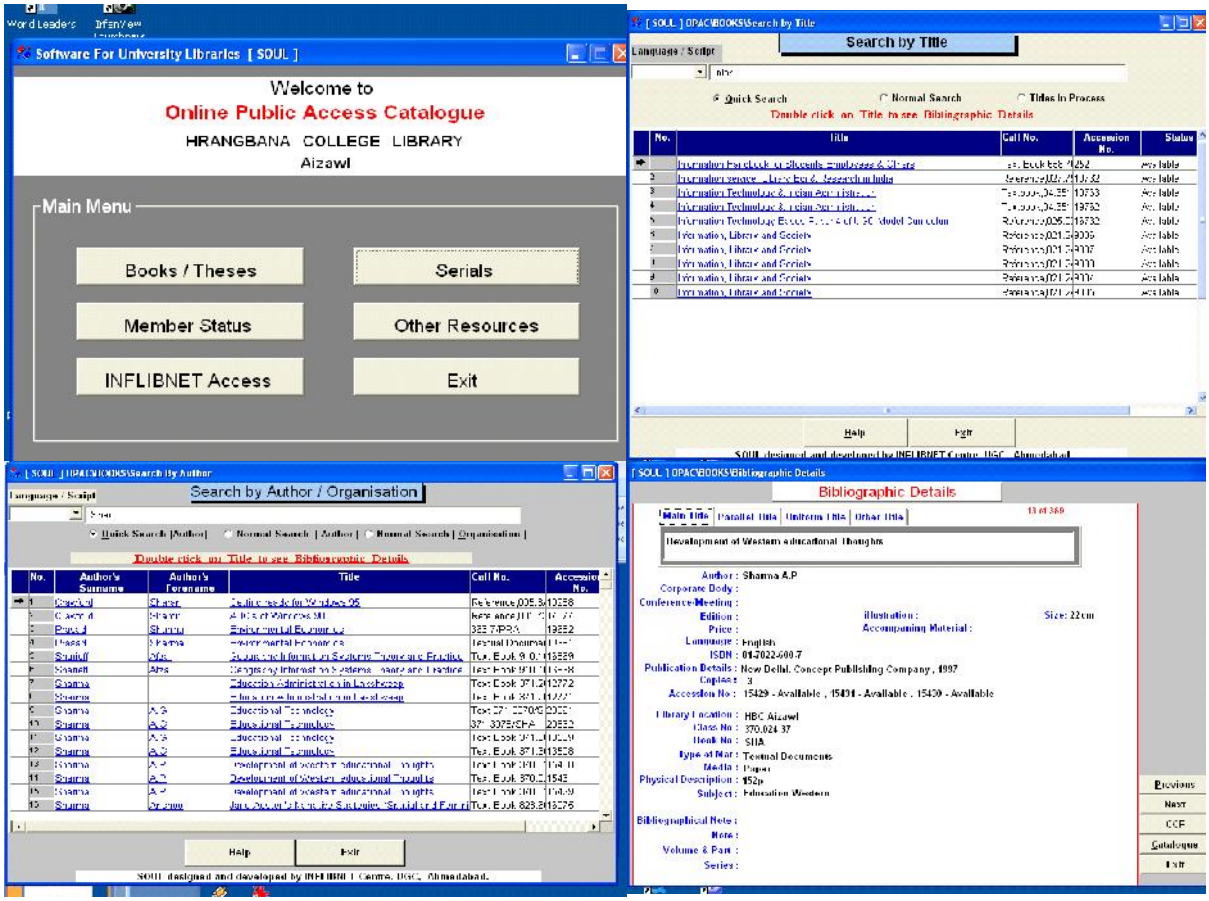

Fig-10: Modules of OPAC

f) Administration Module

Administration module has been to authorise users i.e., the library staff to use various modules. Assigning login and password to use each module of the system is done by the system administrator. The security function, backups, recovery of data and other utility functions are some of the features added under this module. Users have been categorized into three levels looking into nature of functions handled by the staff at different levels.

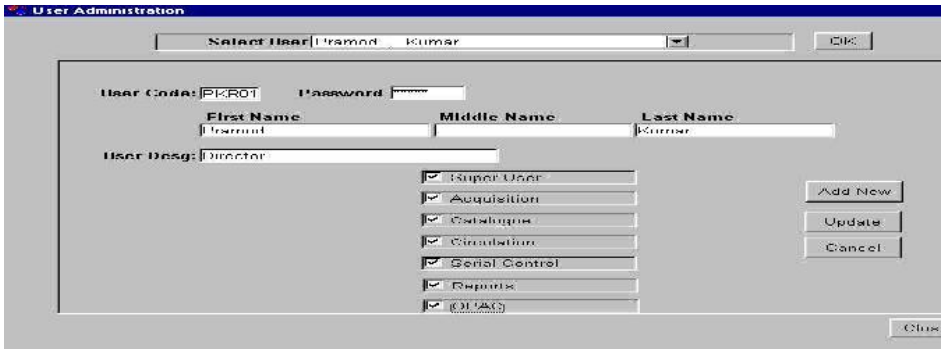

Fig-11: Administrative Modules

- **SOUL Training**: This is a five days intensive training programme for those, who have purchased the SOUL software or already send the purchase order for the software. During this training programme all the SOUL modules will be explained to the participants with hands on practice. Total number of participant who were undergone for SOUL Installation Training reached 1641, among them participant from Gujarat is 375, Assam – 52, Mizoram – 5, Nagaland – 4 whereas Sikkim is-0.

4.8.5 Configurations usage for Computer hardware

Generally the configuration of computer hardware is depend upon the size of the library which include the total collection of items such as strength of books, journals, clienteles, services, functions and type of the library. Normally more than one Lakhs holding we consider it a large size library, medium sized library having more than 50,000 holding and less than this, its called small library. The configuration requirements for different libraries are mention under Table -25

Table-25: Configuration usage for hardware in different Libraries

Large-sized library	**Medium-size Library**	**Small-sized Library**
Pentuim-3 Computer with	Pentuim-3 Computer with	Pentuim-3 Computer with
64 MB RAM	32 MB RAM	16-32 MB RAM
3-4 GB Hard Disk Drive	1.2 GB Hard Disk Drive	I GB Hard Disk Drive
150 MB Cartridge Tape Drive	150 MB Cartridge Tape Drive	150 MB Cartridge Tape Drive
5.25,3.5" Floppy Disk Drive	5.25,3.5" Floppy Disk Drive	5.25,3.5" Floppy Disk Drive

UPS/CVT	UPS/CVT	UPS/CVT
VGA Colour Monitor	VGA Colour Monitor	VGA Co lour Monitor
8 Port Intelligent input! output card	8 Port Intelligent input! output card	8 Port Intelligent input! output card
X.25 Card with Driver Software for Networking	X.25 Card with Driver Software for Networking	X.25 Card with Driver Software for Networking
Terminal 5-7	Terminal 3-5	Terminal 2
Laser printer, Ink-jet and Dot Matrix Printers	Ink-jet and Dot Matrix Printers	Ink-jet and Dot Matrix Printers
MODEM (56 kbps Modem for communication).	MODEM (56 kbps Modem for communication).	MODEM (56 kbps Modem for communication).
CD-ROM Drives	CD-ROM Drives	CD-ROM Drives
TCP/IP	TCP/IP	TCP/IP
O.P.- DOS, *MS-DOS,* WINDOW, UNIX or XENIX etc	DOS, *MS-DOS,* WINDOW, UNIX or XENIX etc	DOS, *MS-DOS,* WINDOW, UNIX or XENIX etc
Bar-code system with software	Bar-code system with software	Bar-code system with software
Lamination machine	Lamination machine	Lamination machine
Telephone lines 2	Telephone lines 1-2	Telephone lines I

4.8.6 Training and assistance library automation

The training of the library staff in computer operation is of vital importance. Every library staff member should be given a general orientation about the computer system. Training should begin much before the computer system is installed because the whole process depends on the library staff. Mostly the supplier of the hardware and software provide training on two levels, general aspects of system operation, and training on specific areas of operation at a higher level, which is free of cost. This

training is very much practical because the staff will work with the machine and if there be any trouble, it can be rectified. The training should be in house training and in the actual work situations and these training programme and planning must be a part of the vendor proposal in the final agreement There may be external experts in hardware and software application to make the training more knowledge-based job-oriented.

Training facilities for library automation are available in various parts of the country at a low cost supported by NISSAT. There are many organization and professional bodies, Associations which are conducting basic computer training as well as library oriented training program's. They also guide them of software selection, hardware selection, and installation of software and operations of day to day library functions. Other than the NISSA T there are many organizations which can provide the help and assistance in library automation. These are INSDOC, DESIOOC, DELNET, BONET, CALIBNET, PUNET, DRTC-Banglore, INFLIBNET Ahmadabad etc.

4.8.7 Trends of Library automation in Colleges in Mizoram

Mizoram at present is having 24 degree colleges and all the colleges are having the individual library. Some of the college libraries are automated and some of them are in the process of automation the following Table 26 clearly indicates the trends of library automations in various colleges of the state.

Table no 26: Current trend of Library automation in Mizoram

Sl.	Name of the College	Estd	Automated	fully/partially
1	Pachhunga University College	1958	Yes	Partially
2	Govt. Lunglei College	1964	No	-
3	Govt. Champhai College	1971	No	-
4	Govt. Serchhip College	1973	Yes	Partially
5	Govt. Aizawl College	1975	Yes	Partially
6	College of Teachers Education, Aizawl	1975	Proposed	-
7	Govt. Kolasib College,	1978	No	-
8	Govt. Saiha College	1978	Yes	Partially
9	Govt. Hnahthial College	1979	No	-
10	Govt. Hrangbana College	1980	Yes	Partially
11	Govt. Zirtiri Resi.Sc.College	1980	Yes	Partially

12	Govt. Lawngtlai College	1980	No	-
13	Govt. J. Buana College,	1983	No	-
14	Govt. Mamit College	1983	Proposed	-
15	Mizoram Law College	1983	No	-
16	Govt. Saitual College	1984	No	-
17	Govt. Khawzawl College	1985	No	-
18	Govt. Zawlnuam Colleges	1986	No	-
19	Govt. Aizawl North College	1988	No	-
20	Govt. Aizawl West College	1990	Yes	Partially
21	Govt. J.Thankima College	1992	No	-
22	Govt. T. Romana College	1992	On process	-
23	Kamalanagar College	1992	No	-
24	Govt. Johnson College,	1993	No	-

The table shows that library automation environment in the different degree colleges of Mizoram are weakness in this line. Out of which 24 colleges, 7 colleges are engage for the process of adopting library automation in partially. Such activities they have been rendered into the College library in Mizoram are generally for the efforts of the house keeping operations like acquisition, circulation, cataloguing and text books. One (1) college is now going to process the resources of library on automation for the fulfillment of the changing information environment into the library, for the benefits of the users. Two(2) colleges has been proposed to the college administrators for the procurement of Library automation and later hope to process the library for changing the scenario of the services of library into the information context with the help of library automation in Mizoram.

4.9 Needs of ICT Skills for College Librarians

Krissof and Konrad (1998) argue that for librarians or users to consider them truly information literate in this day and age, it is essential that they develop both traditional literacy skills and fundamental computer literacy skills. Latham (2000) argues that every librarian should be familiar with all components of an office suite: word processing, spreadsheets, databases, and scheduling programmes. Further, librarians should be able to choose the appropriate application for the anticipated result, that is, a database for lists repeating the same type of information, spreadsheets

for tracking numerical data, word processing for forms, for instance. Library staff, for that matter, should be able to make use of the extended capabilities of an application: to create charts, import graphics, and attach files, and so forth. They should know what is attached to their CPU, and how it is attached, and they should be able to perform basic troubleshooting functions: power source, monitor adjustments, reboots, printer response, and how to write down error messages. All librarians should be familiar with installing, configuring, and using a browser and should be able to discuss intelligently their favorite search engines on the Web and explain why they use each one. Librarians should also be able to discuss when a Web search is preferable to a print search, and vice-versa. Beyond the functionality, however, we need to look at ways to use e-mail to expand communications within the organization, particularly large organizations. Due to the penetration of standards, all staff should be familiar with whichever version of Windows is run within the organization, how to navigate through Windows (with and without a mouse), and how to manage files associated with Windows (Latham 2000). Librarians who are Webmasters need to have a working knowledge of HTML (Hyper Text Markup Language), tables, browsers, graphic placement, CGI (Common Gateway Interface) programming, UNIX and Java (Saunders- McMaster 1997). The challenge facing libraries is to get their librarians up to speed and to master the tools they use in working with electronic information.

According to Marmion (1998) while many individuals, and even some institutions are already there, as a profession librarianship is not. Many research libraries, even, are not. Ongoing training is necessary if today's libraries are to keep up with changing technology. In a digital era the role of the librarians are quite different from the traditional librarian. The traditional librarian is expected to play select, search, collect, organize, maintain and preserve the resources. The role of librarian in a digital era are-

- **Negotiator** – a person who should be able to identify the needs of users
- **Navigator** - Searching the ocean of information regardless the format
- **Facilitator** – Information and Infra-structure
- **Educator** - being familiar with information in different formats and should be able to train the users whenever required
- **Entrepreneur** - Marketing Library Services

- **Information filter** – Able to provide right information, in right time to the right person from right resource.

4.9.1 Emerging Technology of Library 2.0

With Library 2.0 library services are constantly updated and reevaluated to best serve library users. It also attempts to harness the library user in the design and implementation of library services by encouraging feed back and participation en.wikipedia.org/wiki/Library_2.0. Library 2.0 is the application of interactive, collaborative and multi media web based technologies to web based library services and collection (Maness;2006).The basic idea of Library 2.0 is to transform library service by making them more personalize, more interactive, collaborative, more web-based, driven by community needs. A very different communication environment for providing more personalized services to users making librarians more competent. The term Library 2.0, first coined by Michael Casey in 2006 on his blog Library Crunch, refers to a number of social and technological changes that are having impact upon libraries, its staff and their clientele, and how they could interact. It is a model for modernized form of library service that reflects a transition within the library world in the way services are delivered to users. The focus is on user-centered change and participation in the creation of content and community**.** (http://en.wikipedia.org/wiki/Library_2.0). The application of concepts and technologies of Web 2.0 applied to the library services and collections is named as "Library 2.0". It is a concept that personified new generation of library services to meet the present day users' needs and expectations.

- **Components of Library 2.0**

As it is an advanced version which needs to be employed in the library, the users including the staff members need to be aware with various applications and devices including web sites for instant access of information and dissemination of the same. It further supports the following for instant access and dissemination of information to the users.

a) Wiki -

It is a collaborative website whose content can be edited by any one who has access to it. It is a web application that allows users to add content, as on an Internet forum, but

also refers to the collaborative software used to create such a website. en.wikipedia.org/wiki/Wikis

b) Blog-

A blog (WEBLOG) is a website that contains dated entries in reverse chronological order (most recent first) about a particular topic. http://www.answers.com/topic/blog One person or groups of contributors can write them. Entris. es containing commentaries and links to other websites, images contributed by one person or group of people. Some times search facility may also be included. en.wikipedia.org/wiki/Blogs

c) Really simple Syndication (RSS)

RSS is a family of web feed formats used to publish frequently updated content such as blog entries, news headlines and podcasts. An RSS document (which is called a 'feed' or 'web feed' or 'channel') contain either a summary of content from an associated website or the full text, RSS makes it possible for people to keep up with websites in a special programme or filtered displays. en.wikipedia.org/wiki/RSS

d) Podcast-

A portmanteau of Apple's "I Pod" and "broadcasting" is a method of publishing files to the Internet allowing users to subscribe to a feed and receive new files automatically by subscription, usually at no cost. It first became popular in late 2004, used largely for audio files. en.wikipedia.org/wiki/Podcast

d) Social Networking-

Social Networking service uses software to build online social networks for communities of people who share interest and activities or who are interested in exploring the interests and activities of others. Most services are primarily web-based and provide a collection of various ways for users to interact, such as chat, messaging, e-mail, video, voice chat, file sharing, blogging, discussion groups and so on.

4.10 Conclusion:

In the modern society, the types of information and the media which present them have become manifold and multifarious, offering men and women a vast selection. Regardless of which group in a human society is discussed, each one bases its action upon current information and rejects and earlier data. ICT have become the basic building blocks of modern society. They infuse the business environment; support the success of Modern Corporations, provide governments with an efficient infrastructure and add value to the processes of learning, and in the organization and management of learning institution. The very facts that have phenomenally improved productivity by intelligent use of the technology, also risk driving the poor to the periphery, thus creating barriers within and between societies, and could lead to social unrest and tension. ICT disparities usually exacerbate existing disparities based on location such as urban-rural, gender, ethnicity, physical disability, age and especially income level and between rich and poor countries. The revolution in ICTs has profound implication for economic and social development. ICT is the major driving force behind in the information/knowledge society.

The functioning of a College library has been with a fairly old style for a long time. The process indeed was slow and hence it needed a useful improvement. The electronic and digital system brought about a remarkable revolution in the life of libraries. This led to computer oriented technologies. Undoubtedly this new system gave a new boost to electronic publications which greatly helped the library budgets. Besides, we have taken advantage of the copyright based industries, computer software, intellectual property and agreement having links ethics.

Colleges of Mizoram are lacking in the field of Information Communication Technology infrastructures and manpower. Most of the college librarians do not know the importance of technology in the college services, they rather to manage their library by traditional methods. The main keys for acquaintances of technological environment in the library are acquiring Computers and other peripheral, it is absence in the colleges of Mizoram.

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Chapter – 5

Digital Information Resources and Resource Sharing.

5.1 Introduction

In the days of yore, library was considered as a storehouse of books and preservation. The librarian or librarian in-charge was supposed to be a custodian of the books and other documents stored in the library. The users or the consultants were expected to use the library at their own without giving any attention the need of documents or information which was also supplemented with putting less emphasis on organization of documents in the library. Further, the users were also not being imparted with any need based services by the librarian or any other staff of the library. Libraries turned to be passive and archival institution only. However, with the advancement of information technology, need of information, multifarious research, proliferation of literature both traditionally and electronically forced the librarian to impart services in an effective way. Increasingly the library services visualized its growth and development by day by day. Libraries today often see themselves as 'hybrid' institutions, making available both print and digital resources, and many observers see this as a transitional stage on the way to the digital library, as defined by Oppenheim and Smithson as 'an information service in which all the information resources are available in computer-processable form, and the functions of acquisition, storage, preservation, retrieval, access and display are carried out through the use of digital technologies' (1999: 97). A visit to a large university library today is not likely to convince anyone that this prediction is fanciful: typically the bays of print materials are areas of largely undisturbed tranquility, while crowds, queues, and frantic keyboard activity identify where the computer terminals linked to electronic resources are to be found.

Technology has been an important driving force for change. In library environment traditional services of classification, cataloguing, and other technique usage are changed by day by day. Now the resources of the library are placed in a scientific way of new concept, a concept of virtual. Electronic Resources using helps the library services efficiently in many ways of cost effectiveness, manpower reducing, retrieving, storage space and time consuming. Card catalogues have largely been replaced by online catalogues and these are being expanded through the addition of materials not previously included. It is no longer seen as a tool bounded by the collections of a single library but one that revels the availability of resources in a network of libraries is essentially a gateway to a universe of Information resources in

printed, electronic or other forms. A revolution search out the services of the library into the technological world, the demand of easy access, store and retrieval wake up the digital library into the digital mankind. The resources occupied into the digital library acquire in a digital or electronic format, materials of the library are now called as e-resources. The processing of electronic resources is we called it digitization.

Electronic and other digital information Resources are those resources that include both documents and non documents in electronic or e-formats that provide information or a pointer to the information contents which can be accessed via Internet/operated in computer based environment. Different e-resources include e-book, e-journals, e-reports, e-content pages, e-learning material, etc.

5. 2 Digital Information Resources

Web is full of resources. All types of documents are available through it. Publishing industry has been heavily depending on it. Informally we can divide all available resources in two categories:

☼ **Paid e-resources:** Publisher/owner is charging some fee to access the resource, which comes under this category. Access to products from the commercial publishers is mostly available on payment. Few of the leading publishers under this category are Royal Society of Chemistry, Elsevier, Springer, Blackwell Publishing Agency, Cambridge University Press, etc.

☼ **Free e-resources:** The list of this type of resources is quite long and it can be divided in few more sub-categories like: n Open Access Journals/Free Journals: Many of the publishers are providing free access to few of their journals and many organizations are making open access for their product/s. n Information available at Institutional Repositories: Various institutional repositories are accessible to the world without any cost, e.g. Institutional Repository of D-space at the INFLIBNET (http://dspace.inflibnet.ac.in) and Institutional Repository of Indian Institute of Science, Bangalore can be accessed freely. n Organizational/Individual's websites: Organizational and Individual websites are also a source of accurate information. For example Union Databases (books, serials and these available with Indian universities) and other specialized 591 databases which are being maintained and hosted by the Information and Library Network Centre (INFLIBNET) at its official website are

good source of information. n Individual Blogs/Professional discussion Forums: These are the latest and new web options on the Internet to share your views or opinions with other fellow professionals around the world. Day by day various forums, discussion groups and blogs are flourishing with explosive speed.

The characteristics of Digital Resources are as follows:

- Information is always available with access to very large information collection
- It is not limited by physical locations
- It supports multimedia content.
- It can be shared by many users.
- It is quick, accurate and easy to locate a specific piece of Information
- Remote access to expensive and rare materials.

5.2.1 Collection Development of Digital Resources

The collection development policy for digital resources requires a careful and systematic planning device broadly most similar to the policy adopted for print resources. It should also fulfill a broadly similar communication function for, unlike a good collection development policy, digital access to the catalogues of a library indicates the individual items it holds or makes available, not the principles and policies which inform the work of those building and maintaining its collection. As in the case of print resources a collection development policy can provide some protection for library staff in the legitimate performance of their selection duties by laying down the principles governing selection that have the sanction of the library's parent body. This protection is at least as important in a digital environment as in a print one, since, for example, potentially offensive sites displayed by clients of the library on the screens of its computer terminals in public areas are more likely to cause outrage than material less obtrusively retained with the covers of a printed volume. Such considerations suggest that a collection development policy for digital resources is as important as one for print resources. The reality, however, is that the policy is more important in the case of digital resources than it ever was in the case of print. Partly this is because of the nature of digital resources. In the 'pre-digital' era libraries did acquire materials such as audio disks and microforms that required equipment to access the data they contained, and there was of course the 'time bomb' of the slow physical deterioration of most twentieth century paper-based materials.

