Chapter - 3

BLENDED LEARNING: AN OVERVIEW

"Education is not the learning of facts but the training of the mind to think."
– Albert Einstein

3.0 INTRODUCTION

As time crawls on, new advancement takes place in the society which demands for a smart educational system to passably mirror its needs and demands. While needs to be sensed in the way which job profile, services rendered, names of the designation are shaping up nowadays. Demands can be seen from the new generation learners who are apparently genetically inclined towards technology. Today's learners' approach towards knowledge acquisition, problem solving and getting into workplace is quite different as compared to earlier days. Change is here and it is going to stay for long. But the vital issue is how our higher education is meeting the needs and demand of today's learners. It is indeed need of the hour to come up with something like 'Blended Learning' to re-build or transform higher education that not only interests the learners but also educates them at the same time. Blended Learning is nothing much as an innovation rather it is a natural outcome of digital sphere crawling into physical confines and in no time learning became "blended" by necessity. This chapter offers a brief discussion on Blended Learning, its meaning, definition, evolution, types, tools, models, benefits and challenges, its goal in terms of higher education, its impact on Library and information science education, success factors for it, and finally attitudes towards Blended Learning and change. A better understanding of Blended Learning is must so as to utilize the potentialities of it in reality.

3.1 BLENDED LEARNING: MEANING

Blended Learning is a formal education program which mixes face-to-face (f2f) learning and e - learning. The term Blended Learning is not a new concept. But yes the term Blended Learning is a recent addition to the lexicon of the education profession. It can be referred as a new educational sensation. Blended Learning is defined as a mix, blend or combination of learning modalities. With the rise of technological and pedagogic advances, many things came into focus which can be included in the blend. Blended Learning does not have a universally accepted definition in essence; Blended Learning is a term that deals with combining education with communication technology. Teaching and learning activities are delivered through synchronous and asynchronous formats. The Blended Learning provides instructors and learners with a comprehensive learning model of physical classroom formats such as lectures, books, labs, handouts and the integration of telecommunication technologies such as technologies in the classroom, virtual communication tools, social-networking software, e-learning systems and mobile learning in their teaching and learning processes. Blended Learning is thus a flexible approach to course design offering some of the conveniences of fully online courses without the complete loss of face-to face contact. While these blends can range from simple to complex, the goal is to create a more effective and efficient learning experience than can be achieved with just a single type of learning.

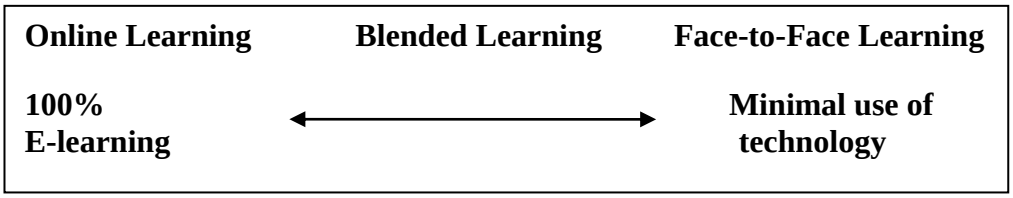

Fig 3.1: Overview of Blended Learning

3.1.1 Synonyms

There are several synonyms or related terms of the word "Blended Learning". They are namely hybrid learning, technology-mediated instruction, web-enhanced instruction, and mixed-mode instruction

3.1.2 Conceptual Definition

Blended Learning is debatable term. Therefore, it is difficult to find a well accepted definition of Blended Learning. Different authors have defined it in different perspectives. A good way to start to understand what is meant by the term Blended Learning is to consider some well accepted definitions. As such some of the popular definitions are tabulated below -

Authors	Year	Definition of Blended Learning
Smith & Dillon	1999	Blended Learning combines multiple delivery media that are designed to complement each other and promote learning and application-learned behaviour.
Colin and Moonen	2001	A hybrid of traditional face-to-face and online learning so that instruction occurs both in the classroom and online, and where the online component becomes a natural extension of traditional classroom learning.
Singh and Reed	2001	A learning program where more than one delivery mode is being used with the objective of optimizing the learning outcome and cost of

		program delivery.
Driscoll	2002	Blended Learning can be seen as: a mix of modes of web-based technology; a mix of various pedagogical approaches (e.g., constructivism, behaviourism, cognitivism); a combination of any form of instructional technology with face-to-face instructor led training; a combination of instructional technology with actual job tasks (in order to create an effective mix of learning and working).
McSporran & King	2002	Blended Learning is a mix of delivery methods that have been selected and fashioned to accommodate the various learning needs of a diverse audience in a variety of subjects. This method can include any combination of any of the above delivery methods.
Valiathan	2002	The term Blended Learning is also used to describe a solution that combines several different delivery methods, such as collaboration software, Web-based courses, and knowledge management practices. Furthermore Blended Learning is used to describe learning that mixes various event-based activities, including face-to-face classrooms, live e-learning, and self-paced learning.

Osguthorpe & Graham	2003	Finding a harmonious balance between online access to knowledge and face-to-face human interaction.
Rooney	2003	Blended Learning refers to events that combine aspects of online and face-to-face instruction.
Brown	2003	Blended Learning supports all the benefits of e-learning including cost reductions, time efficiency and location convenience for the learner as well as the essential one-on-one personal understanding and motivation that face to face instructions presents.
Thorne	2003	Blended Learning is the most logical and natural evolution of our learning agenda. It suggests an elegant solution to the challenges of tailoring learning and development to the needs of individuals. It represents an opportunity to integrate the innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning. It can be supported and enhanced by using the wisdom and one-to-one contact of personal coaches.
Singh	2003	Blended Learning focuses on optimizing achievement of learning objectives by applying the "right" personal learning technologies to

		watch the "right" personal learning style to transfer the "right" skills to the "right" person at the "right" time.
Garrison and Kanuka	2004	Blended Learning is the thoughtful integration of classroom face-to-face learning experiences with online experiences.
Rovai and Jordan	2004	A flexible approach to course design that supports the blending of different times and places for learning, offering some of the conveniences of fully online courses without the complete loss of face-to-face contact. The result is potentially a more robust educational experience than either traditional or fully online learning can offer
Finn & Bucceri	2004	Blended Learning is the effective integration of various learning techniques, technologies, and delivery modalities to meet specific communication, knowledge sharing, and information needs.
Heinze and Procter	2004	Blended Learning is learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and is founded on transparent communication amongst all parties involved with a course.
Byrne	2004	A type of learning in which traditional learning

		and electronic learning meet in different ways to obtain productivity with little cost.
Bersin	2004	The combination of different training media (ie. technologies, activities, and types of events) to create an optimum training program for a specific audience. The term "blended" means that traditional instructor-led training is being supplemented with other electronic formats.
Finn & Bucceri	2004	Blended Learning environment integrates the advantages of e-learning method with some advantageous aspects of traditional method, such as face-to-face interaction. Blended Learning brings traditional physical classes with elements of virtual education together.
Bonk and Graham	2006	Blended Learning can be defined as a combination of face-to-face instruction with online or computer-mediated instruction.
Jones	2006	The linkage between traditional classroom teaching and e-learning. Most recently, Blended Learning programmes represents a more diverse combining of a variety of approaches.
Graham	2006	(1) Blending online and face-to-face instruction, (2) Blending instructional modalities (or delivery media), and (3) Blending instructional methods.

Gulc	2006	Blended Learning empowers learners and teachers as it provides provisions for individualised learning experiences, personalised learning support, collaborative learning, virtual learning environments (VLEs), flexible study and wide access to digital resources, shared tools and information systems.
Shank	2006	Blended Learning seems to mean that there will be some e-learning and some classroom learning. It is in vogue for a simple reason. No one wants to spend that much on e-learning and people in general what to preserve what they have so they made up this nice name for not changing much and called it Blended Learning.
Allan	2007	Blended Learning is the use of different internet based tools including chat rooms, discussion groups, podcasts and self assessment tools to support a traditional course.
Bliuc, Goodyear and Ellis	2007	Learning activities that involve a systematic combination of co-present (f2f) interactions and technologically-mediated interactions between students, teachers and learning resources.
Vignare	2007	Blended courses integrate online with face-to-face instruction in a planned, pedagogically valuable manner, and do not just combine but trade-off