But most collections were predominantly print and most libraries most of the time were able to operate without giving much consideration to these problems. In general, materials once acquired and placed on the shelves, could be expected to be readily available several decades later. Digital materials, in contrast to paper-based ones, require computer hardware and if they are to be used, the library must ensure that the appropriate kinds of hardware and software are available in sufficient quantities. In the case of material not owned but accessed remotely the problem may usually be minor, as vendors will normally ensure their material operates on standard software; but digital resources that the library purchases outright and maintains on its own electronic systems pose a potentially far greater problem. Finding that changes in information technology, including rapid obsolescence may make it difficult or impossible to access a resource created several years earlier is quite a common experience. This means that the selection decision becomes more complicated, because it involves what are in effect new and possibly unpredictable factors to be considered. In the words of Ellis Weinberger that the institutions were need to determine the possibility and cost of preserving the object before obtaining it (2000: p68). Collection development policies must include consideration of both the equipment to use and the preservation implications of the digital materials to which they refer.

The complexities of collecting digital resources also stem partly from the ways in which such resources are made available to libraries. Publishers of digital materials, a cynic might say, have avoided many of the mistakes made by print publishers, who allowed a situation to develop in which libraries purchasing examples of their products were free to make them available to whomsoever they choose, including casual visitors to the library and even individuals in other libraries who sought access to the items through an interlibrary loan service. In the case of digital resources publishers' interests are typically protected by licensing conditions that they impose, or attempt to impose, on libraries seeking to purchase access to their products. The library may find itself confronted with extremely restrictive conditions attempting to govern to whom and under what conditions it may make the digital resource in question available, and further, imposing on it legal liability for any breaches of these conditions by people who access the resource through the library. Consideration of licensing conditions needs to form part of the selection or acquisition procedures for

digital resources. Negotiation may well be necessary, for in extreme cases the licensing conditions proposed, if taken literally, would make library use of the resources impossible. The library may have its own conditions which it wishes to insist on writing into the license agreement, such as a requirement that digital resources provide a satisfactory level of use statistics (Johnson 2004: p83). The services of legal advisers may even be needed. A digital resources collection development policy should probably not be a detailed negotiator's manual, but if it is to be an effective planning device it will need to outline the procedures to be followed in dealing with the complexities of licensing.

In many cases the library will not be acting alone. Some digital resources are very expensive, and libraries band together in purchasing consortia to obtain access to them. Such consortia inevitably restrict to some extent the library's collecting autonomy, and modern collection development policies need to make provision for the possibility of the library's entering into consortia agreements that convey both advantages and obligations on it. It is not merely in relation to other members of a consortium that a library may find its autonomy somewhat circumscribed in a digital environment. In concerning itself with digital resources the library is entering territory to which the parent organisation's computer centre might lay claim, since the centre might well argue that matters relating to computer hardware, computer software, and even data files are its area of expertise. The matter may be dealt with, if not always resolved, by amalgamating the library and the computer centre, but whether or not this happens, an important role of the collection development policy may be staking out the claim of the library to be the collecting agency for files collected for their information content rather than as tools required in the conduct of the organisation's operations. (Kennedy, 2005).

Users of digital information can be broadly divided into four groups of categories according to the usage of information such users are (Satyanarayana, 2003; 166p)

☺ Those who have started using the latest technology of digitized information

☺ Those who have been using these technologies and digitized information and are expanding it rapidly

☺ Those who have the fear of using new technologies for information retrieval

☺ Those who are intermixed between the above three groups, but have no training to use the technology for accessing global information.

5. 2.2 Access to Digital Information Resources

The digital information resources broadly can be accessed broadly in two ways such as,

♦ **Direct Access Resources:**

These are the resources which can be used at any time, e.g. Databases available in CD form. It further can be got at (i) Positive, that can be used at any time through computer by way of searching and downloading the resources and (ii) Negative, where database CD can be protected from scratches or other things that may spoil the, information contained in it by getting out dated with minute span of time (not up to date regularly).

♦ **Remote Access Resources:**

These are the server and client based information resources. These are the online resources in which location of the server is somewhere else, may be in another country and clients are located in different geographical location (countries), e.g. Science Online, Chemical Abstract Services (CAS), etc. This type of access can be given on specific range of IP (Internet Protocol) within the campus, access through username password downloaded from anywhere with the help of Internet.

Positive: update is regular feature of these types of resources - can be used by any number of users at a same time.

Negative: required Internet to use the resources - processing of quarry depend on Internet speed and processing speed the remote server. Some problems at the server can hinder information access.

♣ **Bibliographical resources:**

These are the resources provide bibliographical information only like- title, author, name of the journal, volume and issue number, publication date, publisher and most importantly an abstract of the entry. Bibliographic e-resources are mainly containing information on single subject. These resources are not providing full-text but facilitating the user by providing linking facility to the full-texts in some of the cases,

e.g. Biological Abstracts (database covering biological sciences), MathSciNet (bibliographical database deals with mathematics), Chemical Abstract Services (biggest bibliographical resource for chemical sciences), etc.

♣ **Full-text e-resources:**

These e-resources provide full-text of the document apart from its bibliographical information. The approach in these databases is journal wise or publisher-wise only, e.g. American Chemical Society is the database and containing titles published by the American Chemical Society. The same way there are, Institute of Physics, Cambridge University Press, Springer Journals, Elsevier Journals and Taylor and Francis, etc. are various publishers who are providing access to fulltext journals/databases through Internet.

♣ **Portals/Aggregator products:**

It is just like a super market, where one can get everything from a single shop. Portals provide a single interface to search various databases, e.g. Under UGC-Infonet: E-Journals Consortium Indian universities are accessing more than 20+ different databases or products. User has to search individually (has to open all the websites one by one to search within them) for a single term if s/he wants to search in all the provided products then this exercise needs much time to cover all 20+ products. Here portals can help a user; portals will search the needed term in all the products from single interface. There is no need to go for individual database. Portal does not have its own contents but all the contents have been taken from the member publishers and provide the linking facility to the full-text. Ingenta and J-Gate are the examples of these portals.

5.2.3 Advantages of Digital resources of Information

The advantages of Digital information resources are

- Information that is digitized can become available to anyone anywhere in the world at minimal cost and its source does not get exhausted with unlimited use. Digital information obtains full networking capability.
- Effective searching can be possible to retrieve a particular information
- Downloading of the required information is very easy

- Presentation of information through the digital resources can be done within a reasonable time with speed and easy
- Multiple access to electronic resources is possible
- Access to information is instant.
- It develops a distributed learning environment by which all the users can be benefited at a time.
- Large volumes of data can be stored in the digital resources and made accessible to the users.
- Remote access to information also can be possible.
- Cataloguing, editing, referring, indexing, etc., can be done with easy and speed
- Education and training can be provided through digital resources effectively.
- Information transfer can be provided with speed and accuracy.
- Career planning and related information can be accessible using the digital resources of information.

5.2.4 Creation of Digital information resources

To create and manage digital resources, the very first efforts must be automated libraries by computer applications. The basic requirements for creating digital resources are:

- ♦ All the functions of the library should be computerized
- ♦ Networking facilities like LAN and WAN must be available in the library
- ♦ CD-ROM and multimedia workstations to be installed
- ♦ Internet connection must be provided
- ♦ Digital computer scanner and CD-writer facilities to be established.

5.2.5 Steps for planning digital information resources.

- ❋ A planning committee with members of a computer specialist, librarian, chairman and skilled library professional should be established for strategic planning and managing a digital library.
- ❋ Sources of financial aids for digitizing the library must be planned
- ❋ IT infrastructures for the digital library should be established.
- ❋ Computer hardware and software requirements should be fulfilled
- ❋ Manpower development should be maintained.

- ❋ Digitization of the information must be done in the following two ways such as i) development of new digital collection and ii) digitization of the existing collection.
- ❋ Access to global digital information resources should be made available.
- ❋ Adequate and comfortable furniture and space facilities must be provided.

5. 3 Various Subscription Models

Various subscription models are available now a day. Few of the most demanded pricing models are:

- Print Plus Model: In this model print journals are being subscribed by a library and given electronic access to the subscribed information.
- Print plus Electronic Combined: In this model combined electronic and print, information is being subscribed with where subscription rate will be based on print subscription.
- Bundle Purchase Model: In this selected groups or subject clusters of titles are being subscribed.
- Pay-per-View: In this model client has to pay for whatever has been downloaded by the users of this client.
- Subscription with Historical Archive (back volumes): all the publishers have different subscription price for accessing back volumes of their products. Sometime subscription is based on one time payment and some time access with moving wall option for few years of back volumes.

5. 4 Searching Facilities and Techniques for information resources

Internet has thousands of databases containing millions of pages of information in them. All the databases have been using different techniques of indexing Therefore, it is a quite a daunting exercise to find information which one is looking for. Hours could be spent on the Internet in search of specific information without anything productive being found. The one of the biggest advantage of e-resources is the ability to use computer for searching a word or words in an electronic product or database. There are various types of search options to search the electronic databases, some of these are:

►**Simple Search:** In simple search one can approach the needed information through one simple term or keyword. Simple term or small phrase without using AND, OR and NOT parameters.

►**Direct Search:** It is also like a simple search, in this one can retrieve the document directly though the title, volume number, issue number, year of publication or through page numbers of the document.

►**Advance Search:** It contains Boolean operators to combine the searchable keywords; means in this one can use two or more than two keywords to retrieve the related documents. Here one can also combine search fields like author, title, abstract, article title, or whole document and also limited upto one publisher or one journal only by using AND, OR and NOT operators.

►**Search within the results:** Many databases are giving this search options to refine the result of one query.

►**Federated Search:** it is a searching for resources from heterogeneous online contents, mainly known as 'cross-collection search', Portals like Ingenta and etc. and various search engines, are using federated search option.

5.5 Use of Electronic and digital information resources in libraries

The electronic or the digital resources are becoming more and more available in the libraries. The print media is now being digitized, which increases the availability of books and journals in the electronic format. The electronic books are helpful because of their portability and its feature of incorporating more than one book in a single hand held device. The published material is also available on open access. This helps the poorer people also to get the information required free of cost. They need not worry for licensing and usage of the information.

The government is also undertaking various steps to introduce this facility in academic institutions for the benefit of research scholars. The university avails this facility and gain access to e-resources. UGC-INFONET is a programme that provides electronic access to scholarly literature in all areas of learning to the Universities in India. This programme is wholly funded by the UGC and administered and monitored by INFLIBNET. Universities which are always short of funds, are greatly benefited by this facility.

5.5.1 Role of Electronic publications:

The various features of electronic resources have given birth to e-publishing, which is based on various components.

- CD – ROM (Compact Disc Read Only Memory): CD – ROMs are tool for storage and retrieval of huge information. They save shelf storage space and the publishing cost is also less.

- DVDs (Digital Video Discs): These replace the CD – ROMs as their capacity is several times higher than the multimedia CD-ROM.

- Online Databases: Databases are the collection of Data records on magnetic media in computer readable form. These databases provide instant access to the information.

- Multimedia Packages: Multimedia is an integration of text, graphics, video, audio and animation on a single medium and adds quality to the collection of the libraries.

- E-mail and Fax media: The electronic communication systems permit the transmission of images like photos, maps, drawings and printed paper on paper reproduction at the remote receiver.

- Internet: It is a world wide network of computer networks that contains a vast collection of information and resources.

5.5 .2 Role of E-books

E-books are preferred by the users for their features like portability, upgradability, note making, citation, changeable font size, references, links to other relevant sites, searching, etc. The libraries purchase the e-books and view them on monitor or some specific e-book readers. E-books can also be circulated as printed books. They can be transferred from libraries catalogue to users e-book readers for a fixed loan period and after which it is automatically taken back. E-books help the readers by giving more possibility of access and media of learning.

They can be accessed from anywhere at anytime and are free from time lag. The books need not go out-of-print. They can also create a personal book library from the collections they hold. The content, however, needs to be compatible to all hardware devices. They need to support any formats to make it easy to transfer and read. The features of e-book include;

- Their portability gives a new chance of learning, eg., Distance learnin
- Can be carried and transferred anywhere
- Their feature like changeab e font size makes it easy for use.
- Searchable and navigable through links are provide

5.5 .3 Role of E-journals

It is one of the most important services rendered by the digital & electronic Libraries. e-Journals are published in electronic format and distributed to its users via Internet. e-Journal are also known as Digital journals/online journals/electronic serials. The main feature of the e-journal is, its ready accessibility and it does not consume much time for printing and mailing. Many publisher and organization offer free access to their online journals. Eg:- Journals of Digital Information. http//jodi.ecs.soton.ac.uk/

Characteristics of e-journals are:

- The speed of publication, delivery of such issues is faster than print.
- Worldwide through Internet and supports sound and images with text.
- Facilities of downloading, printing, etc.
- It provide link to related articles cited in each articles and other useful resources
- Preservation problem will be minimum compared with print journals.
- Cost involve will be less than print.

E-journals have now become a major source of information delivery for scholars and researchers. Their timely production, delivery, incorporation of multimedia, hyper-linking and searching facility has attracted the interest of people. E-journals facilitate documentation in many ways. They help for getting the most recent publications even before they are published in hard copy.

The libraries incorporate these facility, they subscribe to the journals online and get their login details and upload in their local server. The users of that library can browse through the journals. The e-journals provide closer link with a wider variety of

publicizing and publishing by bringing informal and supplementary information into the closer proximity with formal, peer-reviewed material. The libraries can help the users by:

- Creating a subject wise list and linking to all resources under the subject.
- Creating search for journal title and locating the sites that provides access.
- Maintaining the list of websites that provided e-journals and checking for access at frequent intervals.

The users appreciate the ways of online searching, browsing, scanning, retrieval and even submission of articles as it saves their time and make them more productive in their work.

5.5 .4 Role of Open access publishing

The fee-based model publishing has restricted the users from accessing scholarly literature by using their security system and access mechanism, thereby putting a limitation or restriction for the use of researcher. If this was made available freely, then the new research findings can be obtained by any one without any restriction. This helps the libraries reduce the financial constraints as now they can own a collection of archives of different subjects. Access is not restricted by any means; they can lend and copy digital archives.

The objective of open access is to maximize research impact by maximizing research access. Open access journals are mostly used by researchers for their reference compared with other media. This also helps the researcher to find journal articles in his subject irrespective of their subscription. This helps libraries tackle the problems of small budget.

According to the Directory of Open access journals only about 7% of all journals are open access. Hence in some cases, a researcher will not get the information he requires from any of the sources. Moreover, there are some authors who could not publish their articles in any open access journals. This situation must change and the number of open access journals must increase.

5.5. 5 Role of e-Documents:

It is said that the modern society is changing towards paperless society. In these sources, microforms, audio-visual materials and electronic formats are included. Thus

the sources which are in electronic formats are called electronic document. E-documents are acquired in format and published by releasing them to central database. They can then be distributed by floppy disk; CD-ROM etc. browsed quickly using a computer, and can embed text, picture, sound, animation etc. E-Documents are found in the following tow formats:

- ❖ Machine Readable (online) Databases: it contains raw data like bibliographical information description on non bibliographical information etc.
- ❖ Compact Discs: CD is important for storing, retrieving and disseminating.

5.6. Advantages of Digital resources compared with traditional resources

- It gives better access to a wider range of information.
- It is cost saving as the e-services are bought through consortiums
- It leads to better use of staff time.
- It leads to equal access.
- E-Publishing can achieve significant saving over traditional paper based system.
- Conservation and preservation problem will be minimum with e journals compared to the print journals.
- The speed of publication, delivery, retrieve, and search and stored is much easier are faster than traditional, further reducing the gap between author of paper and the end use.

5.7 Digital Library and its components:

In digital libraries services are fully automated and all resources are in digital form. It enables users to interact effectively with information distributed across a network. It may be based on a subject, a vocation or procession, a region or a nation. Digital libraries are electronic libraries in which large number of geographically distributed users can access the contents of large and diverse depositories of electronic objects. Electronic objects include networked text, images, maps sounds and videos. They also include hypertext hypermedia and multimedia compositions. The three main characteristics of digital libraries are (i) the storage of information in digital form, (ii) usage of communication networks to access and obtain information, and (iii) copying either by downloading or on-line/off line printing form master file.

A digital library is understood to have the information stored predominantly in electronic or digital medium. The digital information collections may include digital books, digital/scanned images, graphics, textual and numeric data, digitized films, audio and video clips, etc. A digital library is expected to provide access to the digital information collections.

Digitization is the process of converting data to digital format for processing by a computer. Digital libraries are a managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network.

5.7.1 Factors for Emergence of Digital Library

Many factors are compounded with the emergence of digital library which apart from the application of technological devices in the library, the users need became one of the primary component to turn the library a digital library. However, in nutshell the following explanations clearly visualize the notion of the digital library. There are many definitions of a digital library. Terms such as electronic library and virtual library are often used synonymously. The elements that have been identified as common to these definitions,

- The digital library is not a single entity;
- The digital library requires technology to link the resources of many;
- The linkages between the many digital libraries and information services are transparent to the end users;
- Universal access to digital libraries and information services is a goal;
- Digital library collections are not limited to document surrogates: they extend to digital artifacts that cannot be represented or distributed in printed formats.
- A well computer literate user base has started to demand more information at the desktop
- Library budgets are not enough for satisfying the users demands for keeping a hard copy journal titles.
- Users demanding documents for their research were not concerned whether these were held locally in the library or obtained from outside, as long as they could be supplied quickly.

- The distinction between library collection management and document delivery the ownership and access approaches were increasingly becoming blurred.
- Librarians started giving increased emphasis to provide access to resources available elsewhere rather than physically possessing resources.

Further, a digital library is a seamless extension of the library that provides scholars with access to information in any format that has been evaluated, organized, archived, and preserved. Access to this evolving collection of digital information is provided through personalized systems as well as through the services of information professionals. The digital library adds value and saves time while shifting the times of access. It reduces need for proximity to information resources, but still emphasizes the quality of those resources. It is a library that can be individually customized and, ultimately, will be easy to use.

5.7.2 Components of Digital Library:

- Conversion of print to digital and acquisition of digital media
- Metadata creation
- Storing of digital resources.

5.7.3 Functions of digital library

- Provide access to e-resources: it will provide e-resources to users at little or no cost. Users can also access e-resources anytime, anyplace.
- Improved information retrieval: able to search by word or phrase. It will also provide user friendly interfaces, easy access to e-resources
- Electronic document delivery: information transfer in a physical medium by electronically (eg-print, videotape, sound, disk, DVD etc.)
- Access by Multiple users: Same resources in same time used by many users.
- Avoiding space problems: Physically avoid a space occupied by resources
- Provide access to a very large information collection
- Support multimedia content
- Network accessible
- Provided user friendly interface
- Unique referencing of digital objects
- Enable link representation to local/external objects
- Support advances search and retrieval

- Information is available for very long time.

5.7.4 Advantages of Digital Library

- It helps in preservation of materials
- Saving the space
- It also provides facility for downloading and printing
- Provide universal accessibility

5.7.5 Resources of Digital Library

Web site represents those electronically available information resources related to issues of digital library research and development. A sampling of the resources listed here: the British Library Digital Library Programme, the Digital Library Federation home page, and International Federation of Library Associations and Institutions (IFLA) Digital Libraries: Resources and Projects page. These sites provide end users with a glimpse into current activities of those at the forefront of the study of digital libraries. . The Web sites of researchers engaged in digital library issues. The listing of researchers included in this section of the Web site originated from a Delphi study of digital libraries conducted by students at the University of Missouri-Columbia during the winter 1998 semester. Results from the study identified leading researchers or experts in digital library research and development areas. Web sites from this community can provide valuable links to resources as well as original material, such as course syllabi and documents and reports, not necessarily found elsewhere in print or on the Web.

5. 8 Resource Sharing

The concept of 'Resource Sharing' involves two words ie Resource and Sharing whereas Resource means wealth or available assets and Sharing means giving to have or use with others. Thus Resource Sharing means sharing one's assets with others In terms of library, resource sharing means sharing of library resources by the participating libraries among them selves on the basis of principle of co-operation all for one and one for all. Resource sharing in library involves the followings:

- Materials that includes information of all kinds and available in any format
- Manpower
- Equipment
- Expertise

- Services
- Money

In the present age of information revolution, the information needs of the users have been increased enormously that no single library on its own can meet their information requirements. This has necessitated the need for effective linkages and cooperation between libraries and information centers for sharing available resources and information through networking.

The tremendous growth of Information Technologies has brought many changes in libraries. These technologies have facilitated LIS professionals to work together to acquire and share library collection and provide digital library services to the user community. Increase of literature in all subjects and shrinking of the library budget made the libraries depend upon each other. This leads to Library Cooperation, resource sharing and networking

Being an integral part of the institution, the College Library takes care of the information requirement of the students and teachers in the college. It has important role in the teaching and learning process. In order to meet the objective "Right information to right user at the right time", the college library have to spent huge amount of money to acquire, process, maintain and retrieve information sources. Even after spending such a huge amount the college library fails to meet the information requirements of the users' community at a desired level. No college library is self sufficient and therefore Library Resource Sharing Network in a college library is a necessity to ensure the optimum utilization of available information resources. The most important goal of Library Resource Sharing Network is to maximize the availability of resources materials and services at the minimum expenses. The explosion of information keep the budget of the library in a critical position that librarian feels more difficult to acquire relevant documents for their readers. These conditions have led to the creation of database on various subjects for providing pinpointed information services to the users. Hence, the objective has now been changed from comprehensive selections and acquisition of documents in libraries to satisfying the reader's requirement by providing nascent and relevant information within the short span of time. This situation has further led to the formation of library networks and building of databases for Resource Sharing.