		face-to-face time with online activity, or vice versa.
Garrison & Vaughan	2008	A new educational paradigm that integrates the strengths of face-to-face and online learning - a design approach whereby both face-to-face and online learning are each made better by the presence of the other.
Hrastinski	2008	Blended Learning systematically incorporates the use of asynchronous teaching (facilitated by computer-based technologies) into the traditional onsite teaching in order to maximize both teaching and learning opportunities.
Vasileiou	2009	It is a new model of education that combines the advantages of both ways of teaching – traditional teaching and teaching with the use of technologies.
Kudrick, Lahn and Morch	2009	Combination of two kind of learning environment, physical classroom learning and online learning to enhance the learning outcomes.
Shatarat	2010	It is the restructuring and reformation of teaching content by depending on the theories of learning and combining it with different modern electronic media which provide an interactive environment for the learner the programs of managing the content by transferring it form the traditional

		classroom to a wider one which is not restricted by time or place.
Larkin	2010	The basic principle is that face-to-face oral communication and online written communication are optimally integrated such that the strengths of each are blended into a unique learning experience congruent with the context and intended educational purpose
Watson	2012	This blended approach combines the best elements of online and face-to-face learning. It is likely to emerge as the predominant model of the future -- and to become far more common than either one alone
Liu and Yu	2012	Blended Learning is referred to as a blending of different learning environments, or as a blending of methods, techniques or resources and applying them in an interactively meaningful learning environment.
Horn and Staker	2012	A formal education program in which a student learns: at least in part through online learning, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home; and the modalities along each student's learning path within a course or subject are

connected to provide an integrated learning experience.

3.2 EVOLUTION OF THE CONCEPT OF BLENDED LEARNING

The idea of Blended Learning is not new. It has been in practise ever since human being started teaching and learning. Teachers and learners have often used more than one method and strategies in their teaching and learning. Teachers have blended the learning experiences by using simple technologies like paper and pencil, before the arrival of computers and social networks.

It is said that during World War II, the American military were given training through films and in the 1950s and 1960s this medium was used in public schools as part of the curriculum, especially in the social and physical sciences. The pioneering effect of Blended Learning using technology began in 1960s, when mainframes and minicomputers were used in training by Control Data and the University of Illinois. A system called PLATO (Programmed Logic for Automatic Teaching Operations) developed by Control Data, started the use of computers in traditional educational settings, which still exists. Though visually it's not that interesting, it remains the first platform that extended learning to large audiences through technology. In the 1970s, the limitations of Mainframe-based training gave rise to satellite-based live video. Then in the early 1990s, CD-ROMs emerged as a dominant form of providing technology-based learning removing the barriers of satellite-based training. Again the limitations of CD-ROM gave rise to learning management systems.

Later in the early '90's, the emergence of multimedia signed a new era for the use of technology in learning contexts. The internet and World Wide Web made it possible to create new surroundings for learning, synchronous and asynchronous collaboration, and

new modes of delivery for learning materials, self-directed guides, and tutorials from the constraints of time and place. The first article in internet-based training appeared in 1997. Less than a decade later, as a reaction to alarm that online learning was not bringing acceptable marks due to the cost and time of developing courses and the shortfall of the learning process, Blended Learning came into being. Blended Learning is founded largely on this heritage.

So, what has newly brought this term into the attention is the blend of web based technologies into the learning and teaching process creating new opportunities for students to interact with course concepts, their peers, faculty, and external experts in university courses and programs. Blended Learning represents a convergence of online and face-to-face experiences. It has grown increasingly in demand and popularity in corporate as well as academic settings. Very few references to the term predate the year 2000, though hundreds of articles containing the phrase have been written since then In fact it has been mostly researched across the globe in the educational circle over the past couples of years.

3.3 CHARACTERISTICS OF BLENDED LEARNING

The term Blended Learning has been subjected to various situations counting from technology integration in institutions to developing professionals in business. Therefore Blended Learning carries a variety of instructional practices. There are many attribute that makes Blended Learning unique and special. Following are the characteristics of Blended Learning that helps to promote critical thinking, collaboration, communication, and creativity making education more exciting and alive.

i. ***Offline and Online Learning****:* - The most important characteristics of Blended Learning is its ability to combine two different settings of learning environments: face to face and fully online. The Blended Learning model implements instruction that

takes place both offline in the traditional face to face classroom and online that usually occurs through the use of the internet. Blended Learning identifies the strength and weakness of both the environments and finally merges the strength for more engaged learning experiences. In this program, students are provided study materials using web along with teacher led classroom teaching and learning sessions.