5. 8 .1 Resource Sharing Network

Resource sharing network is basically a co-operative endeavor among the participating libraries and information centers in developing, sharing, utilizing resources at the local, national and international level. It establishes mechanisms of access to information, information transfer and exchanged in order to support all academic activities including learning and research. Such resource sharing network facilitates easy availability of information resources and services to all its potential users. Hence resource sharing network provide access to the academic world. Allen Kent (Kent; 1974) mention that Resource Sharing is a mode of operations functions whereby that functions are shared in common by a number of libraries. The new goals for achieving the resource Sharing objectives are:

- Ω Increase access to information and sources at existing cost
- Ω Access to existing information and services at least cost

5.8.2 Network

The rapid growth of telecommunications led to the creation of new methods of computer-based library systems. These developments enable the user to sit before a personal computer and have access to the information at a far-off place. Any communication via electrical or electromagnetic media, including radio, television, telegraph or telephone is known by the word telecommunications. In the computer field application of this term is meant to the transmission of digital data between remote computers over a telephone system. The linking of computers along with telecommunication has made the networking usage to the maximum extent. In general, the term network can refer to any interconnected group or system. Several different types of networks exist, including:

- ◊ **Human networks**
  - ✠ Business network
  - ✠ Economic network
  - ✠ Entrepreneurial network
  - ✠ Old boy network
  - ✠ Social network
  - ✠ Value network

- Marketing network - Networking refers to the art of creating interdependent or interconnected groups or systems for the mutual benefit of all members of the ecosystem.

◊ **Media Network**

- Radio network, create and distribute radio programming through multiple channels that connect in a network
- Television network, create and distribute television programming through multiple channels that connect in a network

◊ **Technology Network**

- Electrical network, a network of electrical components
- Computer network, a network of computers
- Computer networking, the scientific and engineering discipline concerned with this kind of network
- Telecommunications network, a network of telecommunications links
- Energy transmission and distribution networks
- Electric power transmission network, a network of conduits for bulk transmission of electric power
- Electricity distribution network, a network of conduits for delivery or short-haul transmission of electric power
- Pipeline transport network, a network of pipes for transmission of gases, usually natural gas
- Gas distribution network, a network of pipes for delivery of gases, usually natural gas or, formerly, town gas
- Network Systems system network, a system of combined networks of main systems

◊ **Other Network**

- Transport network, facilities on which people and goods move
- Spatial network, urban networks or networks of rooms within buildings
- Network effect, a characteristic that causes a good or service to have a value to a potential customer dependent on the number of customers already owning that good or using that service

5.8.3 Computer Network

Computer Network is the term used between systems of computers connected by transmission channels. Network cannot be classified rigidly as one overlaps over the other, and often data flow from one kind of network into another. Network (computer science), techniques, physical connections, and computer programs are used to link two or more computers. Network users are able to share files, printers, and other resources; send electronic messages; and run programs on other computers.

A network has three layers of components such as,

- Application Software
- Network Software
- Network Hardware.

Application software consists of computer programs that interface with network users and permit the sharing of information, such as files, graphics, and video, and resources, such as printers and disks. One type of application software is called client-server. Client computers send requests for information or requests to use resources to other computers, called servers that control data and applications. Another type of application software is called peer-to-peer. In a peer-to-peer network, computers send messages and requests directly to one another without a server intermediary.

Network software consists of computer programs that establish protocols, or rules, for computers to talk to one another. These protocols are carried out by sending and receiving formatted instructions of data called packets. Protocols make logical connections between network applications, direct the movement of packets through the physical network, and minimize the possibility of collisions between packets sent at the same time.

Network hardware is made up of the physical components that connect computers. Two important components are the transmission media that carry the computer's signals, typically on wires or fiber-optic cables, and the network adapter, which accesses the physical media that link computers, receives packets from network

software, and transmits instructions and requests to other computers. Transmitted information is in the form of binary digits, or bits (1s and 0s), which the computer's electronic circuitry can process.

The main benefits of computer networks are:

* Resource Sharing
* Enhanced performance
* Improved reliability and availability

A group of two or more computer systems linked together. There are many types of computer networks, including:

- **Local-area networks (LANs):** The computers are geographically close together (that is, in the same building). Data is transmitted from one computer to another digitally over the channel (twisted pair wire, co-axial cabel or fibre-optic cable) at speed currently ranging from 1 million to 16 million bits per second. A LAN is typically confined to a single building or a single department in a building. They may consist of a mix of microcomputers, mini computers, mainframe computers and various kinds of stand-alone video-display terminals. LAN does not need telecommunication channels as they are limited to one area only. All local area networks transfer data in digital form at a high speed and have low implementation cost.

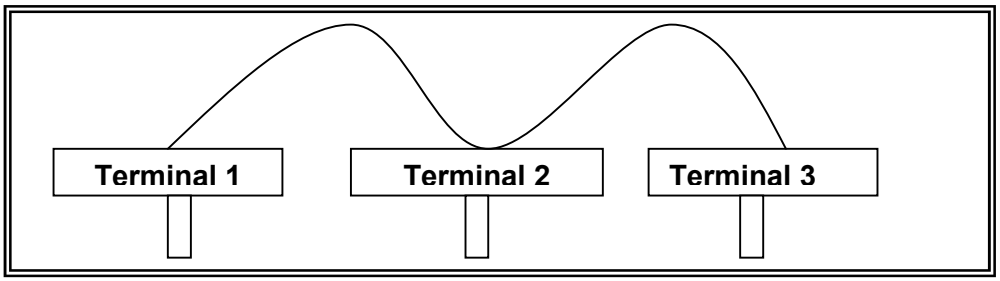

Fig-12: Local Area Network.

- **Wide-area networks (WANs):** The computers are farther apart and are connected by telephone lines or radio waves. They are bigger networks with dedicated telephone lines or satellite links and broadcasting. WANs are also called Long Haul Networks (LHNs). Wide area networks can either be point to point type or broadcast type. In a point to point type network, the source and the destination machines are connected to each other via several intermediate

routers. In each one is connecting a pair of routers. Here the collections of machines the hosts are connected by a communication subnet. The job of subnet is to carry messages from host to host, just as the telephone system carries words from speaker to listener.

A second possibility for a WAN is a satellite or ground radio system. Each router has an antenna or transmitting device through which it can send and receive. All routers can received the output from the satellite, and in some cases they can also receive the upward transmissions of their fellow routers to the satellite as well.

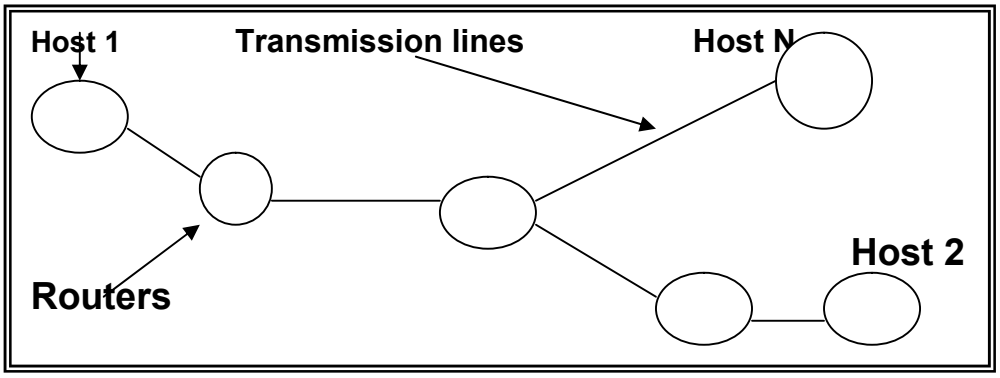

Fig-13: Wide Area Network.

The best example for WAN is the British Library Wide Area Network (BLWAN) which is operated by BL computing telecommunications directorate. This enabled terminals and computers within the British Library to communicate more easily with each other and have access to other services as well.

• **Metropolitan-area networks (MANs):** A data network designed for a town or city. It connects the computer system an other resources and sometimes local area networks to a rage from 5 to 50 Km. It uses high speed data transfer medium like fiber optics. The main reason for even distinguishing MAN as a special category is that a standard has been adopted for them, and this standard is now being implemented. It is called Distributed Queue Dual Bus (DQDB). It consists of two unidirectional buses (Cables) to which all the computers are connected as shown in figure 8. The dual bus helps the transmission of data in both directions simultaneously. Data going up uses bus A and data going down uses bus B

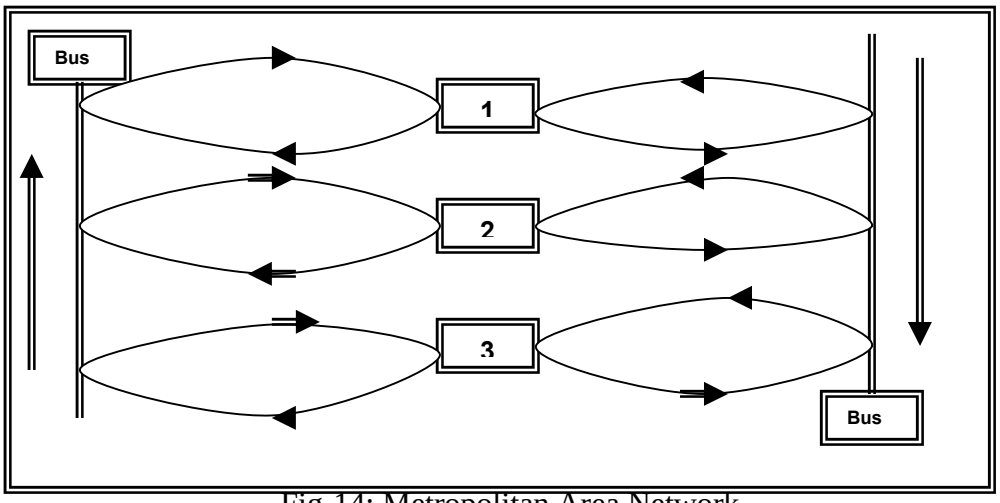

Fig-14: Metropolitan Area Network.

- Campus-area networks (CANs): The computers are within a limited geographic area, such as a campus or military base.
- Home-area networks (HANs): A network contained within a user's home that connects a person's digital devices.

In addition to these types, the following characteristics are also used to categorize different types of networks:

◊ **Topology**: The geometric arrangement of a computer system. Common topologies include a bus, star, and ring. An important aspect of any Network (LAN, MAN or WAN) is the path or route that the data take when these are being transmitted from one location to another. This is referred to as network configuration or topology. Several different network topologies exist, each with its own advantages and limitations. Some of the topologies are.

⌦**Star topology:** Star topology or star network is derives its name from the fact that there is one central controller (usually a computer) which has communication channels radiating outward. Each one is connected to a separate device such as a terminal or another computer. For two devices to send or receive data from one another, the data are routed through the central controller. These networks are typically found in cases where a large-scale central computer is connected to many terminals. The reliability of central

controller becomes the main issue in star networks, because when it goes down, the entire network fails.

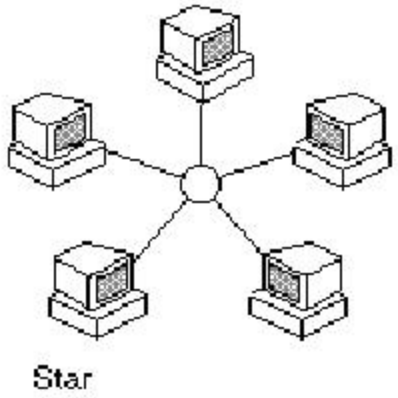

Fig-15: Star Topology

⌦**Ring topology:** a ring topology is a completely closed loop. A single communication channel with devices connected to it, runs through a building or office until the end of the beginning. There is no central controller here unlike in star topologies.

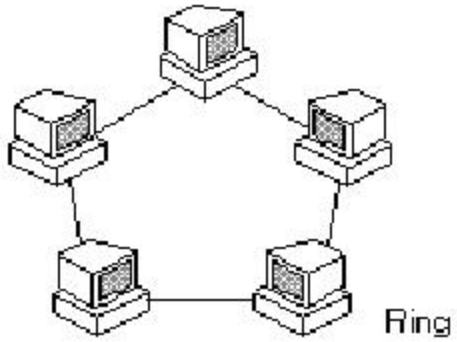

Fig-16: Ring topology

⌦ **Bus Topology:** Bus topology is a single communication channel routed along a path in which various devices can be attached. In this networking adding or taking off one computer from the bus does not disturb the system operation or the rest of the network.

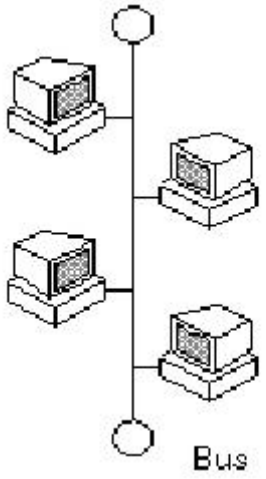

Fig-17: Bus Topology

- Protocol: The protocol defines a common set of rules and signals that computers on the network use to communicate. One of the most popular protocols for LANs is called Ethernet. Another popular LAN protocol for PCs is the IBM token-ring network.
- Architecture: Networks can be broadly classified as using either a peer-to-peer or client/server architecture.

5.8.4 Sharing of Information

When computers share physical connections to transmit information packets, a set of Media Access Control (MAC) protocols are used to allow information to flow smoothly through the network. An efficient MAC protocol ensures that the transmission medium is not idle if computers have information to transmit. It also prevents collisions due to simultaneous transmission that would waste media capacity. MAC protocols also allow different computers fair access to the medium.

One type of MAC is Ethernet, which is used by bus or star network topologies. An Ethernet-linked computer first checks if the shared medium is in use. If not, the computer transmits. Since two computers can both sense an idle medium and send packets at the same time, transmitting computers continue to monitor the shared connection and stop transmitting information if a collision occurs. Ethernet can transmit information at a rate of 10 Mbps.

Computers also can use Token Ring MAC protocols, which pass a special message called a token through the network. This token gives the computer permission to send a packet of information through the network. If a computer receives the token, it sends a packet, or, if it has no packet to send, it passes the token to the next computer. Since there is only one token in the network, only one computer can transmit information at a time.

5.8.5 Library Network:

Library network is a network which resources can disseminated between one places to another. It is any arrangement or any structure that links a group of individuals or organizations such as libraries also. The concept of library network is very relevant to develop the library services. This concept usually referred to describe a form of arrangement or and administrative structure that links a group if individuals or organizations who have agreed to work together and to share resources. Resources may consist of bibliographic information and of collections and better services to the users. Over the last so many years, libraries have become dependent upon computer and telecommunicators technologies to carry out many of their functions. These functions include not only in providing service to end users, such as information retrieval, inter-library loan and document delivery, but also those that support end user services, such as cataloguing and acquisitions.

A Library network is a description of an activity which existed before the classification was devised. When any two or more libraries talk to each other, we have the fundamental condition for networking, which is exchange. Libraries form networks primarily to achieve better sharing of resources. When one library provides a service to another we have the rudiments of network behaviour. Inter Library Loan or bibliographic exchange in any form is the chief justification of a network.

5. 8.6 Causes for Networking among Libraries:

The main causes for establishing networking among the libraries are to:

- promote sharing of resources by inter-library-loan among the libraries through computer networking for maximum use of resources.

- assist member libraries in cataloguing of books, serials, non-book materials and production of catalogue.
- facilitate and promote delivery of documents manually or mechanically.
- Co-ordinate efforts for suitable collection development and reduce unnecessary duplication wherever possible.
- establish referral centres to monitor or facilitate catalogue search and maintain a central on-line union catalogue of books, serials and non-book materials of all the participating libraries.
- develop a specialist bibliographic database of books, serials and non-book materials for search and access.
- create a database of projects, specialists and institutions for providing on-line information service.
- implement computerization of operations and electronic services in the libraries for fast communication of information.
- Co-ordinate with other regional, national and international networks for exchange of information and documents for the use of libraries and users.
- evolve standards, and uniform guidelines in techniques, methods, procedures, hardware and software, services and so on and promote adopting in actual practice by all libraries, in order to facilitate pooling, sharing and exchanging resources.

5.8.7 Library Resource Sharing Network:

A group of unique libraries come forward and pooling their resources through network is called Library Resource Sharing Network. It is an independent organization for satisfying the common desires of a group of member libraries with two way communication facility for distributing the information through computer. UNISIST main working document define Library Resource Sharing Network as a set of inter-related systems associated with communication facilities, which are

cooperating through more or less formal agreements and institutional agreement in order to jointly implement information handling operation with a view to pooling their resources and to offer better services to the user. They generally follow identical and compatible rules and procedures. There is several number of library Resource Sharing Networks in India, some of them are:

- DELNET(Developing Library Network) started in January 1988 and was registered as society in 1992, recently known as Delhi Library Network it also initiated by NISSAT DELNET had the objective on the line of CALIBNET. They were the promotional sharing of resources by user to the maximum extent, to reduce unnecessary duplication, development of various databases to help in the usage of libraries resources, to have access to resources at a faster pace by using modern electronic equipment. It is the most successful network at the moment in the country.
- CALIBNET (The Calcutta Library Networks) NISSAT took the responsibility of initiating CALIVBNET with the main objective of resource sharing. CMC limited was given this task to de done. In this networking adding of records is done by only one library and hence the swing of duplication of work and valuable manpower. The cost of hardware being high, it is reduced to a large extent by sharing.
- INFLIBNET (Information and Library Network) and many more. UGC-INFLIBNET plays an important role in developing Resource Sharing Network in College Library. Efforts have been underway to establish a VSAT network connecting all the University and College Library under the INLIBNET programme that will help to s hare resources. Along with DESIDOC(Defence Science Information and Documentation Center It also prepared Library management software (ILMS) to be used in resource sharing activities by the participating libraries

5.8.7 .1 Factors necessitating Resource Sharing Network in Library:

The followings are the factors that necessitated Library Resource Sharing Network

- Literature Explosion : Numerous growth of literature resulted the need of the resource Sharing since no library is big and sufficient enough to acquire all the materials like books, periodicals, research papers and non-book materials that are being produced.

- Readers Demand: Due to the tremendous increase in number of user the demand for materials increases.
- Limited Resources: Due to the shortage of money, space and man power no single library cannot meet all the requirements even the most resourceful library of the affluent country cannot afford to acquire, organized and put to use all the materials required by its clients that in turn result the need for sharing its resources.
- Observations : The Laws like 'Every Reader his/her Book and Every Book its Reader and the concepts like books are for all Free flow of information, Universal Availability of Publication(UAP) etc, make it obligatory on the part of the Library to provide to its readers every reading materials they are interested in. The concept like' maximum number of books at least cost' would make it impossible for a library to acquire, preserve and put to use all these materials to its readers out of its own resources.

5.8.7 .2 Objectives of Library Resource Sharing Network:

The main objectives of Resource Sharing Network in Library is to facilitate easy availability of materials and services to the users at a minimum cost and avoiding unnecessary delay and saving readers time. The basic objectives of the resource sharing Network can be classified as follows:

- Making the material available that were not in the Library
- To have access to services not available in the library
- To improve the effectiveness and efficiency of the participating libraries to serve the needs of the users
- To create integration of Library and information Services of a system or of a Geographical area
- Reciprocal lending for better interaction among the participating libraries.
- To assist member libraries in selection of materials.
- To provide aid in purchasing, cataloguing and processing of library materials
- To promote programme for increased use of library materials.
- To acquired cooperation in the development of library personnel.
- To achieve cost-effective use of resources ie human and material.
- To facilitate sharing of materials among the members of the organization.

Θ To avoid duplicate purchase of materials.

5.8.7 .3 Prerequisites of Resource Sharing Networks:

♠ Government Sanction:

There should be sufficient Budget to operate the Resource sharing Network. In a College Library, budget may be provided from State Government or if they are under UGC 2(f) &12B UGC fund may be utilized for providing Resource Sharing Network

♠ Agreement among Library Authorities:

For Resource Sharing the participating Libraries should agree the following issues like

- Agree to share all the resources they have, terms and conditions in this regards can be spelt out on mutual basis.
- Written agreements on division of responsibilities on acquisition
- Agreement on document description like same classification scheme and cataloguing code, shared cataloguing will be feasible
- Agreements on loan period and payment for loss of materialistic

Agreeing the above issues, system of Resource Sharing has been set up among the participating libraries, consequently some problems arise like which library is having a particular document that in turn consume much time and labour. Hence compiling a Union Catalogue within all the participating Libraries is the best alternatives.

♠ Computerised Library Networked:

The use of Computer and Library Networking has resource sharing given a new direction. A main frame computer interconnects a very large number of libraries into a well-knit network. In this networking system we took into account two libraries, each one of them has two terminals, one for the users and the other for the Librarian. The user can access the Union Database which contains the detailed catalogue of the holdings of both the libraries.

♠ Scheme of the system:

For this scheme, he took into account two libraries, each one of them has two terminals. One terminal is for the users and the other for the librarian. The user can access the union database which contains the detailed catalogue of the holdings of both the libraries.

5.8.7 .4 Characteristics of Library Resource Network:

Library networks have the following characteristics such as

Data	----	Bibliographic records (MARC)
Retrieval	----	Author/title/number (Subject) keyword/code
Access	----	Telecommunication network/private network/hard wired Network
Users	----	Librarians and Library client.

The above characteristics library network has the features such as one type of data, committed user base, high professional needs and low end user needs. The various characteristics of Library Network Resource Sharing can be identified as follows;-

- **Equal Opportunity of Access**: The Total information resources to every individual regardless of location, social status or physical condition. The access of network is for all those who are connected through communication links.
- **Interdependence**: No Library is self sufficient in terms of collections, personnel or services; they are dependent on each other for sharing their Resources.
- **Creation of Large Databases**: Network can control and provide access on co-operative basis to very large scale bibliographic database.
- **Adoption of Standards and Quality**: Networks Develop, use and propagate the use of well developed Bibliographic standards of Universal implementation and help in improving the quality of bibliographic services.
- **Loss of Autonomy**: Participation in Network may result in loss of autonomy for individual library or information centre.
- **Share Decision making**: Policy Decision are arrived on mutual benefit and collective agreements among participants..
- **Integration & Co-ordination**: Network development has emerged as consisting of separate operations largely different from those offered by specialized information centres.
- **Centralization:** The network activities are centralized, large bibliographic database centrally stored and monitored; at times a national apex body holds the responsibility of network management.
- **Cost and Productivity**: Cost involved is distributed over several participants and the productivity is increased in terms of total information services or information products.

Internationalism: Network may have gateways to access other networks and database at global level and hence work to achieve internationalism.