ii. ***Structured and Unstructured Learning****:* - Blended Learning uses both structured and unstructured learning. While in the structured, premeditated, or formal learning program, the content is organized in a definite sequence like book chapter, in unstructured or informal learning takes place through discussions, meetings, e-mail, or hallway conversations. A structured learning program encourages students to be actively engaged, allowing the instructor to have track on student's usage of the program, supervise access to the next stage on the basis of evaluation, and to have a follow up class with those students who are not able to complete the task. In an unstructured online environment, students have the freedom to interact and collaborate with peers, without the teacher looming overhead can be highly motivating and beneficial for students with learning disabilities who may identify their individual potency in this new environment. A blended curriculum incorporates both these types of learning that are taught through a range of instructional methods.

iii. ***Custom Content and Off-the-Shelf Content****:* - Blended Learning uses the dual settings of content to enhance student community and interaction. Here, students and instructors are not limited to those resources which can be exploited in a traditional face-to-face setting; but can combine all of the traditional resources, like lectures and assigned readings, with interactive, self-paced materials. Off-the-shelf content is generally defined as an ignorance of an institute's limited context and needs. Today, generic self-paced content could be customized either by blending live experiences

such as classroom and online, or with the process of content customization. These may provide opportunities for extra skill practice, online assessments, and links to resources that would not be possible in traditional bound book. The instructor could create a blended course entirely from these additional materials for a completely off-the-shelf learning experience by synthesizing materials to create a unique learning context, combining recorded lectures, online articles, and material up-loaded by the instructor. Therefore Blended Learning provides wide range of resource materials.

iv. ***Self-Paced and Live, Collaborative Learning****:* - Blended Learning supports and encourages independent and collaborative learning. When a learner learns on privately and on-demand learning at a learner's pace where they are the manager and controller, it is called self-paced learning. Collaborative learning implies more active communication which takes place among many learners and which leads to knowledge contribution. The blended classroom support students to take important possession of many of their learning knowledge. The freedom to interact and collaborate with peers, without teacher intervention, is highly motivating for some students where students start on small tasks and work their way into more complex projects. It provides an easy to use learning environment that encourages student directed learning and more personalized learning support.

v. ***Practice and Performance Support***: - Blended Learning provides a place for a stress free practice and perform environment, where learners can develop valuable and necessary 21st century learning skills. It is the best part of Blended Learning program which facilitates productivity tools for workspace environments. The blended classroom provides technical support for students and meets them where they are.

vi. ***Flexible Use of Space and Schedule: -*** The Blended Learning supports a flexible learning environment irrespective of time and place to meet learners' needs. The

quantity of time used up online versus traditional instruction is dependent on the nature of the instruction, the individual requirements of the students, and the preference of the instructor. Blended Learning programs can differ in the amount of time spent on-site, the role of the face-to-face teacher, and the prevalence of technology as the primary instructional delivery mechanism. But the fact that is common to all is the blend is of some time in a face to face site and some instruction delivered through online with a part of student control over time, place, path, and/or pace providing a flexible study, anytime or anywhere.

vii. ***Support Learning Diversity***: - Blended Learning supports learning diversity. Learners are diverse in terms of learning approaches, learning skills, as well as learning aptitude and Blended Learning comes as a rescue by making it possible for individualized learning and self regulated learning to happen. Here, the instructor uses combined approaches to provide for the needs of the various student bodies and to generate a chance to make everyone's learning an equally successful experience.

viii. ***Enrichment of e-learning Experience:*** - Blended Learning supports e-learning experience on campus. Blended Learning enables the teachers them to improve their existing teaching practices. From the learners' viewpoint too, they can take their own decisions on what to do each day and what to achieve by certain deadlines for the same goal and how to achieve them. Now, learning anytime and anywhere has become realism. As of administrators' standpoint, heaps of paper work is changed by limited e-work. Therefore, Blended Learning helps the entire educational administration as easy as mouse-clicking. It helps in forming interest in e-learning and at the same time narrowing the digital divide.