5.8.7. 5 Resource Sharing Network in College Library

Importance of Resource Sharing Network in College Library

- ☐ Collection Development : It is considered as means to optimized the accessibility of materials and reduced cost without sacrificing identity
- ☐ Avoiding purchase of costly documents: By sharing the resources of other Library by Networking large amount of money will be save.
- ☐ Avoiding Duplication: Avoiding Duplication where the institution engaged in various aspects of same information activities.
- ☐ Mobility of Data: It plays an important role for improving mobility of data
- ☐ Flow of Information: It develops the flow of information among the special information centres/Libraries and other types of libraries.

5.8.7 .6 Benefits of Resource sharing network in College Library

Resource Sharing Network in College library not only enhances the use and utilization of information resources and services but also ensures optimum benefits to the user communities in the utilization of the library resources of all kinds. Resource sharing includes lending of all kinds of document, their acquisition, processing and storage, and sharing computer facilities and other machinery equipment, professional, experience and experts, etc. The followings are the benefits of Resource Sharing Network in college Library:

- o Preparation of Union Catalogue
- o It provides Cataloguing data/ catalogue cards for the publication available in the network library.
- o It Provides Bibliographies.
- o Optimum utilization of rare collections
- o Co-operative acquisition of documents
- o Cooperative exchange and distribution
- o Savings, both of technical work and collections and
- o Maximize cost of library services in the long run

5. 9 Library Consortia of resource sharing

Library Consortia is the important means for sharing the Resources of the Library. The word Consortia was originated from Latin in the sense of partnership; Oxford Advanced Learners Dictionary describes Consortia as a group of people, countries, and companies etc who are working together on a particular project. A Library Consortia is an association of a group of libraries that agree to share their resources to satisfy the needs of users. Consortia may be formed on a local, regional, national, or international basis; on a functional or format basis or on a subject basis. At present there are many consortia being run successfully by different organizations, some of them are as:

- ✧ INDEST (Indian National Digital library in Science and Technology)
- ✧ FORSA(Forum for Resource Sharing)
- ✧ UGC-INFONET
- ✧ IIM Library Consortia

There is several number of library Resource Sharing Networks in India, some of them are:

- ✦ DELNET (Developing Library Network) started in January 1988 and was registered as society in 1992
- ✦ CALIBNET (The Calcutta Library Networks)
- ✦ INFLIBNET (Information and Library Network):. UGC-INFLIBNET plays an important role in developing Resource Sharing Network in College Library. Efforts have been underway to establish a VSAT network connecting all the University and College Library under the INLIBNET programme that will help to s hare resources. The UGC constituted in 1988 a committee on National Network System for universities/libraries to suggest measures to network libraries in the country, so as to share the literature resources towards optimum utilization and to avoid duplication in holdings to extent possible. The committee constituted a working group to prepare a project report for consideration and further action. Some of the terms of reference for the working group were as –
    - ∞ To review the existing scenario of library automation and computerized bibliographic information service in India, taking into account. In some of the developed countries, with a view to propose a

mechanism to establish a Network of libraries in Universities, colleges, special Libraries and documentation centres in the country.

- ∞ To identify the possible areas of cooperation for resource sharing and to minimize duplication in acquisition of books, serials etc.
- ∞ To propose a mechanism for using such a network for scientific communication among the research community in the country and abroad.
- ∞ To specify the objectives of the Network at National, Regional and Unit level.
- ∞ To suggest a suitable architecture for Network.
- ∞ To define the areas of standardization required in the Network and to suggest minimum level of standardization for effective compatibility and participation in the three component areas of the Network, database, data communication and computer hardware and software.
- ∞ To suggest an action plan for implementation and management mechanism including financial and personnel requirements to maintain and sustain the Network in short-term and long-term.
- ∞ To prepare a Project Report for developing a Network based on the above factors.

This working Group has submitted its report. This report set out a project proposal for the establishment and development of an information and Library network, in short called as INFLIBNET, in the country during the Eight Five Year (1990-1995) period.

✪ **Role of INFLIBNET**

- * INFLIBNET is a computer-communication network of libraries and bibliographical information centres.
- * It is a major national effort to improve capability in information transfer and access that provide support to scholarship, learning, research and academic pursuits.
- * Institutions of higher learning covering all disciplines like R&D institutions and national organizations such as CSIR, ICAR, DRDO, ICMR, ICSSR, AICTE, IGNOU, etc. participate in the INFLIBNET

* INFLIBNET is a cooperative network and will contribute to pooling, sharing and optimization of resources, facilities and services of libraries and information centres in the university system as well as in the R&D complexes.
* It is a major programme towards modernization of libraries and information centres in the country, with application of computer and communication technologies.
* INFLIBNET is a multiple function/service network. It will offer catalogue based services, database services, document supply services, collection development and communication based services.

✪ **INFLIBNET System:**

Approximately a total sum of Rs.500 crores per annum is spent towards books and journals by all the libraries concerned with higher education. Still a researcher/faculty in any institution is handicapped due to paucity of resources and services offered by his library. It is neither possible nor feasible to fund all the libraries in the country so as to be self sufficient in meeting fully the needs of their users. INFLIBNET system are shown in a fig-12

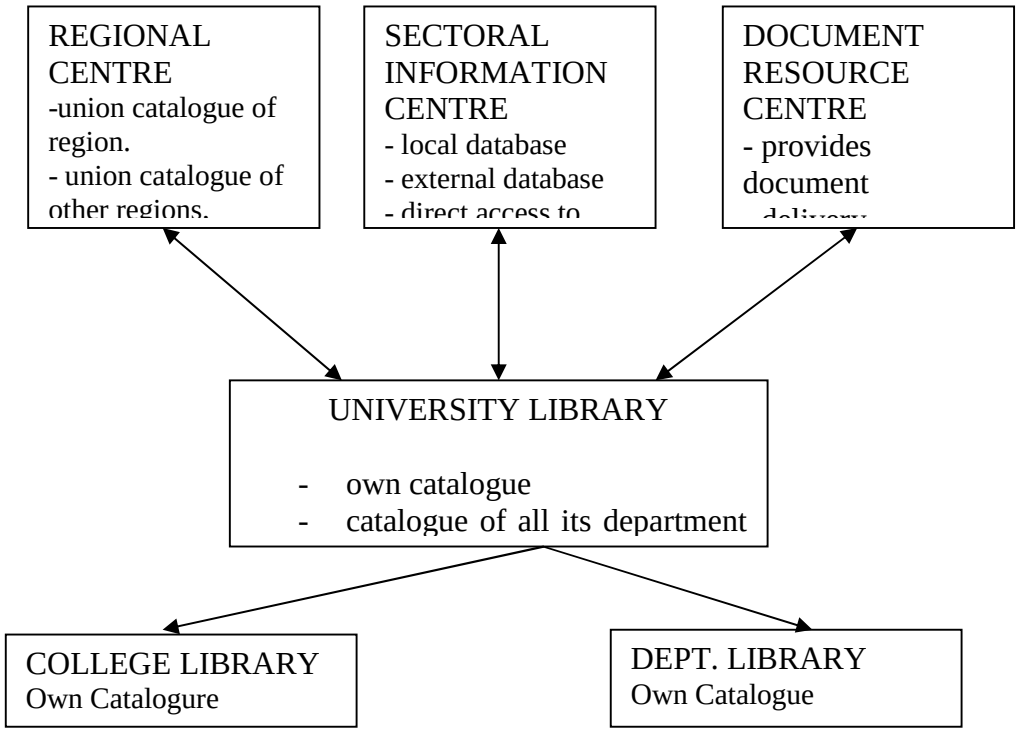

Fig-12: Inflibnet

The explosion of information keeps the budget of library in critical position. Facing this problem librarians feel more difficult to acquire relevant documents for their users. This condition have led to the creation of databases on various subjects for providing pinpointed information services to the users this situation further led to the formation of Resource Sharing Network in College Library. As a result of innumerable technical developments resource sharing among the libraries has become a matter of common practice in many part of the world.

5.9.1 A Mission of UGC-INFONET

Indian Universities constitute one of the largest higher education systems in the world. Fast changing curricula and frequent introducing of new subjects impose a great demand on the system in general. Indian Universities need to be given the required thrust to entire the third millennium with a leading edge.

Technology is a driving force in the contemporary education systems. University Grant Commission has launched an ambitious programme to bring about a qualitative change in the academic infrastructure, especially for higher education. Under this initiative UGC is modernizing the University Campuses with State-of-the-art campus wide networks and setting up its own nationwide communication network named UGC-Infonet.

INFLIBNET Centre is an autonomous Inter-University Centre of the University Grants Commission. It is the coordinating and monitoring agency in the UGC-Infonet Project. It works liaisons between UGC, ERNET and universities. INFLIBNET is also responsible for providing training to university library professionals in the use of this network for providing variety of services to the users.

ERNET India, scientific society under the Ministry of Communications and Information Technology, in partnership with the University Grants Commission is setting up UGC-Infonet. Under this programme it is proposed to use information and communication Technology (ICT) and Internet to transform learning environment from a mono-dimensional one to a multi-dimensional one. UGC-Infonet will be a boon to the higher education systems in several ways such as:

- ∅ UGC-Infonet will become a vehicle for distance learning to facilitate spread of quality education all over the country.
- ∅ UGC-Infonet will be a tool to distribute education material and journals to the remotest of areas.
- ∅ UGC-Infonet will be a resource for researchers and scholars for tapping the most up-to-date information.
- ∅ UGC-Infonet will form a medium for collaboration among teachers and students, not only within the country but also all over the world.
- ∅ UGC-Infonet will be an Intranet for University Automation.
- ∅ UGC-Infonet will encompass entire University Systems for most efficient utilization of precious network resources.
- ∅ UGC-Infonet will establish a channel for Globalisation of Education and facilitate the universities in marketing their services and developments.

5.9.1 .1 Functions of UGC-INFONET

Some of the best essential functions of UGC-Infonet are the interlinked between one another or share the resources of one library to another library though a Web base inter library loan. Some of the important roles and functions are

- ⌑ **Intranet for Universities**

Availability of Reliable and Stable network infrastructure will facilitate increased usage of computers in the University Campuses. Campus Management will be more efficient and student friendly. Interlinking of the universities will expand the reach of students and faculty to other universities providing them with better avenues for wider horizontal growth.

UGC-Infonet will establish a seamless link between the UGC and the universities. This will help to provide a more accurate and up-to-date picture of the Universities, while at the same time it will enable universities to have timely information about the various schemes of the UGC. Consequently, this will bring a qualitative change in the UGC-Universities interaction. The huge and multifaceted Indian Education Systems would achieve greatest efficiency through e-governance of UGC.

⌑ Technological partnership

Information Technology is evolving at a rapid pace worldwide to cater to the need for providing information in any form, at any anywhere. The trend is to set up networks, which are device independent, thus enabling flexibility of access, and also meet the requirements arising out of codependence technologies. Regular technology inputs would be required to upgrade the network infrastructure to ensure delivery of upcoming applications and contents to the education and research community in the country. UGC, INFLIBNET and ERNET have come together to meet the challengers that may face the education community with respect to real time information.

⌑ Implementation Methodology

The UGC-Infonet will be overlaid on ERNET Infrastructure in a manner so as to provide assured quality of service and optimal utilization of bandwidth resources. The network will be run and managed by ERNET India. The project will be funded by UGC with 100% capital investment and up to 90% of recurring costs. Towards this end, a MoU has been signed between UGC and ERNET India for implementation of UGC-Infonet and also for long-term technology partnership. A joint technical and tariff committee, consisting of leading experts in the country has also been setup to guide and monitor the design, implementation and operations of UGC-Infonet. INFLIBNET, an autonomous IUC of the UGC, would be the nodal agency for coordination of the UGC-Infonet and facilitate linkage between ERNET and the Universities. In the long run, each University will become a hub for the colleges affiliated to it.

⌑ Network Architecture

UGC Infonet is based on open IP platform, employing state-of-the-art technologies like IP or TV, enabling on-line response to queries. Open system architecture will ensure support for current and future applications. Users from educational Institutions would enjoy high data rates while accessing Intranet and Internet resources.

Main features of the UGC-Infonet are:

- ➔ Scaleable Architecture to grow from Universities to affiliated Colleges
- ➔ Nation-wide Terrestrial Backbone using Fiber Optic links

- ➔ Integrated Satellite WAN supporting broadband and VSAT technology
- ➔ Comprehensive Network Management Systems for overall monitoring of the network, down to each and every device.
- ➔ Linkage with other Academic and Research Networks all over the world.
- ➔ Data security and virus protection using firewalls and Intrusion Detection Systems
- ➔ Dedicated Data Center for Web hosting, e-Journals and Mail Boxes.
- ➔ Mirror sites spread all over the country for content hosting.
- ➔ Broadband Multimedia and Video Channels for Distance Learning

⌑ Data Center

A data center with large server capacity is being set up for the UGC-Infonet., Content of common interest will be maintained at this data center. Each University will have the option of hosting their website and the journals subscribed through University Consortia.

The data center will be:

- ❍ dedicated for the UGC-Info Net
- ❍ comprising of Email, Web, News and Proxy Servers
- ❍ protected with firewalls and IDS
- ❍ co-located with Satellite Hub
- ❍ within single hop access to the Universities over VSAT
- ❍ hosting a Portal on Higher Education in India

5.9.1 .2 Connectivity for the Universities and Affiliated College

UGC-Infonet is overlaid on ERNET Infrastructure including a nation wide terrestrial backbone and a complimentary satellite Wide Area Network (WAN). As such ERNET can provide a complete range of connectivity options to the universities depending upon their location and bandwidth requirements. Since terrestrial media offers greater scalability and performance, efforts will be made to connect the universities on terrestrial media. Alternately a Satellite connection will be provided through VSAT.

- **Digital Leased Lines:**

In the localities where telecom network is well developed, dedicated leased lines will be hired from basic telecom service providers. Such links are primarily for 64 Kbps and 2 Mbps speeds. Since fiber optic connections facilitate better connectivity, efforts will be made to bring the fiber links as near to the universities as possible. Most of the universities have the potential to become hubs of communication for affiliated colleges. Therefore, basic service providers will be locating their terminal within the university premises.

- **RadioLink**

The universities, located within 30 kms of the ERNET PoPs, will be provided with dedicated radio links operating from 64 Kbps to 2 Mbps speeds. These links require line of sight clearance between the network node and the concerned university. Radio links are very reliable and their operational cost includes only maintenance of the equipment and a nominal license fee.

- **Satellite based Wide Area Network**

ERNET operates a Satellite based Wide Are Network (SATWAN) using C-Band transponder on INSAT-3C. SATWAN hub, located at Bangalore, supports Broadband VSATs with up to 45 Mbps shared bandwidth and Single Channel Per Carrier (SCPC) VSATs capable of providing up to 2 Mbps dedicated bandwidth.

- **Broadband-VSAT**

Most of the remote universities will be served using Broadband VSATs. These VSATs operate in a shared bandwidth mode for optimal utilization of the precious satellite resources. Since Internet traffic is asymmetric in nature Broadband VSATs are optimized to receive high bandwidth (shared beam of up to 45 Mbps) and relatively smaller capacity for outgoing traffic (shared channel of up to 307 Kbps) from a University.

- **SCPC-VSATs**

Single channel Per Carrier (SCPC) VSATs will be used for establishing dedicated tow-way channels of 64 Kbps to 2 Mbps from Hub. SCPC VSATs are ideal for those

universities which are located in remote areas but wish top host their own internet server for providing access to their information through internet all over the world.

⊙ **Campus LANs at University and Colleges**

Infrastructure at the University campus is also critical to take full advantage of the UGC-Infonet. Campus LAN technology is evolving rapidly and many universities may not have the expertise to setup the most modern and cost effective LANs. ERNET India has participated with many institutions in the planning and implementation of their campus computing facilities. The expertise generated thus will be extended to the Universities so that every university can have a state of the art infrastructure.

⊙ **Network Access Center**

For maximum benefits of UGC-Infonet, Universities and colleges should preferably set up a campus wide network and ensure uniform access all over the campus. Wherever campus LAN is not in place, it is suggested that the university sets up a network access center, which is open to all students at the university. This will work on lines similar to the terminal in traditional computer centers.

⊙ **Network-Trained Manpower**

Trained manpower is one of the most critical resources for successful implementation of high-tech programmes like UGC-Infonet. ERNET India has setup a modern training laboratory to train network system managers and users of UGC-Infonet. Technical staff from each of the participating universities will be trained to take maximum advantage of the infrastructure.

5.9.2 University Grants Commission (UGC)

The University Grants Commission (UGC) is a statutory organisation established by an act of Parliament. This is a national body for the coordination, determination and maintenance of standards of University education. The UGC serves as a vital link between the Union and State Governments and the institutions of higher training. In addition to its role of giving grants to universities and colleges, the UGC also advises Central and State Governments on the measures necessary for the improvement of

university education. It also frames regulations on various issues like the minimum standards of instruction and minimum qualifications of teachers, on the advice of subject specialists and academicians with whom it frequently interacts in connection with the formulation, monitoring, and evaluation of programmes.

294 Universities/institutions in the country are directly under the preview of UGC. The universities are uniformly spread all over the country from metropolitan cities to very remote areas. Implementation and operation of UGC-Infonet will be coordinated by INFLIBENT, an autonomous Inter-University Center of the University Grants Commission of India. INFLIBENT is providing a variety of services to the academic community of the country and is helping libraries in their automation efforts.

ERNET India, and autonomous scientific society under Ministry of Communications and Information Technology, is providing Internet access to Education and Research community in the country for over 10 years. ERNET is a nation-wide terrestrial and satellite network with points of presence located at leading education and research institutions in major cities. ERNET infrastructure is a judicious mix of satellite and terrestrial networks ideally suited for the Education and Research community in the country.

ERNET has pioneered the Internet revolution in the country. Way back in 1986 ERNET started as an R&D programme of the Government of India and UNDP, with the objective of enhancing the national capabilities in the area of computer communications and networking. After successful completion of the R&D phase, ERNET became an Autonomous Scientific Society under the then Department of Electronics (now Department of Information Technology), to provide the best network resources to the Indian academic community. Marching towards this goal, ERNET India is participating with UGC for implementation of the UGC-Infonet.

Apart from providing computer network infrastructure for the academic community ERNET is playing a role of total service provider for various institutions. ERNET provides High End education in the area of computer networking, undertakes R&D for evolving newer solutions and also assists universities in establishing their in campus infrastructure. Content provision is a major thrust area for ERNET. ERNET

has designed and made operational many portals to supplement the information for students and teachers alike.

5.9.2 .1 Subscription to Electronic Journals.

With globalization of education and competitive research, demand for journals has increased over the years. Due to insufficient funds, libraries have been force to cut subscriptions of journals.

UGC has turned towards the Internet to cover the gap between demand and supply by way of e-journals that can be subscribed online. Most of the journals are available in electronic form.UGC is also exploring the possibilities of alliances with publishers for adapting a consortia-based approach for e-subscription of journals. INFLIBNET Centre is the focal point of this consortium. Orders for subscription to e-journals on publishers/aggregators will be placed by INFLIBNET Centre, on behalf of member universities of the consortium. INFLIBNET Centre is also responsible for creating awareness about use of e-journals among the academic and research community of the country. These journals will be available over UGC-Infonet to all the universities. Much of the new research publications are also available on the net as free ware, thereby, making quality information accessible to a wider academic scholar base spread across the country at an affordable price.

5.10 Conclusion:

The increasing popularity of computers and their explosion of use has created a situation where it is no longer simply enough to process data on one computer. The need frequently arises to share data and resources between many computers. Network is the term used among a system of computers connected by transmission channels.

As a network become widespread, its use has also become more difficult. Networks have brought many advantages to companies and enterprise, it is also benefits for the services of library. It resulted for minimizing costs, sharing expensive peripherals between many users. Thus networks while making a large number of users increases the utilization of resources at only marginally increased costs. A computer network can eliminate dependence on a single resourced, resulting that the failure of a single

computer is no longer to halt the working of the organization and colleges. Because there will be several other machines or servers that can perform the same task.

Technology has been an important driving force for change. In library environment traditional services of classification, cataloguing, and other technique usage are changed by day by day. Now the resources of the library are placed in a scientific way of new concept, a concept of virtual. Electronic Resources using helps the library services efficiently in many ways of cost effectiveness, manpower reducing, retrieving, storage space and time consuming. Card catalogues have largely been replaced by online catalogues and these are being expanded through the addition of materials not previously included. It is no longer seen as a tool bounded by the collections of a single library but one that revels the availability of resources in a network of libraries is essentially a gateway to a universe of Information resources in printed, electronic or other forms.

As years passed by, changes in all environmental issues have been the continual activities of the world. Although the core of profession remains the same, but the methods and tools for information delivery and the scope of the enterprise continue to grow and change dramatically. At this juncture, LIS professionals being an information access tool in various forms needs gradual preparation to meet the challenges that have encompass the world in varied education and other activities of the like. There has been new development in certain subject or disciplines, as such the basic need of such developments are to be available in certain information sources in documentary or others.

There will be continual opportunities for the information professionals but, it is a great challenge for them to develop their proficiency in computers and its related activities. Digitization will be the future of library and information centers and hence, LIS professionals need to have acquired deep knowledge and expertise in digitization to meet the challenges of the environment. In the field of digitization process in Mizoram College libraries are lacking behind, due to the similar problem faced by each and every colleges are shortage of adequate fund and computer knowledge personals.

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Chapter – 6

Data Analysis, Findings

6.1 Introduction

Analysis of data is one of the most important mechanisms to find out the result of any research work. To wind up research problems, researcher has to organize and collect various data from various sources, which can lead to logical findings and conclusion. Data collection can be done by various methods depending upon the research problem. Analysis of data should be scientific in nature and easily understandable in presentation, so that there will be no fallacious or inappropriateness in the research result. This chapter presents the analysis of data collected from various sources of information that could match with the research problems and objectives so as to derive reasonable findings. On the basis of the received questionnaires, the researcher could carry out the analysis of data with the help of tables and charts/graphs as explained below.

6.2 Analysis of Data

The following analysis of data is basically based on the research activities carried out through structured questionnaires covering different areas and most of the respondents belong to various levels, such as:

1) Librarian or in-charge of the 24 degree college libraries;
2) Faculties of the colleges under study; and
3) Students of the colleges.

The scheduled questionnaires were distributed among different categories such as, librarians, students and teachers of 24 degree colleges of the state. As already mentioned two types of questionnaires were designed one for the librarian and other for the students and teachers and all 24 questionnaires meant for the librarian were distributed. Random sampling method was also adopted to distribute the questionnaires among the students constituting samples from all types of students i.e, from the stream of arts, commerce and science of the colleges under study. As such, 360 questionnaires were circulated to students and teachers of different colleges out of which 235 responses in total were received which constitutes 65.27 % or say 66% in total. Out of 235 respondents covering both students and teachers of the colleges under study, a total number of 132 (56%) are the students while 103 (44%) are the teachers of the colleges. Analysis has been drawn taking into various parameters of the questionnaire circulated to both the groups along with the librarian. Further, the

researcher got the response from the librarian of all 24 colleges covered under study which constitute 100% responses. The questionnaire meant for the librarian were categorized broadly to 22 fields covering almost all the aspects of the library including the automation parameter require to be implemented in the libraries under study. Likewise, another set of questionnaire meant for the users both students and teachers were also classified primarily into 19 headings to elicit information about the library of the respective college. The important data relating to the study were tabulated and analyzed to draw the inferences.

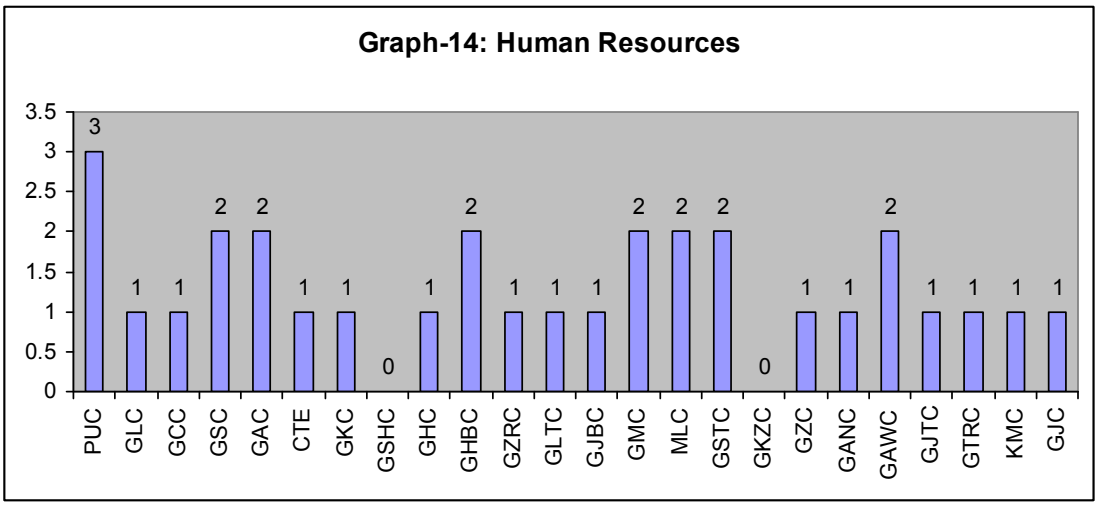
6.3 Human Resources

Data relating to human resources having the computer knowledge of all the twenty four colleges under study has been put under Table.27.

Table 27: Human Resources in college libraries of Mizoram

Sl. No	College	Estd	Computer Knowledge	%
1	PUC	1958	3	9.67
2	GLC	1964	1	3.22
3	GCC	1971	1	3.22
4	GSC	1973	2	6.45
5	GAC	1975	2	6.45
6	CTE	1975	1	3.22
7	GKC	1978	1	3.22
8	GSHC	1978	0	0
9	GHC	1979	1	3.22
10	GHBC	1980	2	6.45
11	GZRC	1980	1	3.22
12	GLTC	1980	1	3.22
13	GJBC	1983	1	3.22
14	GMC	1983	2	6.45
15	MLC	1983	2	6.45
16	GSTC	1984	2	6.45
17	GKZC	1985	0	0
18	GZC	1986	1	3.22
19	GANC	1988	1	3.22

20	GAWC	1990	2	6.45
21	GJTC	1992	1	3.22
22	GTRC	1992	1	3.22
23	KMC	1992	1	3.22
24	GJC	1993	1	3.22
	Total		31	99.9 or 100



Analysis of the above table reveals that out of 24 college libraries, a total number of 31 professionals are having the computer knowledge. It is interesting to note that, only one college library it's having three professionals having the computer knowledge constituting thereby, 9.67% followed by seven college libraries having two professionals (6.45%) each having the computer knowledge. However, a major number of college libraries i.e. 14 each are having one professional (3.22%) each having the computer background. But two college libraries do not have the professionals having the computer background. Need for computer knowledge is essential to run the library. Analysis further reveals that most of the college libraries are lacking behind the professionals with computer knowledge to run the respective library effectively in an automated environment.

6.4 Library Collection

Library collections happen to be one of the important parameters for providing effective services in the library which constitute books, journals, e-resources, thesis and dissertation etc. The scholar split the data relating to collection development into

six tables individually covering books, journals, e-resources, thesis & dissertation, conference proceedings and reference.

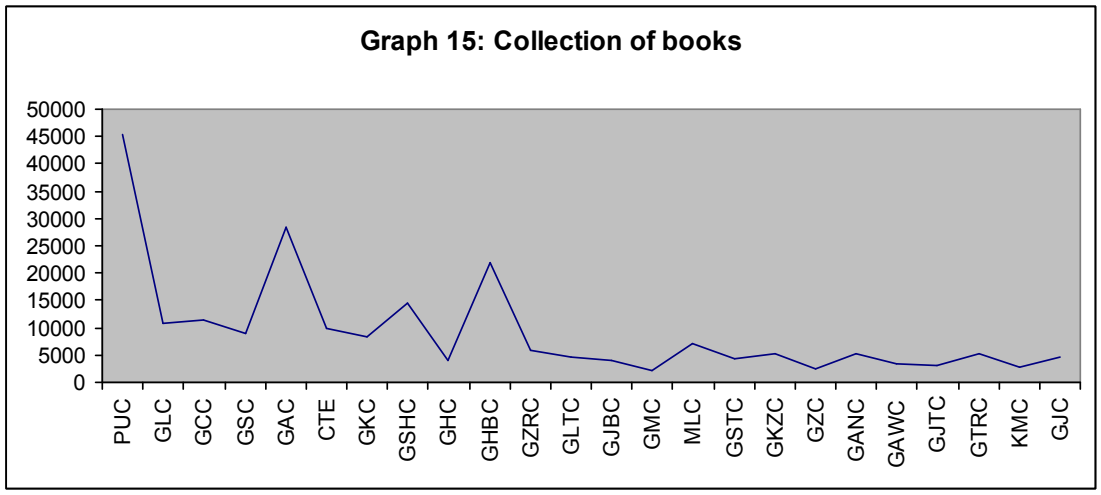
6.4.1 Collection of books (Total Books)

Collection of books of various colleges covered under study has been shown in Table 28 supplemented with Graph 15 for clear understanding of the collection strength of respective libraries.

Table 28: Collection of Books (Total Books)

Sl. No	College	No. of books
1	PUC	45389
2	GLC	10707
3	GCC	11500
4	GSC	8887
5	GAC	28369
6	CTE	9862
7	GKC	8402
8	GSHC	14500
9	GHC	4000
10	GHBC	21843
11	GZRC	6000
12	GLTC	4500
13	GJBC	4149
14	GMC	2200
15	MLC	7206
16	GSTC	4307
17	GKZC	5101
18	GZC	2500
19	GANC	5222
20	GAWC	3412
21	GJTC	3200
22	GTRC	5360
23	KMC	2780
24	GJC	4500

While analysing the Table 28 with regard to the collection of books of all 24 libraries it could be revealed that, the PUC has the highest collections of 45389 followed by GAC (28369) and HBC (21843). It is due to the fact that the budget allocation made in the about 3 libraries are adequate including the number of users. However, other colleges which are not at per with the above 3 colleges, still have a good collection strength. The college libraries have developed their collection basis on the meagre budget allocation.



6.4.2 Collection of Journal

Collection of Journals of various college libraries under studies have been depicted in Table 29 collaborated with Graph 16. Journal happens to be the primary mode of communication of information regarding the latest development of various subjects. Journals further act as an indispensable ingredient for research and development which are being preferred modes by the teachers, students and researchers.

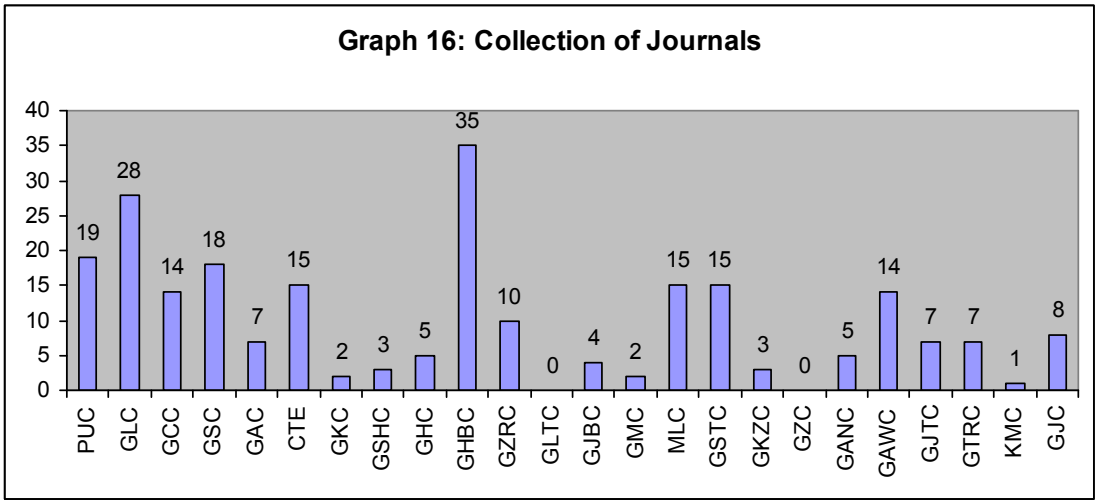
Table 29: Collection of Journals

Sl. No	College	Journals	%
1	PUC	19	8.01
2	GLC	28	11.81
3	GCC	14	5.90
4	GSC	18	7.59
5	GAC	7	2.95
6	CTE	15	6.32
7	GKC	2	0.84

8	GSHC	3	1.26
9	GHC	5	2.10
10	GHBC	35	14.76
11	GZRC	10	4.321
12	GLTC	0	0
13	GJBC	4	1.68
14	GMC	2	0.84
15	MLC	15	6.32
16	GSTC	15	6.32
17	GKZC	3	1.26
18	GZC	0	0
19	GANC	5	2.10
20	GAWC	14	5.90
21	GJTC	7	2.95
22	GTRC	7	2.95
23	KMC	1	0.42
24	GJC	8	3.37

Analysis concerning to the collection of Journals by various colleges put under the table visualises that the GHBC library procures 35 number of journals out of a total number of 237 journals being subscribed by all 24 college libraries and thus, constitute 14.76% in total and ranks at the top followed by 28 number of journals procured by GLC library (11.81) and GSC library 18 number of journals (7.59%) and ranks at second and third respectively.

It further revealed that most of the college libraries irrespective of the types also subscribe to journals to promote research and development in their respective colleges. It is surprised to note that two college libraries do not subscribe any journal due to the lack of regular fund. The above table has been shown in Graph-16.



6.4.3 Collections of e-resources

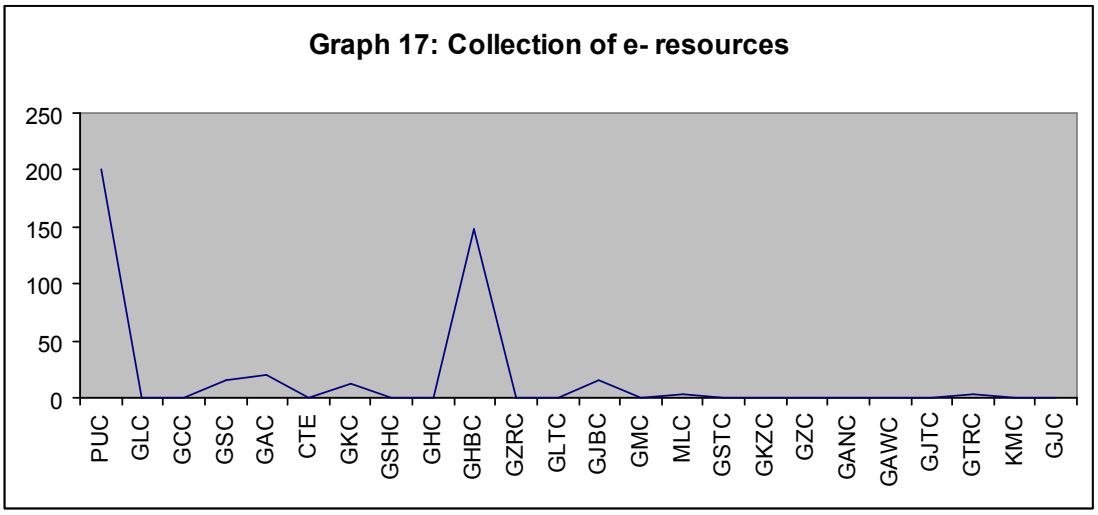
E-resources in the present days have become the primary vehicle of information and most of the libraries in an automated environment have started disseminating information through computers. The users irrespective of the type need e-resources for learning, teaching and research. E-resources is also considered to be a positive component in collection development of various college libraries covers under studies has been put fort in Table 30.

Table 30: Collection of e-resources

Sl. No	College	E- resources	%
1	PUC	200	47.96
2	GLC	0	0
3	GCC	0	0
4	GSC	15	3.59
5	GAC	20	4.79
6	CTE	0	0
7	GKC	12	2.87
8	GSHC	0	0
9	GHC	0	0
10	GHBC	148	35.49
11	GZRC	0	0
12	GLTC	0	0
13	GJBC	16	3.83
14	GMC	0	0

15	MLC	3	0.71
16	GSTC	0	0
17	GKZC	0	0
18	GZC	0	0
19	GANC	0	0
20	GAWC	0	0
21	GJTC	0	0
22	GTRC	3	0.71
23	KMC	0	0
24	GJC	0	0
	Total	417	99.95 or 100

Analysis of e-resources procured by the libraries covered under study submitted in the above table supported with Graph-17 reveals that altogether 417 e-resources as of now are available in various forms such as CD-ROM, Disk, Floppies .etc. in eight college libraries. While analysing the data, it could be revealed that PUC library; the only constituent college retains 200 e-resources of different types which constitutes 47.96% and ranks at the top followed by GHBC library which is having 148 e-resources (35.49%) and 20 e-resources by GAC library (4.79%) and thus, rank as second and third position respectively. It could be observed that 16 college libraries do not have collection of e-resources of any kind. This may be due to the fact that most of the college libraries do not have adequate fund and the demands from the users may be minimum and hence, libraries could not effort to procure the e-resources. It also may be due to the fact that most of the college libraries do not have computer systems.



6.4.4 Collections of Theses/Dissertations and Conference Proceedings

Theses/Dissertations including Conference Proceedings are also equally considered as principal medium of information. It has been proved as a major source of information due to research activities and organisation of seminars, conference, etc. at both National and International level. The Library and information centre also pay equal attention to include these materials in their collection development. These components have been put placed in Table 31 of the college libraries under study.

Table 31: Collections of Theses/Dissertation and Conference Proceedings

Sl. No	College	Theses/ Dissertations	%	Conf. proceedings	%
1	PUC	0		0	
2	GLC	0		0	
3	GCC	0		0	
4	GSC	3	8.33	65	57.02
5	GAC	0		0	
6	CTE	11	30.56	0	
7	GKC	0		0	
8	GSHC	12	33.33	5	4.38
9	GHC	0		0	
10	GHBC	10	27.78	0	
11	GZRC	0		0	
12	GLTC	0		0	
13	GJBC	0		44	38.60

14	GMC	0		0	
15	MLC	0		0	
16	GSTC	0		0	
17	GKZC	0		0	
18	GZC	0		0	
19	GANC	0		0	
20	GAWC	0		0	
21	GJTC	0		0	
22	GTRC	0		0	
23	KMC	0		0	
24	GJC	0		0	
	Total	36	100	114	100

While analysing the data placed under the Table 31 it could be found that, there are altogether 36 number of Theses/Dissertations which are possessed only by four college libraries. Out of this, GSHC is having maximum 12 number of Theses/Dissertations as of now, which constitute 33.33% followed by 11 Theses/Dissertations (30.56%) and 10 numbers of Dissertations (27.78%) possessed by CTE and GHBC. Further, some of the college libraries like GAC three Theses/Dissertations (8.33%) which is an encouraging step of the library. However, 20 college libraries do not possess any Thesis/Dissertation mainly due to inadequate fund. Likewise, while analysing the data for conference proceedings placed in the same table it was reveals that GAC library is having 65 numbers (57.02%) out of a total number of 114 Conference Proceedings collected by three college libraries and is followed by GJBC which is having 44 numbers (38.60%) and GSHC 5 numbers (4.38%) respectively.

The above analysis shows that GAC College is having more conference proceeding than that of Theses/Dissertations along with GJBC which is also having the same parameter of collection of conference proceedings as against no collection of Theses/Dissertations. Most of the college libraries, however, do not have sufficient strength of the collection of Theses/Dissertations and Conference Proceedings.

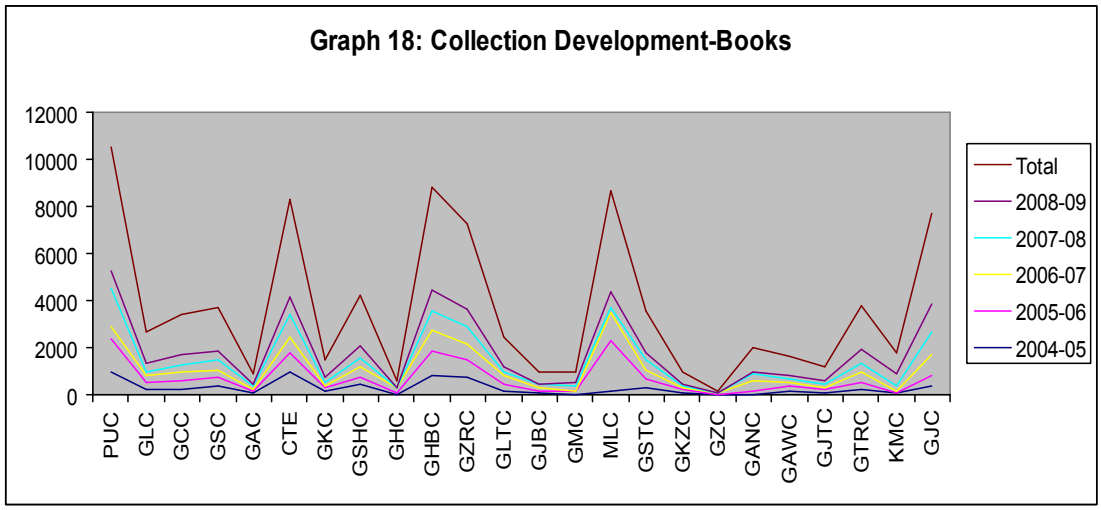
6.4.5 Collection Development- Books.

Collection development is nucleus to any library system and academic library is not an exception to its. The library is best known by collection development whether print or electronic. This strength of the library is counted on the basis of the collections. The scholar has obtained data concerning to the collection development of the college libraries covered under the study which has been placed in Table 32. The table reflects the collection made by the respective 24 colleges from the year 2004-2005 to 2008-2009 supported with the Graph 18.

Table 32: Collection Development-Books

Sl. No	College	2004-05	2005-06	2006-07	2007-08	2008-09	Total	%
1	PUC	993	1360	565	1633	692	**5243**	**11.96**
2	GLC	189	349	244	214	319	**1315**	**3.00**
3	GCC	258	323	374	291	462	**1708**	**3.89**
4	GSC	355	375	335	405	395	**1865**	**4.25**
5	GAC	80	80	80	110	110	**460**	**1.04**
6	CTE	994	772	684	954	745	**4149**	**9.46**
7	GKC	154	161	38	175	204	**732**	**1.67**
8	GSHC	415	330	422	355	578	**2100**	**4.79**
9	GHC	34	26	203	24	17	**304**	**0.69**
10	GHBC	817	1000	918	844	832	**4411**	**10.06**
11	GZRC	740	740	700	710	740	**3630**	**8.28**
12	GLTC	157	320	310	205	230	**1222**	**2.78**
13	GJBC	72	72	146	160	19	**469**	**1.07**
14	GMC	0	142	0	208	140	**490**	**1.11**
15	MLC	180	2091	1226	196	658	**4351**	**9.92**
16	GSTC	307	340	377	423	334	**1781**	**4.06**
17	GKZC	100	90	80	110	100	**480**	**1.09**
18	GZC	21	15	14	7	6	**63**	**0.14**
19	GANC	35	122	444	262	121	**984**	**2.24**
20	GAWC	120	254	170	156	102	**802**	**1.82**
21	GJTC	100	120	110	150	120	**600**	**1.36**
22	GTRC	215	308	472	345	567	**1907**	**4.35**

23	KMC	41	15	76	244	528	**904**	**2.06**
24	GJC	380	470	860	970	1180	**3860**	**8.80**
	Total	**6757**	**9875**	**8848**	**9151**	**9199**	**43830**	**99.89 or 100**



While analyzing the data put under Table 32 with regard to the books procured by all 24 college libraries covered under study it could revealed that, PUC has the highest collection of books constituting 5243 (11.96%) followed by GHBC which is having 4411(10.06%) and MLC 4351 (9.92%) and thus, constitute first, second and third position respectively. It could further revealed that, the lowest collection of books goes to be GZC which is having 63(0.14%) out of 43830 collection total for all the libraries. Most of the colleges do not have a healthy collection of books which may be due to the shrinking budget allocation for the libraries.

6.5 Processing of Library Material

The processing of library material for the libraries under covered has been analysed by the scholar which has been put under Table 33. The table reveals that the time taken of processing new books to get ready for use.

Table 33: Time taken for processing of new books

Sl.No	College	Time for processing (Week)
1	PUC	1
2	GLC	2
3	GCC	1

4	GSC	1
5	GAC	1
6	CTE	1
7	GKC	1
8	GSHC	2
9	GHC	1
10	GHBC	2
11	GZRC	1
12	GLTC	1
13	GJBC	2
14	GMC	1
15	MLC	1
16	GSTC	1
17	GKZC	1
18	GZC	1
19	GANC	1
20	GAWC	1
21	GJTC	1
22	GTRC	1
23	KMC	1
24	GJC	1

The scholar while analyzing the data with regard to the time taken for processing of document could found that, 20 college libraries consume one week each to process the documents, while four college libraries such as GLC, GSHC, GHBC and GJBC take two weeks time due to inadequate professional men power in the library for which the users face difficulties for retrieving the documents.

6.5 Technical Processing

Technical processing is one of the important functions of the library activities. Among other functions classification and cataloguing in a traditional environment are essential to process a document. The scholar has analysed below the two components concerning to the libraries under study.

6.6.1 Classification

Classification of documents requires artificial numbers derived out of the scheme of classification. The scheme of classification applied for processing of documents for all 24 college libraries have been provided under Table 34.

Table 34: Classification Scheme

Sl.No	College	Scheme of classification
1	PUC	DDC
2	GLC	DDC
3	GCC	DDC
4	GSC	DDC
5	GAC	DDC
6	CTE	DDC
7	GKC	DDC on process
8	GSHC	DDC
9	GHC	DDC on process
10	GHBC	DDC
11	GZRC	DDC
12	GLTC	DDC on process
13	GJBC	Nil
14	GMC	DDC
15	MLC	DDC
16	GSTC	DDC
17	GKZC	Nil
18	GZC	Nil
19	GANC	DDC
20	GAWC	DDC
21	GJTC	DDC
22	GTRC	DDC
23	KMC	Nil
24	GJC	Nil

While analysing the above table, it could be ascertained that, 15 college libraries adopt 19th edition of DDC, while one college library i.e, GAC adopts 21st edition of DDC. Three college libraries, however, are in the process for procurement of DDC schedule. It is surprise to note that, five college libraries have not yet adopted any classification scheme to process the document due to price hike of the printed schedule. However, while making personal interaction/ interview with the librarian of respective college libraries, it could be revealed that, the libraries in near future would be procuring DDC schedule for their respective libraries.

6.6.2 Catalogue

Cataloguing is also equally the important components of technical processing which allow the user to ascertain the availability of the document in the library. The data obtained for all the 24 colleges under study were placed under Table 35 below which revealed that 13 college libraries maintain catalogue. However, out of those 13 college libraries 8 college libraries prepare card catalogue while 5 college libraries maintain the catalogue through the ledger systems. 11 college libraries rather maintain non ledger system.

Further, the catalogue codes applied to the libraries under studies placed under the same table reveals that 8 college libraries adopt AACR-2 while two college libraries apply CCC and 14 college libraries do not apply any type of catalogue codes.

Table 35: Catalogue process and Codes

Sl.No	College	Catalogue process	Catalogue code
1	PUC	Card	AACR-2
2	GLC	Ledger	-
3	GCC	-	-
4	GSC	Card	AACR-2
5	GAC	Card	AACR-2
6	CTE	Ledger	AACR-2
7	GKC	-	-
8	GSHC	Card	CCC
9	GHC	Ledger	AACR-2
10	GHBC	Card	AACR-2
11	GZRC	-	-

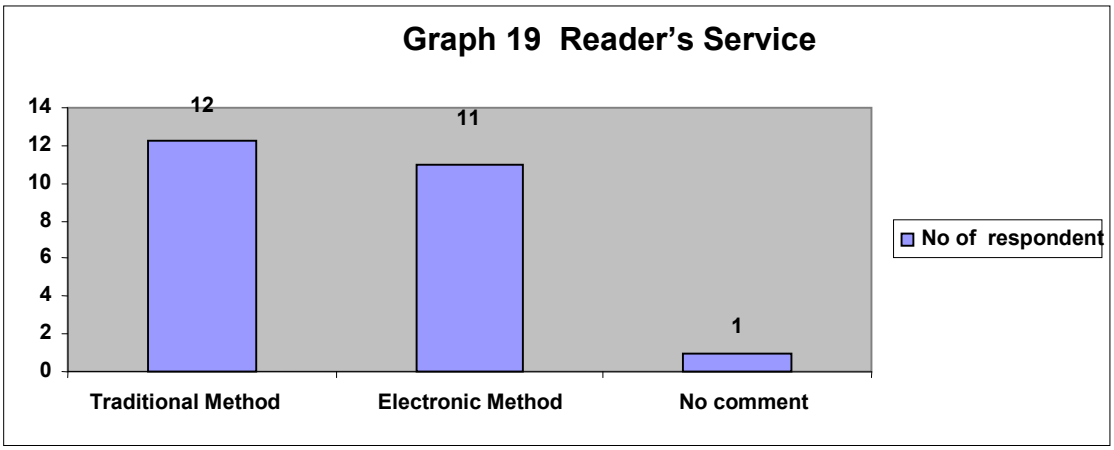
12	GLTC	-	-
13	GJBC	-	-
14	GMC	-	-
15	MLC	Card	AACR-2
16	GSTC	Card	AACR-2
17	GKZC	-	-
18	GZC	Ledger	-
19	GANC	-	-
20	GAWC	-	-
21	GJTC	Card	CCC
22	GTRC	Ledger	-
23	KMC	-	-
24	GJC	-	-

6.7 Reader's Services

The reader services by the college libraries under study have been provided in Table 37. The scholar through the questionnaire obtained the information with regard to issue system prevailing in the college libraries. The librarians were asked to submit the preferred method of services. The table while analyzing revealed that while, 12(50%) Librarians preferred the dissemination of services to the readers though traditional way, 11(45.83%) librarians viewed to deliver the services through electronic method. However, 1 (one) (4.16%) Librarian did not opine any method to be chosen to provide the reader services. This shows that, the librarian still prefer to deliver services to the users most preferable through the traditional way. This may be due to lack of computer literacy and inadequate proper infrastructures which is a costly affair for the libraries because of high involvement of money. The above table has been supplemented with Graph 19 for clear understanding of the issue.

Table 36: Reader's Service

Issue System	No of respondent	%
Traditional Method	12	50
Electronic Method	11	45.83
No comment	1	4.16
Total	24	99.99 or 100%



6.8 Automation

6.8.1 Status of Library automation

Library automation in the present scenario has become imminent to provide effective library services and optimum utilization of library resources. This has become a feasible method for the users to access the document in a seamless way. The scholar put the questions to all 24 college librarian about the status of automation which has been tabulated under Table 37.

Table 37: Status of Library Automation

Sl. No	College	Is Library automated	Fully or Partially
1	PUC	Yes	Partially
2	GLC	No	-
3	GCC	No	-
4	GSC	Yes	Partially
5	GAC	Yes	Partially
6	CTE	Proposed	-
7	GKC	No	-
8	GSHC	No	-
9	GHC	No	-
10	GHBC	Yes	Partially
11	GZRC	No	-
12	GLTC	No	-

13	GJBC	No	-
14	GMC	No	-
15	MLC	No	-
16	GSTC	No	-
17	GKZC	No	-
18	GZC	No	-
19	GANC	No	-
20	GAWC	No	-
21	GJTC	No	-
22	GTRC	On process	-
23	KMC	No	-
24	GJC	No	-

The above table reflects the library automated status either completely and or partially. From the analysis of the table it shows that 4 (four) (16.66%) college libraries although have started automation process, partially they have made automated some of the sections in library. No college as yet has been fully automated. However 1 (one) (4.16%) college library has started on process whereas CTE college library has given the proposal for automation. However, a major chunk of libraries i.e. 18(75%) colleges have not yet initiated any automation process. This is significant in view of the limited budgetary provision in the college libraries supplemented with limited technical and computer literate staffs in the college libraries.

6.8.2 Library Automation Software

Library Automation is a mechanical process which requires user-friendly software. A lot of initiatives have been taken by both State and Central Government with regard to adopt automation in the college libraries. As it has been pointed out in the previous discussions that, 4 (four) college libraries such as PUC, GAC, GHBC and GTRC have started the automation process and all of the college libraries use the SOUL software developed by INFLIBNET. It is a very welcoming state that, initiation has already made in some college libraries which may show the path to other college libraries to start automation. The above information, however, has been shown in Table 38 for clear understanding.

Table 38: Library Automation Software

Sl. No	College	Type of software
1	PUC	SOUL
2	GLC	-
3	GCC	-
4	GSC	SOUL
5	GAC	SOUL
6	CTE	-
7	GKC	-
8	GSHC	-
9	GHC	-
10	GHBC	SOUL
11	GZRC	-
12	GLTC	-
13	GJBC	-
14	GMC	-
15	MLC	-
16	GSTC	-
17	GKZC	-
18	GZC	-
19	GANC	-
20	GAWC	-
21	GJTC	-
22	GTRC	SOUL
23	KMC	-
24	GJC	-

6.9 Internet Connection

Internet has become essential now-a-days to access multi-faceted, multi-dimensional electronic resources for academic purpose, research and development. Priority is now been given in all college libraries to have the internet connectivity so that the users can access for their information. The status of the internet connection of all 24 college libraries covered under study has been shown in Table 39. The scholar obtained the

data relating to the Internet connection which is being provided to the college libraries either through leased-line, dial-up connection, or broadband

Status of Internet Connection

Table 39: Status of Internet Connection

Sl. No	College	Internet connection	Lease-line	Dial up connection	Broadband /Others
1	PUC	Yes	Yes	-	-
2	GLC	No		-	-
3	GCC	No	-	-	-
4	GSC	Yes	Yes	-	-
5	GAC	Yes	Yes	-	-
6	CTE	No	-	-	-
7	GKC	No	-	-	-
8	GSHC	No	-	-	-
9	GHC	No	-	-	-
10	GHBC	Yes	Yes	-	-
11	GZRC	Yes	Yes	-	-
12	GLTC	No	-	-	-
13	GJBC	Yes	-	-	Yes
14	GMC	No	-	-	-
15	MLC	No	-	-	-
16	GSTC	Yes	Yes	-	-
17	GKZC	No	-	-	-
18	GZC	No	-	-	-
19	GANC	Yes	Yes	-	-
20	GAWC	Yes	Yes	-	-
21	GJTC	No	-	-	-
22	GTRC	Yes	Yes	-	-
23	KMC	No	-	-	-
24	GJC	Yes	Yes	-	-

While analyzing the data, 11(45.83%) college libraries have internet connection and out of 11, while 10(41.66%) college libraries use leased-line based connection,

1(4.16%) college library has broad band connection. Other 13(54.16%) college libraries do not posses internet connection due to the lack of infrastructures, and inadequate fund.

6.10 ICT infrastructures

ICT infrastructures are boon to the library which not only support the activities of the library but also accelerate the use of library resources profusely. The scholar obtained information relating to ICT infrastructures of all 24 college libraries and the same has been grouped under (i) system requirement, (ii) other infrastructures and (iii) communication including other technologies available in the respective library. The system status of all the college libraries has been shown in Table 40 which is comprises information relating to the number of computers and number of printers available in the libraries. The components of other infrastructures include scanners, photocopiers, fax-machines. etc. and the data of the same has been placed with under Table 41.

ICT infrastructures

Table 40: ICT infrastructures

Sl. No	College	No. of Computer(s)	%	No. of Printer(s)	%
1	PUC	5	11.62	1	6.25
2	GLC	1	2.32	0	0
3	GCC	1	2.32	0	0
4	GSC	5	11.62	1	6.25
5	GAC	3	6.97	1	6.25
6	CTE	1	2.32	1	6.25
7	GKC	2	4.65	1	6.25
8	GSHC	0	0	0	0
9	GHC	1	2.32	1	6.25
10	GHBC	7	16.27	4	25
11	GZRC	1	2.32	1	6.25
12	GLTC	0	0	0	0
13	GJBC	1	2.32	0	0
14	GMC	3	6.97	0	0
15	MLC	1	2.32	0	0
16	GSTC	1	2.32	1	6.25

17	GKZC	0	0	0	0
18	GZC	1	2.32	1	6.25
19	GANC	1	2.32	1	6.25
20	GAWC	6	13.95	1	6.25
21	GJTC	0	0	0	0
22	GTRC	1	2.32	0	0
23	KMC	0	0	0	0
24	G JC	1	2.32	1	6.25
Total		**43**	**99.89 or 100**	**16**	**100**

Other Infrastructures

Table 41: Other Infrastructures

Sl. No	College	No. of Scanner	%	No. of Phtocopier	%	No. of Fax.	%
1	PUC	1	16.66	1	10	1	33.33
2	GLC	0	0	0	0	0	0
3	GCC	0	0	0	0	0	0
4	GSC	1	16.66	1	10	0	0
5	GAC	0	0	0	0	0	0
6	CTE	0	0	1	10	0	0
7	GKC	0	0	1	10	0	0
8	GSHC	0	0	0	0	0	0
9	GHC	1	16.66	1	10	0	0
10	GHBC	1	16.66	1	10	1	33.33
11	GZRC	0	0	1	10	0	0
12	GLTC	0	0	0	0	0	0
13	GJBC	0	0	0	0	0	0
14	GMC	0	0	0	0	0	0
15	MLC	0	0	1	10	1	33.33
16	GSTC	1	16.66	1	10	0	0
17	GKZC	0	0	0	0	0	0
18	GZC	0	0	0	0	0	0
19	GANC	0	0	0	0	0	0

20	GAWC	0	0	1	10	0	0
21	GJTC	0	0	0	0	0	0
22	GTRC	0	0	0	0	0	0
23	KMC	0	0	0	0	0	0
24	G JC	1	16.66	0	0	0	0
Total		**6**	**99.96 or 100**	**10**	**100**	**3**	**99.99 or 100**

While analyzing the data from Table 40, it could be revealed that out of 43 no. of computers available in different college libraries, GHBC constitutes 7 (seven) (16.27%) number of computers and thus, stands at the apex followed by GAWC 6 (six) (13.95%) number of computers and PUC & GHC having 5 (five) no. of computers (11.62%) each and thus rank second and third respectively. It also could be revealed that most of the college libraries are having minimum 1 (one) (2.32%) and maximum number of 3 (three) (6.97%) computers. But it is surprised to note that 5 (five) college libraries do not possess computer.

Further, while GHBC library is having 4 (four) (25%) number of printers and stands at the apex, 12 number of colleges libraries are having only 1 (one) (6.25%) printer each. It is surprised to know 5 (five) college libraries though they are having computer with them do not possess any printer. This either may be due to the fact that either they might have declined to purchase due to unrestrained use or constraint in the budget allocation.

The scholar, while analyzing the data relating Table 41 with regard to the other infrastructures available in the libraries under studies could ascertained 9 college libraries possess necessary infrastructures comprising of scanner, photocopier and fax either partly or wholly. Analysis reveals that, while PUC library acquires 1(one)(16.66%) scanner, 1(one)(10%) photocopier and 1(one)(33.33%) fax out of 6 scanners, 10 photocopiers, and 3 faxes in total respectively GSC, GHC, GHBC, GSTC and GJC Library possess 1(one) (16.66%) scanner. Further, PUC, GAC, GHBC, GHC, GZRC, MLC, GSTC and GAWC have 1(one) (10%) photocopier each in their respective library out of a total number of 10(ten) Photocopiers. Again only 3(three) libraries such as PUC, GHBC and MLC are having 1(one)(33.33%) fax out of a total number of 3(three) fax. This shows that among the other infrastructures photocopier machines are more in demand other than the other infrastructures.

Communication and other Technologies

Table 42: Communication and other Technologies

Sl. No	College	No. of Barcode	No. of Telephone	%	No. of Projector	%
1	PUC	0	1	7.14	0	0
2	GLC	0	0	0	0	0
3	GCC	0	0	0	0	0
4	GSC	0	1	7.14	0	0
5	GAC	0	1	7.14	0	0
6	CTE	0	0	0	0	0
7	GKC	0	1	7.14	0	0
8	GSHC	0	0	0	0	0
9	GHC	0	0	0	0	0
10	GHBC	0	3	21.42	1	50
11	GZRC	0	1	7.14	0	0
12	GLTC	0	0	0	0	0
13	GJBC	0	0	0	0	0
14	GMC	0	0	0	0	0
15	MLC	0	1	7.14	0	0
16	GSTC	0	1	7.14	1	50
17	GKZC	0	0	0	0	0
18	GZC	0	1	7.14	0	0
19	GANC	0	1	7.14	0	0
20	GAWC	0	1	7.14	0	0
21	GJTC	0	0	0	0	A0
22	GTRC	0	1	7.14	0	0
23	KMC	0	0	0	0	0
24	G JC	0	0	0	0	0
Total		**0**	**14**	**99.96 or 100**	**2**	**100**

The college libraries in the automation process need to acquire communication technology and other related technologies to promote effective service. The data relating to the communication and other technologies prevailing in the college

libraries under study have been placed in Table 42 which includes barcode, telephone and projector. Analysis to the table reflect that, out of a total number of 14 telephones while GHBC has got 3(21.42%) telephones, 11 college libraries are having 1(7.14%) telephone each and 12 college libraries do not have any telephone connectivity. With regard to the projector altogether 2 numbers of projectors are available in total acquired by GHBC and GSTC 1 (one) (50%) each which show the sign of improvement.

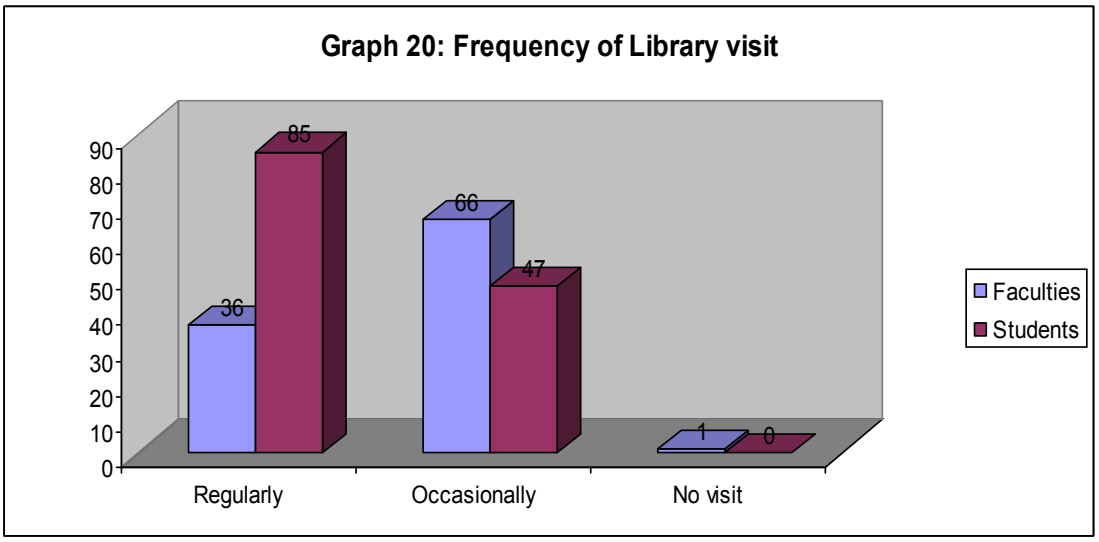
6.11 Information Needs of the users

6.11.1 Frequency of library visit

Information needs for the user irrespective of the types is one of the vital components. The libraries are considered as a source of knowledge centers where the users are expected to obtain information as per their needs. To promote better and effective information service, the libraries need healthy collection development, infrastructures, manpower and feasible location. Use of library by the users also depends upon the collections and services of the library. To ascertain the fact, the scholar obtained data from the users about their visit of library in three ways which has been placed under Table 43 supplemented with Graph-20.

Table 43: Frequency of Library Visit

Sl.No	Type	Faculties	%	Students	%
1	Regularly	36	34.95	85	64.39
2	Occasionally	66	64.07	47	35.60
3	No visit	1	0.97	0	0
Total		**103**	**99.99 or 100**	**132**	**99.99 or 100**



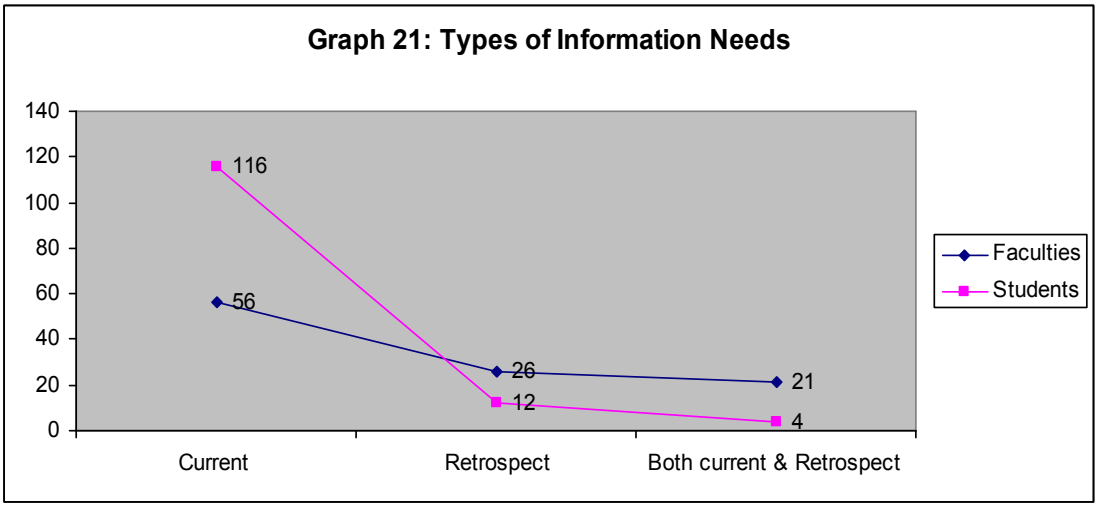
The analysis to be above table reflect that 66(64.07%) number of faculties out of 103 in total visit library occasionally as against 47(35.60%) students out of 132. Further, it could be visualized 36 (34.95%) numbers of faculties visit the library regularly as against 85(64.39%) number of students out of 132 which might be due to the fact that the faculties are pre-engaged with academic assignments and hardly find any spare time within the office hour to visit the library. In contrary to this, the students visit the library more because of their assignments, academic pursuits, and issue and return of the books etc. However, 1 (one) (0.97%) faculty declined to give the opinion.

6.11.2 Types of Information needs

The scholar tried to ascertain the types of information needs both from faculties and students and the data so obtained from all the college libraries under study have been mentioned under Table 44 supplemented with Graph 21 for clear vision of the facet.

Table 44: Types of Information Needs

Sl.No	Types	Faculties	%	Students	%
1	Current	56	54.36	116	87.87
2	Retrospect	26	25.24	12	9.09
3	Both current & Retrospect	21	20.38	4	3.03
Total		**103**	**99.98 or 100**	**132**	**99.99 or 100**



The table while analyzing reflect that, 56(54.36%) out of 103 faculties require current information in parallel with 116(87.87%) students out of 132 who also opined for current information requirement. 26(25.24%) faculties however, has given the opinion to go in favour with retrospect information needs as against 12(9.09%) students out of 132. It is interacting to note that 21(20.38%) faculties out of 103 and 4(3.03%) students out of 132 have revealed the needs of both current and retrospect information. This shows that both the faculties and students are quite concerned to get the current information for new knowledge and other academic works.

6.11.3 Types of Document Needs

The scholar tried to identify the type of documents required by both from faculties and students. After obtaining the relevant data, the scholar has tabulated the same under Table 45.

Table 45: Types of Document Needs

Sl.No	Types	Faculties	%	Students	%
1	Text book	87	84.46	104	78.78
2	Periodicals	40	38.83	13	9.84
3	Reference	59	57.28	57	43.18
4	Conf/seminar Proceeding	16	15.53	3	2.27
5	Patent	0	0	0	0
6	Standard	5	4.85	9	6.81
7	Review	14	13.59	6	4.54
8	Newsletter	31	30.09	45	34.09

9	Index	2	1.94	5	3.78
10	Abstract	7	6.79	4	3.03
11	Bibliography	11	10.67	2	1.51
12	Others	1	0.97	1	0.75
	Total	**273**		**249**	

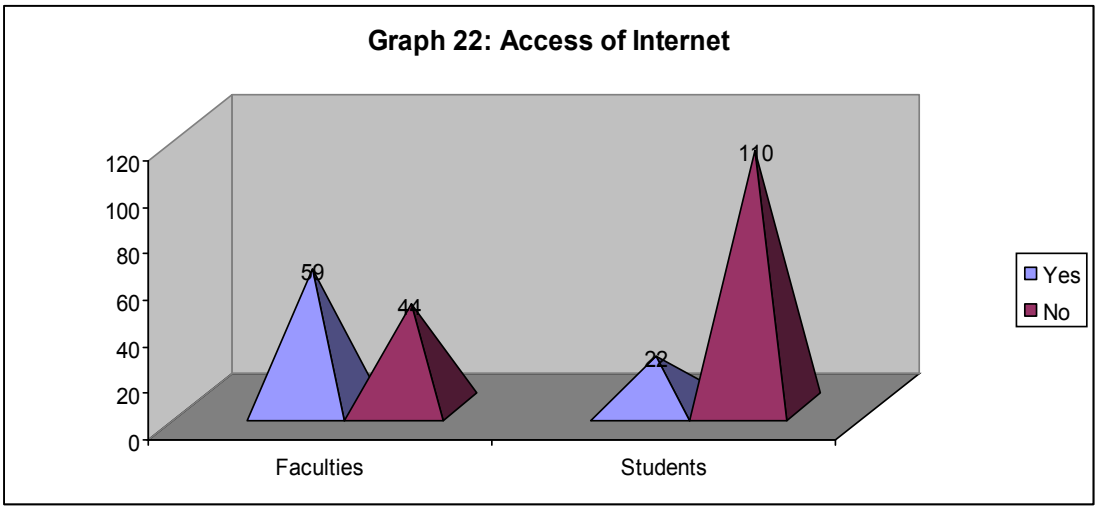
Analysis to the above table reveals that, the faculties and the students as well have given their option for their document needs for more then one item as listed in the table. The scholar has split the table under 12 broad categories. The analysis to the table further revealed that the major number of faculties .i.e, 87(84.46%) out of 103 and 104(78.78%) students out of 132 in total have given their opinion for text books, periodicals etc. While much emphasis has been given by both faculties and students for the requirement of text books, less emphasis has been given by both faculties and students on periodicals. Further, the importance for reference books both by faculties and students have been given which counts 59(57.28%) and 57(43.18%) out of 103 and 132 respectively. In tune of the document needs emphasis has also been given for newsletter, reviews, bibliography, etc. by both faculties and students. This visualized that as the work has been under taken only the level of colleges both the faculties and students are more inclined to use the text book and as most of the college libraries do not have sufficient periodicals. This is also supplemented with the management attitude to go in favour with collection development focusing primarily on books. It is surprising to note that none of the users neither faculties nor students prefer for consultation of patent.

6.11.4 Access to Internet.

The scholar obtained the data with regard to access to Internet from both faculties and students and the data has placed under Table 46 supplemented with Graph 22 for clear vision.

Table 46: Access of Internet

Sl.No	**Access**	**Faculties**	**%**	**Students**	**%**
1	Yes	59	57.28	22	16.66
2	No	44	42.71	110	83.33
	Total	**103**	99.99 or 100	132	99.99 or 100



Analysis shows that 59(57.28%) faculties out of 103 would like to access Internet for various academic progress, programs, research and development as against 22(16.66%) students out of 132 students. Further 44(42.71%) faculties out of a total number of 103 do not prefer to access Internet as against a major chunk of students. Which constitute 110(83.33%) out of 132. This is perhaps due to the fact that though most of the libraries are linked with Internet, it is confined either to the libraries, library staffs and faculty members. The students hardly get any chance to access Internet may be due to the engagement of the systems. Again, the Net connectivity and bandwidth in college library under study in an absolute problem and as most of the colleges are having only system; it is difficult both for the student and faculties to access Internet.

6.11.5 Types of search on Internet

The type of search on Internet is one of the components of the questionnaire which requires to be revealed by the faculties and students of all 24 college libraries covered under study. The data split over to seven different categories were obtained through the questionnaire which has been tabulated in Table 47 for analysis to ascertain the different types of searches made by the faculties and students on Internet.

Table 47: Types of Search on Internet

Sl.No	Types	Faculties	%	Students	%
1	e-book	50	48.54	12	9.09
2	e-journal	39	37.86	5	3.78
3	e-patent	3	2.91	1	0.75

4	e-repots	16	15.53	7	5.30
5	e-proceedings	9	8.73	3	2.27
6	Database	14	13.59	0	0
7	Others	4	3.88	0	0
	Total	135		28	

The above table on analysis revealed that the faculties as well as the students use to browse many types of e-resources such as e-book, e-journal, e-patent, .etc simultaneously. However, browsing for e-book is more in compared to the other electronic information sources. It is ascertained that 50(48.54%) faculties and 12(9.09%) students out of 103 and 132 respectively prefer to browse e-book followed by browsing of e-journal by 39(37.86%) faculties as against 5(3.78%) students. The e-reports one of the types is being browsed by 16(15.53%) faculties and 7(5.30%) students. The faculties along with students preferred to browse e-books which are text oriented. e-journals are browsed mostly by the faculties to keep abreast with the latest development in their respective subject along with to prepare article and other academic matters. It shows that less number of users browse/search their information on Internet because of non-availability of sufficient number of computers in the library. In tune of information needs emphasis has also given for e-reports, databases by the faculties as, most of the students are not aware the use of search techniques of web resources on Internet. It shows that users especially students do not get a chance for surfing into internet as they are not aware of the benefits of the resources.

6.12 Library Services

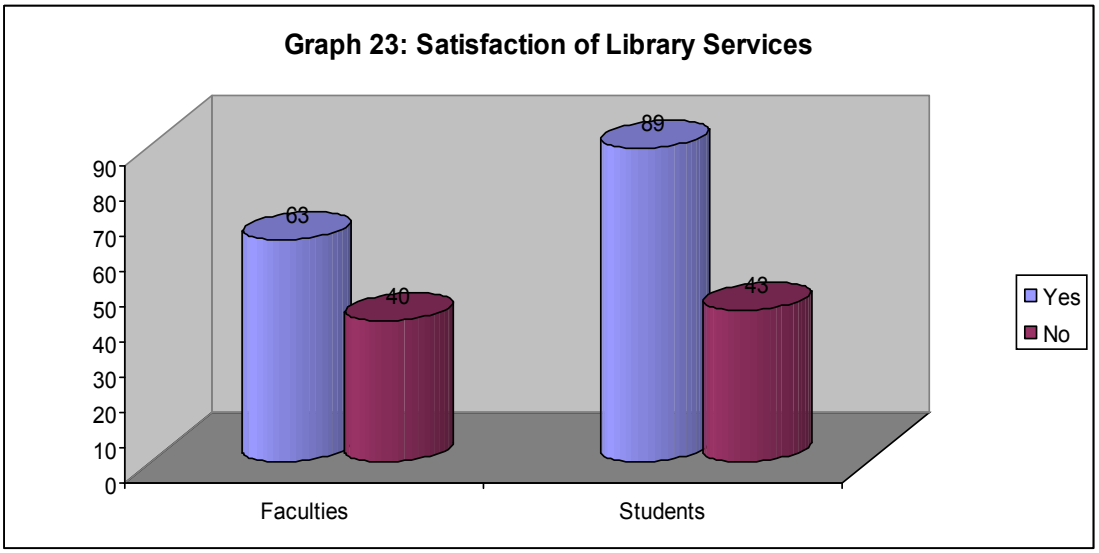
6.12.1 Satisfaction of library services

Library services for users irrespectively are one of the essential components to achieve the objectives of the library. As already discussed, the libraries are considered as a source of knowledge centers where the users are expected to obtain information according to their needs. Satisfactions of users depend upon the quality, nascence, and clarity of library services provided to them. It is, however, a performance indicator of library. The library service primarily depends upon the collection development, management, technical manpower, infrastructures, and resources of the library. The scholar obtained the data relating to the satisfaction derived by both faculties and

students of the college libraries under study which has been placed in Table 48 and plotted with Graph 23 for clear understanding of the issue..

Table 48: Satisfaction of Library Services

Sl.No	Satisfied	Faculties	%	Students	%
1	Yes	63	61.16	89	67.42
2	No	40	38.83	43	32.57
	Total	**103**	99.99 or 100	132	99.99 or 100



Analysis to above table illustrated that 63(61.16%) faculties out of 103 are satisfied with the services provided by the irrespective library as against 89(67.42%) students out of 132 students who are also satisfied. This is due to fact that, the college library are more inclined to develop their collections through of the books prescribed in the syllabus which, however, include both text and reference books. Further 40(38.83%) faculties out of 103 are satisfied with the services made available by the library and 43(32.57%) students out of 132 in total also opined the same feeling. This is perhaps due to the fact that though most of the libraries are poor in collection strength and are unable to add new edition of books, journals and other information tools due to limited budget.

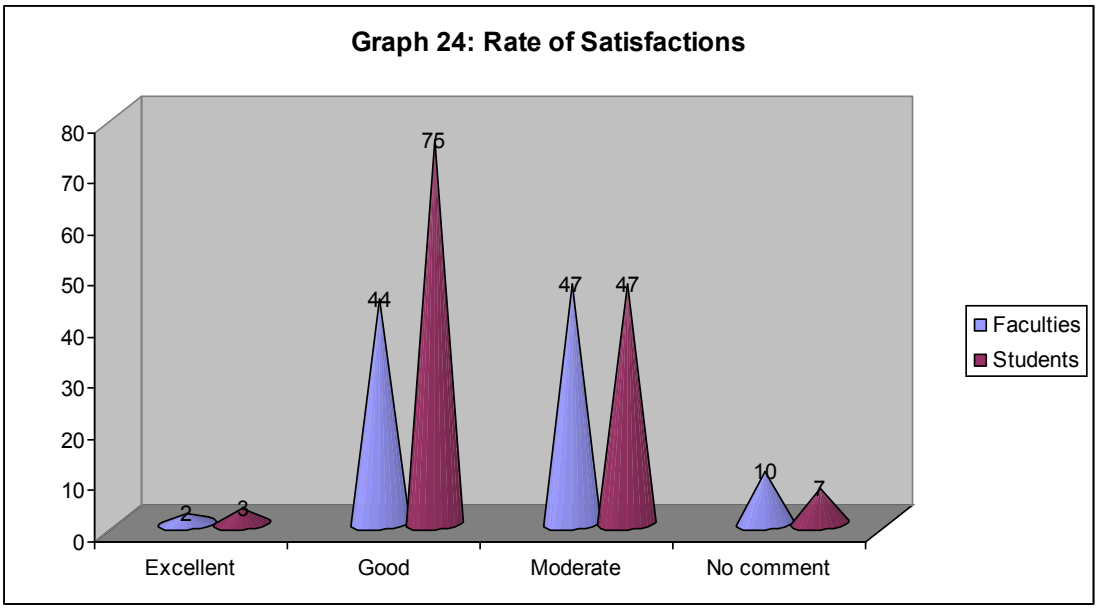
6.12.2 Rate of satisfaction

The scholar obtained data relating to satisfaction level among the faculties and students with regard to library services. The data relating to the component has placed in Table 49 supplemented with Graph 24. The scholar split the questions in four

different categories such as excellent, good, moderate and no-comment and the data relating to this opined by the faculties and students have been tabulated in Table-49 supported with Graph-24.. No other parameter has however, been applied to know the rate of satisfactions.

Table 49: Rate of Satisfactions

Sl.No	Rate	Faculties	%	Students	%
1	Excellent	2	1.94	3	2.27
2	Good	44	42.71	75	56.81
3	Moderate	47	45.63	47	35.60
4	No comment	10	9.70	7	5.30
	Total	**103**	99.98 or 100	**132**	99.98 or 100



While analyzing the data it could be ascertained that 47(45.63%) faculties along with 47(35.60%) students out of 103 and 132 respectively express the library services as moderate. But it is surprising to note that, 75(56.81%) students as against 44(42.71%) faculties have opined the library services has good. It could be further noted that, only 3 (three) (2.27%) students along with 2 (two) (1.94%) faculties viewed the library services as an excellent. 10(9.70%) faculties and 7 (seven) (5.30%) students, however, did not mention their idea. It is fact that most of the college libraries are lacking of sufficient infrastructures and electronic devices coupled with less collection of journals which are essential for promoting research and development. The students as well as faculties are not getting ample opportunities to browse the concept and hence, they have opined the library services as moderate.

6.13 Testing of Hypotheses

The scholar initially formulated 4(four) different hypotheses so as to be verified through analysis of data based on questionnaires. The scholar after obtaining the data relevant to the questions through the structured questionnaire from the librarians, faculties and students of all 24 college libraries under studies analyzed and verified the formulated hypotheses.

H_1 The college libraries in Mizoram under study are facing major physical resources and financial problem.

From the analysis of the respective tables it could be found that most of the college libraries are running with deficit fund including less physical resources and hence, the first hypothesis is correct.

H_2 Library professionals are lacking of information technology skills and ICT skills including its application.

While analyzing the data it was revealed that most of the college libraries neither have adequate infrastructure nor communication devices, and computers etc. Further the library staffs do not have proper ICT skills so as to provide electronic services. Hence, the hypothesis formulated initially came true.

H_3 Application of ICT will facilitate better services to the users' communities.

The scholar after analyzing the data could ascertained that most of the faculties and students as well are inclined to use the ICT for academic excellence, research and development but, due to lack of technologies, they are not getting adequate scope to browse on Internet. The library staffs of the colleges under study have, however, felt that applications of ICT will facilitate better services and hence, the hypothesis came true.

H4 The users' communities need the services of e-journals, content development, content management, resource sharing etc.

The scholar could know from the analysis of data that most of the students including some of the faculties satisfy themselves through the traditional ways. Even if e-journal services are disseminated by some of the libraries such as PUC, GHBC, less number of faculties and students take the benefit of services. Hence, at this stage the content development, content management services cannot be initiated due to the lack of interest of the users and inadequate infrastructures and hence, the hypothesis is wrong.

Chapter – 7

Suggestions and Conclusion

7.1 SUGGESTIONS

On going through the service by the college libraries under the study and the responses data collected from the students, it is necessary to make suggestion on the use of the library for the optimum utilization of the services and for all around development of the library. The following are the suggestions

- ☑ Library should concentrate on building up its collection keeping in mind the teaching curriculum, research project and carrier guide will be helpful to student.

- ☑ Library staff still has to undertake a number of exercises for library services. Bibliography service- CAS, SDI and other services should have to be introduced. The main lack of this library is library service. There is no proper service and the library does not much function as a library.

- ☑ The college library should make efforts to attract the users to library and convert them into regular visitor/users.

- ☑ The library staff should be made aware of the importance and advantage of library use, so as to achieve the spirit for team work, and provide effective and efficient services.

- ☑ At commencement of every academic year library orientation programmed should be organized on regular basis. Library also builds its collection including rich reference materials, and also help the teachers should be taken in this regard.

- ☑ College authority should take initiatives to strengthen library's infrastructural development to satisfy the users.

- ☑ College Library is required to be well equipped by modern Information Communication Technology to facilitate each access to the information needs of the users.

- ☑ Each and every college Libraries should have their own building with state-of-the-art at the central place of the college for easy accessibility by the users.

- ☑ Qualified professional staff with technical knowledge should be recruited for smooth functioning of library services.

- ☑ Organisation of Workshop, Seminar, Lectures, Audio-visual Programs is essential for the library professionals to promote library services effectively.

- ☑ Each and every college library should follow collection development policy of the Government. Collection development policy may emphasize on information need of the users.

- ☑ Internet facility should be provided to the library users, so that they may access their information needs easily. Libraries may be linked with or be a member of library resources in the country, e.g. DELNET.

- ☑ Each and every college library requires to be the member of UGC-Infonet Digital Library Consortium

- ☑ Separate reading room for teachers should be available in a library. Collections and facilities should also be organized systematically to meet their information needs.

- ☑ Libraries need to be automated to meet the challenges of an information society with necessary hardware and software. Each College library should create its own local database and provide effective and efficient computerized library and information services, such as Database Service, CAS, SDI, Reference Service, Document Delivery Service, etc.

- ☑ The state government may continue to adopt UGC norms and conditions and to retrieve a strategic plan to acquire information resource centre in each and every colleges. College libraries need a constant source of finance from the State Government.

- ☑ Library staff, both professional and semi-professional needs to be fully oriented towards application of ICT. The authority should organize such kind of regular training programs to acquire latest developments in the field.

Special initiatives in orientation programs/computer literacy program may be organized for the library staff.

- ☑ Due to inflation, library required more budgets from the state Government. More library budget will facilitate in developing a good services and well collection of reading material for all categories of users.

- ☑ Since ICT based services are very much needed in today's society, each and every library professionals should aware of it;

- ☑ Qualified and competent manpower of the library and more funds are very much needed for the development of the library.

- ☑ The Government should sanction separate budget for library development.

- ☑ Every college library should be automated so that work of staff became easier and the user can get their information at right time.

- ☑ Library must employ modern library technique and device in its operation. So that it provide service in order to save time of library user and the staff because manual system is time consuming.

- ☑ Proper and more subscriptions of current content, journal and periodicals should require.

- ☑ Each department of the college should have an online access to the library.

- ☑ Reprographic service should me made available to the library for smooth services especially for the collection of reference materials

7.2 Conclusion

Education happens to be a positive parameter to bring about the changes in the society and library and information services are no exception to it. Mizoram throughout its ages have started progress and as such, its considered to be one of the progressive states in India primarily in the field of knowledge through the establishment of schools, colleges and university. This is evident from the data duly analyzed from all 24 colleges covered under study. The library and information service is also equally responsible for making all round changes and developments in the sphere of economics among the faculties, students and other staffs in particular and society in general.

Literacy skills whether, computer or any other technology are essential to promote better and effective services in the sphere of libraries. The scholar analysed the data of all 24 colleges with regard to the computer skills and it could be ascertained that though a total number of 31 professional staffs of all the colleges are having computer knowledge still then no sporadic attempt has yet been taken by the libraries to provide full fledged computer services to the users of the libraries. However, efforts are going on by the college authorities, administration and government as well to impart training to the library professional of the colleges to gain computer knowledge and communication technology to implement in the libraries.

The collection development signifies the strength of a college library especially with regard to the books, reference books etc. The scholar analysed the collection development of all 24 colleges placed under Table No 28 and deduced that the libraries of PUC, GAC and GHBC stand as the apex among all the college libraries covered under study. To build up a healthy collection development sufficient budget along with the initiatives of the principals, faculties and the librarians are essential and efforts are being made by the authorities to bring out more funds for the libraries.

With regard to collection of Journals the GHBC library subscribes 35 numbers of Journals as against GLC library 28 and PUC 19. The college libraries need to put emphasis to get more journals to provide current information but due to the stringent budget allocation a poor show could be visualized. Further the college libraries are not provided with a separate budget allocation for the journals. However, the book allocation grant is provided separately and the college authorities put much emphasis

in building the collection development through books and other printed materials. Moreover, the cost of the Journals is higher than that of books and hardly expenditure with regard to Journal subscription are approved by the management and Government. Again continuity is another component of the regular subscription of journal. Mizoram being situated at the far off corner communication is a continuous problem. The libraries, therefore, are not in a position to continue the journal subscription due to the reason beyond control.

E-resources which are the need of the hour need to be available profusely in the college libraries in an automated environment. It is evident from the study that some of the colleges have already started adopting the means of collection of e-resources who have already started automation process in the library. Other colleges who have not yet been started with automation are still in pipeline waiting for the management not to apply the ICT in the library services.

Accordingly, theses and dissertation contributed value to the library services. It could be pointed out that the college libraries have given a progressive signed by way of collection of theses and dissertation in their collection development which requires to be disseminated in an automated environment. The UGC in this prospective has already issued clear direction to the re-searcher to deposit a soft version of theses/dissertation especially in the level of M.Phil and Ph.D to be referred by the scholar in the library.

With regard to the technical processes which comprises both classification and cataloguing. The college libraries adopt the International classification scheme such as DDC to classify the documents. Though not all the college libraries have yet posses the DDC schedule due to heavy cost are processing the document according to some other notion as less collections are available with their libraries. Still efforts are being going on by the respective college libraries to procure a scheme of classification for processing of document which was depends upon the budget allocation and administrative clearance. Likewise some of the colleges have developed their data though the internationally accepted cataloguing code i.e. AACR-2 and some libraries still are adopting CCC. The college libraries generate catalogue though various mechanism card, ledger etc.

However, most of the librarians preferred the dissemination of services to the readers through traditional method which is evident from the questionnaire obtained from all college libraries. It is due to the lack of computer literacy and shortage of proper infrastructures which are costly affair for the libraries. Even though the library professionals preferred to deliver the mode of services through traditional way still than all out efforts are being made by the administration and government as well to promote the delivery of services through computers and accordingly initiatives are being made by the authorities to impart training in computer technology for the library staffs. Further government has started providing computers in the college libraries.

It is evident that, so far 4(16.66%) numbers of college libraries i.e. PUC, GAC, GHBC and GTRC out of 24 college libraries have recognised the importance of library services in the changing scenario of information requirement by the users by way of adopting computer application in the libraries which happened to be a part of automation.

Although, many of the college have not introduced library automation and technological services provided to the users, they are still in the process and persuading the Government for sanction of more funds to developed ICT infrastructures to adopt automation in the library services. Further the college libraries that have already started automation process have chosen SOUL software developed by INFLIBNET.

Internet has become essential now-a-days to access multi-faceted, multi-dimensional resources for the use of academic and other developments. The Governments of India has undertaken developmental action in the field of IT and distribution of free internet connection to all the Government schools and colleges in all over India. Priority is now been given in all college libraries to have the Internet connectivity so that the users can access for their information. The present study revealed that most of the college libraries in Mizoram covered under study posses internet connection and some are still in the pipeline for internet connection which however, requires the development of necessary infrastructure and initiations are being undertaken by the authorities to provide more funds to develop the infrastructures.

ICT infrastructure is a boon to the library which is not only supports the activities of the library but also accelerates the use of library resources profusely. The scholar obtained the data with regard to the ICT infrastructure available in all 24 college libraries placed under Table No 40 and 41. After analysis the study could be revealed that most of the college libraries are having computers with limited printers. But it is surprise to note that some the college libraries neither have computers nor printer. This visualized that college libraries require more update with regard to institution of computers in library services. More efforts require to be made by the authorities and the Government in providing necessary infrastructures and skill development among the professional to come up with the latest trend in the library services.

Information needs for the user irrespective it is one of the important components then other requirement. The libraries are considered as a source of knowledge centers where the users are expected to obtain information as per their needs. There however depends upon the strength of collection development, infrastructure, manpower and feasible location of the library. The frequency rate of users library visit is the parameter to know the exact needs and satisfaction of the library. The present study revealed that the faculties are pre-engaged with academic assignment and hardly find any suitable time within the office hour to visit the library. In contrary to this, the students visit the library more because of their assignments, academic pursuits, issue and return .etc. Most of users of faculties and students in Mizoram need an information content related to current information. It is found that both the faculties and student are quite allure to get the current information for new knowledge and other academic works. While emphasis has been given for both faculties and students for the requirement of text books less emphasis has been given for periodicals. In tune of the document needs emphasis has also given for newsletter, reviews, bibliography, etc. by the faculties and students. This also visualizes that as the work has been under taken only the level of colleges both the faculties and students are more inclined to use the text books and as most of the colleges do not have sufficient periodicals collections, the teacher and students as well do not find a place to refer the periodicals. This is also supplemented with the management attitude to go in favour with collection development with regard to periodical. It is surprising to note that none of the users either faculties or students prefer consultation for patent.

Internet is a viable platform to access electronic resources which has become the basic requirement for teachers especially in an academic institution. The study tried to know the habits for information gathering though internet by the faculties and students of the colleges under study. It is evident that most of the faculties preferred to access Internet while the students have a poor opinion on internet access. This is perhaps due to the fact that though most of the libraries are linked with Internet, it is confined either to the libraries, or library staffs and faculties. The students hardly get any chance to access Internet may be due to the engagement of the systems. Again, the Net connectivity and bandwidth in college library under study in an absolute problem and as most of the colleges are having only system it is difficult both for the student and faculties to access Internet. Some of the users are regularly surfing on internet for their academic purpose and some for other purpose such as sending of e-mails, browsing on search engine, subject gateways etc. The present studies made queries to know the exact needs of users from internet and it was found that the faculties along with students preferred to brows e-book which are mostly text related to their subject. E-Journal is browsed mostly by the faculties for knowing the latest development in their respective subject along with to prepare article and academic curriculum. It shows that less number of users browse/search their information on Internet because of non availability of sufficient number of systems with internet connectivity in the library. In tune of information needs emphasis has also given for e-reports, e-databases by the faculties Most of the students are not aware of the use of Internet and the web resources. This visualizes that as the work has been undertaken only in the level of college libraries; both the faculties and students are interested to use the e-books.

Library service for users irrespectively is one of the essential components to achieve the objectives of the library. The libraries are considered as a source of knowledge centers where the users are expected to obtain information as per their needs. Satisfaction of users depends upon the quality, nascence, and clarity of library services provided to them. It is a performance indicator of library. The library service primarily depends upon the technical manpower, infrastructure, and resources of the library. The study revealed that the users comprising both faculties and students of the colleges are satisfied with the services provided by the libraries. It is due to fact that the most of the college libraries have developed their collection development with

regard to the books prescribe in the syllabus which however, includes both text and reference books.

It is a demand in the present changing scenario that the libraries requires to provide proper an effective services electronically which can be gear up with the prevalence of computers and communication technologies. This however, requires a change of attitude among the library professionals and also the authorities including the Government. Proper infrastructures require to be developed in the college library services for a fruitful result in the academic scenario especially for promoting research and development.

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Appendices

Appendix - 1

QUESTIONNAIRE

on

An Assessment of the Services of College Libraries in the context of changing Information Scenario with special reference to Mizoram

The respondent is requested to put (✓) mark in the space provided in each question or provide information in the space provided in the questions or may use separate sheet wherever necessary.

A. GENERAL

i. Name of the College: _____

ii. Year of establishment: _____

iii. Status of College: Provincialised ☐ Deficit ☐ Private ☐

iv Name of the Librarian: _____
with qualification _____

v. Status of the Librarian: Regular ☐ Contract ☐ Temporary ☐

vi. Correspondence Address of the: _____
Librarian with Phone & e-mail _____

vii. No of Library Staff: Technical Staff ☐ Supporting Staff ☐

viii. Web Address/e-mail of Library _____

vi. Phone No. of the Library _____

B. HUMAN RESOURCES:

i. Do you handle Library Software: Yes ☐ No ☐
If yes, which software: _____

ii. Does you operate Computer application: Yes ☐ No ☐

iii. How many staffs are having Comp Knowledge: Yes ☐ No ☐

iv. Are you attend Seminar/workshop/conf in the
Area of Computerization: Yes ☐ No ☐
If yes, specified: National ☐ International ☐

1. LIBRARY COLLECTIONS

1.1 Please specify the type of resources available in the Library.

Sl.No.	Form of Documents	Yes	If yes, please mention number	No
1.	Books			
2.	Back volumes			
3.	Theses/ Dissertations			
4.	Reference Tools			
5.	Conference Proceedings			
6.	Periodicals/Journals (Indian)			
7.	Periodicals/Journals (Foreign)			
8.	Audio-Video Cassettes			
9.	CD-ROMs/Floppies			
10.	Online operating facilities			
11.	Any other (Please specify)			

1.2. Please mention number of Journals subscribed for different Subject/department.

Sl.No.	Department	Indian	Foreign	Total
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

1.3. No. of e-Journals subscribed for different Departments under the College.

Sl.No.	Department	Indian	Foreign	Total
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

14				
15				

1.4. Total books procured for different Departments/Subject since last five (5) years.

Sl.No.	Department	2004-05	2005-06	2006-07	2007-08	2008-09	Total
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

1.5. No. of e- books procured for different Departments/Subject

Sl.No.	Department	Indian	Foreign	Total
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

1.6. No. of other e-resources available in the library. (Please specify)

Description of e-resources	Total number of e-resources

2. LIBRARY BUILDING

2.1. Do you feel that Library has adequate space to provide the various types of services to the clienteles? Yes ☐ No ☐

2.2. Do you think that the number of seats provided in the library is adequate to meet the users and teachers of the Colleges ? Yes ☐ No ☐

2.3. Do you provide Research Cubical/ Research Carrels/? Yes ☐ No ☐

2.4 Does the Library have its own building? Yes ☐ No ☐

3. PROCESSING OF LIBRARY MATERIALS

3.1. How much time is usually taken by your library to process the books after arrival and make them available to the users?

a. One week; ☐
b. Two weeks; ☐
c. One month; ☐
d. More than one month ☐

3.2. Which scheme of classification do you follow in the library?

a. DDC; ☐
b. CC; ☐
c. UDC. ☐

3.3. Which Physical form of catalogue do you follow?

a. Card; ☐
b. Ledger. ☐

3.4. Which catalogue code do you use in the library?

a. CCC;
b. AACR-1;
c. AACR-2;
d. Any other (Please mention) _____

4. READER'S SERVICE

4.1. What are the total working hours of the library?

a. Week days; ☐
b. Sundays. ☐

4.2. Does the library remain open during holidays and vacation? Yes ☐ No. ☐
If no, please state the reasons.

4.3. Which charging system do you follow?

a. Browne; ☐
b. Newark; ☐
c. Two card system of Ranganathan; ☐
d. Any other system (Please specify) _____

4.4. What type of issue system do you like?
a. Electronic Method
(If electronic method, please state the reason)
_____
_____

b. Traditional Method ☐

4.5. Do you provide active Reference service to the readers Yes ☐ No ☐

If yes, please state the method of disseminating of services
a. Through document; ☐
b. Through electronic form; ☐
c. Through any other media (Please state) ☐ _____

5. Do you provide Documentation Service? Yes ☐ No ☐

6. Do you provide any bibliographic/ Current Content Service? Yes ☐ No ☐

7. Do you provide e-content service? Yes ☐ No ☐

8. Is your library automated? Fully ☐ Partially ☐

8.1 If partially, which sections are computerized?

Acquisition ☐
Cataloguing ☐
Circulation ☐
Serial control ☐
Back volume ☐
Text book ☐
Any other (please specify) _____

9. Which library software do you use?

- Libsys ☐
- CDS/ISIS / WINISIS ☐
- SLIM++ ☐
- SOUL ☐
- TLMS ☐

Any other (Please specify) _____

10. On which server the library software has been installed?

Library ☐ Institute's computer center ☐

10.1 Who is managing the library software?

Library and Inf. Professional ☐ Computer Professional ☐

System Analyst ☐ Any other (please specify) ☐

11. Does your institute have a website? Yes ☐ No ☐

If yes, who is hosting the your website (Please specify) _____

12. Has your library got an independent LAN or is a part of campus network?

Independent ☐ Part of campus network ☐

If it is independent, or part of campus network, what are all the equipments and cables used for LAN connection in the library?

12.1 Hub:

Manageable ☐

Unmanageable ☐

Cisco ☐

13. How do you spread out your institute's campus LAN?

- To Library ☐
- To All Labs/Centers/Units ☐
- To all Faculties and officers residences ☐
- Any other _____

14. Are your campus network and library network connected to internet? Yes ☐ No ☐

If yes, please specify your Internet Service Provider (ISP)

- ERNET(ex: ac.in, edu.in, res.in) ☐
- VSNL ☐
- NICNET ☐
- Any other _____

15. Type of internet connection is being used in the library, laboratory.

15.1 Library

Dial-up ☐

Leased ☐

Any other _____

15.2 Laboratory

Dial-up ☐

Leased ☐

Radio link ☐

Cable network ☐

V-sat ☐

Any other _____

15.3 Bandwidth of library network

- <=1.0 Mbps ☐
- >1.0 to <=2.0 Mbps ☐
- >2.0 Mbps to <=4.0 Mbps ☐
- >4.0 Mbps to <=6.0 Mbps ☐
- >6.0 Mbps and above ☐

15.4 Library Networks:

- DELNET ☐
- CALIBNET ☐
- BONET ☐
- MALIBNET ☐
- INFLIBNET ☐
- Any other _____

15.5 Consortium:

- INDEST ☐
- CSIR ☐
- UGC-Info E-journals ☐
- Any other _____

16. What are all the e-resources (*full-text and bibliographic databases*) subscribed for you by INDEST/ CSIR/UGC Info net consortium?

16.1 Full-text databases:

- Science Direct ☐
- Springer link
- ASTM journals and Standards ☐
- J-Gate ☐
- JCCC ☐
- Any other _____

16.2 Bibliographic databases:

- Engineering village2 (*Compendex & INSPEC*) ☐
- Chemical Abstracts ☐
- Any other _____

16.3 Does your library subscribe to any e-databases from any library consortia? If so, whether payment is made out of its own budget or from consortium? (Please specify in detail)

17. Amount spent by your library for subscribing electronic resources during the year?

- 2003-2004 Rs._____
- 2004-2005 Rs._____
- 2005-2006 Rs._____
- 2006-2007 Rs._____
- 2007-2008 Rs. _____
- 2008-2009 Rs.. _____

18. What are all the Networked Services provided by your library?

Services	YES	NO
▪ Electronic Data Interchange (EDI)	☐	☐
▪ Automated Cataloguing	☐	☐
▪ Automated Circulation	☐	☐
▪ Virtual Reference	☐	☐
▪ E-CAS	☐	☐
▪ Online Databases	☐	☐
▪ CD-ROM/DVD	☐	☐
▪ Electronic Thesis and Dissertations (ETD)	☐	☐
▪ Multimedia Databases (*audio and video etc*.)	☐	☐
▪ Standards (*CD-ROM or intranet version*)	☐	☐
▪ Internet facilities	☐	☐
▪ E-mail	☐	☐
▪ Facsimile transmission (Fax)	☐	☐
▪ Web-based document delivery	☐	☐
▪ Any other services _____		

*Note: If the answer is **No** the subsequent related questions are need not be answered (filled-in)*

19. If your library provides Electronic Data Interchange (EDI) services, please tick mark the area(s) covered.

- Ordering of library materials ☐
- Budgeting ☐
- Any other services _____

20. If your library provides automated library catalogue services, please tick mark the type of service(s)?

- ◈ OPAC ☐
- ◈ WebOPAC ☐
- ◈ Both ☐
- ◈ Any other services _____

21. If your library provides automated circulation services, please tick marks the area(s) covered and specify the daily transactions of books.

- Check-in ☐ No._____
- Check-out ☐ No._____
- Renewal ☐ No._____
- Reservation ☐ No._____
- Inter-library loan ☐ No._____
- Any other services _____

22. If your library provides virtual reference service, which media you usually use to deliver the services? (Please tick mark and specify number of queries attended per day).

- ◈ Online assistance ☐ No._____
- ◈ E-mail assistance ☐ No._____
- ◈ Telephone assistance ☐ No._____
- ◈ Any other services _____

23. Does the library provide the following services?

- Current contents ☐
- E-SDI ☐
- Alert ☐
- New arrivals ☐
- Newspaper clipping ☐
- Any other services _____

24. If your library provides online information access, please tick mark the type of materials provided access.

- E-books ☐
- E-journals ☐
- Abstracting databases ☐
- Open access journals (free) ☐
- Any other services _____

25. Does the library provides CD-ROM services, please tick mark the type of service(s).

- Standalone ☐
- Networked ☐
- Both ☐
- Any other services _____

26. Does the library provides Internet facilities, please provide the following data.

- No. of PCs connected_____
- Type PCs used (ex. *P1, P2, P3, P4*)____
- No. of users accessing per day _____

27. If your library provides communication network services, please tick mark the type of service(s) available

- E-mail ☐
- Telephone ☐
- Facsimile (fax) ☐
- Any other services _____

28. If your institute provides personal e-mail facilities, please tick mark the category of users who use this facility:

- Teachers ☐
- Student ☐
- Non-Teaching ☐
- Any other _____

29. Does the library provides e-learning/education services, please tick mark the type of service(s)

- Desktop (stand-alone) ☐
- CD-ROM/DVD ☐
- Audio and video cassettes ☐
- Intranet ☐
- Internet or online ☐
- Any other services _____

30. If your library provides electronic conferencing services, please tick mark the type of service(s) provided.

- Audio and video ☐
- Telephone ☐

- Both ☐
- Any other services _____

31. If your library provides e-publishing services like

- Library news bulletin
- Library new letters ☐
- Any other _____

32. Does the library provides any support services, please tick mark the type of assistance in accessing electronic resources.

- User orientation/education ☐
- User Training ☐
- Staff Training ☐
- Any other means _____

33. Has your library initiated digitization process? Yes ☐ No. ☐

(If yes, please specify the type of documents, software and format for digitizing documents)

33.1 Types of documents:

Books (rare*, out of print, public domain*) ☐ Journal ☐
Question papers ☐

Any other _____

33.2 Type of software is being used:

- Fine reader ☐
- Any other_____

33.3 Type of format is being:

- PDF ☐
- HTML ☐
- DOC ☐
- Any other_____

34. Please provide the infrastructure facilities available in the library.

- No. of Computers ___
- No. of Scanners ___
- No. of Barcode ___
- No. of Printers ___
- No. of Photocopiers ___
- No. of Fax Machines ___
- No. of Telephones ___
- No. of Projectors ___

35. Are you satisfied with your library, if no, please mention the problems and also make suggestions for future prospect.

_____-
_____
_____
_____
_____
_____

Date: Signature of the Librarian

N.B. The Librarian is requested to place any other information pertaining to the Library in a separate sheet.

Appendix – 2

Q U E S T I O N N A I R E

on

An Assessment of the Services of College Libraries in the context of changing information scenario with special reference to Mizoram

Dear Sir/ Madam,

I am pursuing my research for Ph.D. in Library and Information Science in Mizoram University on the above topic under the guidance of **Dr. R N Mishra,** Lecturer of the Department. You are kindly requested to fill-up the questionnaire for the purpose. The information given by you will be kept strictly confidential and will be used exclusively for the research purpose.

Thanking you, Sincerely yours,

(Lalbiaksanga Hnamte)

The respondent is requested to put (✓) mark in the space provided in each question or provide information wherever necessary.

1. Name & Designation of the respondent: _____

   with e-mail address _____

   _____

2. Category to which you belong : (a) Research Scholar ☐ (b) JRF/SRF ☐

   (c) Faculty ☐ (d) Student ☐

3. Name of the Department: _____

4. Area of your Research: _____

5. Do you visit the library? Yes ☐ No ☐

   If yes, whether you visit the Library Regularly ☐ Ocasionally ☐

6. Purpose of visits the library: Writing /reading abook ☐ lending/return a book ☐
To update knowledge ☐ Starting a project ☐
To browse Internet others (please specify)
☐ ☐

7. Type of information you need? Current Retrospective
Others (please specify) _____

8. Do you have a Department Library? Yes ☐ No ☐

9. Do you access the library from the Dept. Yes ☐ No ☐

10. Type of documents you search

Text book ☐ Periodicals ☐ Reference ☐

Conference/Seminar Proceedings ☐ Patents ☐ Standards ☐

Reviews ☐ News letters ☐ Index ☐ Abstracts ☐

Bibliographies ☐

Any other (please specify) _____

11. Do you access Internet? Yes ☐ No ☐

If yes, the reason for access Internet

e-book ☐ e-journal ☐ e-patent ☐ e-reports ☐

e-proceedings ☐ e-databases ☐ any other (pease specify) ☐

_____

12. Does the library provide any special services? Yes ☐ No ☐

If yes, please specify

_____

_____

13. Does the library provide the required document/ information? Yes ☐ No ☐

14. Are you satisfied by the library services? Yes ☐ No ☐

15. How do you rate your satisfaction? Excellent ☐ Good ☐

Moderate ☐ No comment ☐

.16. Is the library automated? Yes ☐ No ☐

If yes, the level of library automation:

Fully ☐ Partially ☐ On the process ☐

18. Any other information you would like to contribute:

_____

_____

_____

_____

_____

_____

_____

_____

_____

19. Any suggestion you would like to share for development of the Library?

_____

_____

_____

_____

_____

_____

_____

_____

Date Signature

N.B. You are kindly requested to use separate sheet wherever applicable, and also kindly requested to give your filled-up questionnaire to the Librarian.

Appendix – 3

LIST OF AFFILIATED COLLEGES UNDER MIZORAM UNIVERSITY AS ON 2010

Sl.	Name of the College	Year of Establishment	Status of the College
1	Pachhunga University College, Aizawl	1958	Constituent
2	Govt. Lunglei College, Lunglei	1964	Permanent
3	Govt. Champhai College, Champhai	1971	Permanent
4	Govt. Serchhip College, Serchhip	1973	Permanent
5	Govt. Aizawl College Aizawl	1975	Permanent
6	College of Teachers Education, Aizawl	1975	Permanent
7	Govt. Kolasib College, Kolasib	1978	Permanent
8	Govt. Saiha College, Saiha	1978	Permanent
9	Govt. Hnahthial College Hnahthial.	1979	Permanent
10	Govt. Hrangbana College, Aizawl	1980	Permanent
11	Govt. Zirtiri Resi. Sc. College, Aizawl	1980	Permanent
12	Govt. Lawngtlai College, Lawngtlai	1980	Permanent
13	Govt. J. Buana College, Lunglei	1983	Permanent
14	Govt. Mamit College Mamit	1983	Permanent
15	Mizoram Law College	1983	Provisional
16	Govt. Saitual College Saitual	1984	Permanent
17	Govt. Khawzawl College, Khawzawl	1985	Permanent
18	Govt. Zawlnuam Colleges, Zawlnuam	1986	Permanent
19	Govt. Aizawl North College, Aizawl	1988	Permanent
20	Govt. Aizawl West College, Aizawl	1990	Permanent
21	Govt. J. Thankima College, Aizawl	1992	Permanent
22	Govt. T. Romana College, Aizawl	1992	Permanent

23	Kamalanagar College, Chawngte	1992	Provisional
24	Govt. Johnson College, Aizawl	1993	Permanent
25	RIPANS, Zuangtui, Aizawl	1996	Provisional
26	DOEACC Centre, Zuangtui, Aizawl	2000	Provisional
27	Mizoram Nursing College, Civil Hospital, Aizawl	2005	Provisional
28	Higher & Technical Institute of Mizoram, Lunglei	2007	Provisional

(Source: CDC, Mizoram University)