ix. ***Flexibility of Learning Resources***: - Blended Learning provides flexibility of learning resources. Blended Learning is treated as an instructional approach, which is

developed in a networked setting. It is supported by virtual learning environments (VLEs), a computer-based learning structure which is used to maintain content delivery of online learning also to promote online communication between an instructor and learners. It helps providing course information, supplementing on-campus studies as well as accessing online resources. This can be diversified through the provision of other learning resources like E-mail, and other functions. It accommodates a variety of learning styles. Thus, blended classroom is an interactive and innovative learning environment where each student makes use of a range of learning resources and setting which helps them to be more engaged and motivated to find academic and personal success.

x. ***Student Accessibility***: - Blended Learning supports student accessibility. As Blended Learning uses the Web for the classroom, it has the potential to serve any student, irrespective of time and place. Likewise, Blended Learning allows students the same advantage in terms of accessibility who cannot meet in the traditional classroom.

xi. ***Synchronous and asynchronous communication methods:*** **-** Blended Learning supports synchronous and asynchronous communication methods. These means of teaching and learning are vital in encouraging lively participation in the Blended Learning environment. These two are the main types of online communication. Synchronous methods allow people to communicate when they log on the same system at the same time which are immediate and live communications. Examples include chat, video conferencing, phone calls supported by internet e.g Skype. Synchronous discussions help students who might not otherwise participate collaboratively within the traditional classroom allowing quick and well-organized exchanges of facts. Asynchronous methods allow people to communicate at a time that suits them. Individuals post a message that is held by the system. This message can be

read and responded to as and when the recipient comes online. It takes place over time rather than at the same time. This method gives time for reflection and reaction to others allowing students the ability to work at their own pace and control the pace of instructional information with less time restrictions and opportunity of flexible working hours. Internet and World Wide Web permits learners to access information all the times. Students can give in questions to instructors at any time of day and get quick reply, rather than waiting until the next face-to-face meeting. These methods develop cognitive qualities among students.

xii. ***Data- Empowered Leadership*****: -** Blended Learning supports leadership. It allows administrators to closely check the growth and the performance of the virtual instructor as they guide students through the program. Blended Learning is a technology-driven program; a web-based education management system which enables administrators the right to use information about each student, class, assignment, and instructor at the click of mouse.

From the above mentioned dimensions of Blended Learning we can have a better understanding of its actual meaning not just textual definition of it rather a concept of teaching and learning instruction of the 21st century.

3.4 MODELS OF BLENDED LEARNING

While there are ample differences in the Blended Learning preparation, still there are some considered similarities. Blended Learning occurs at many different organizational levels. Bonk and Graham (2004) pointed out four different levels where Blended Learning occurs. Across all four levels, the nature of the blends is either determined by instructor or by administrator. They are:

a) Activity Level: - Here, blending occurs when a learning activity contains both Face to Face and computer mediated elements.

b) Course Level: - Here, blending involves a combination of distinct Face to Face and computer mediated activities used as part of a course.

c) Program Level: - Here, blending involves either one of the two approaches. One in which the participant chooses a mix between Face to Face courses and computer mediated courses or one in which the combination between the two is prescribed by the program.

d) Institutional Level: - Here, institutions makes an organizational obligation to blending Face to Face and computer mediated instruction. Nowadays, many institutions of higher education are creating models for blending at an institutional level.

While blending at the activity and course level is often left to the carefulness of instructors, blending at the program and institutional level are taken care by administrator. Recently focus has been on physical dimensions of the learning environments and pedagogical approaches. This has led to the three broad standards viz. K-12 Education Models, Higher Education Models and Corporate Models. Blended Learning has made an impact on K-12 background and so in its framework. Again many institutions of higher education have developed a detailed Blended Learning labelling. In corporate environments too, there has been use of Blended Learning that puts together learning directly into workplace activities.

Blended Learning is full of innovation and creativity. There are a variety of blends that helps to transform students' learning experiences. A search for a particular model of Blended Learning is not that fruitful. Rather focus should be on providing the staffs a framework of understanding the potentialities for learning devise and allowing them to opt and apply finest tools in their teaching and learning. Though with time there will be concrete models for Blended Learning which will help in its constancy.

Many educationalists have suggested distinct models of Blended Learning. Among them Horn and Staker (2011) gave most accepted six models of Blended Learning such as Face-to-Face Driver, Rotation, Flex, Online Lab, Self-Blend and Online Driver which will be discussed at length in the following-

i. ***Face to Face driver Model*** – In this model, the teacher drives the teaching and supplement with digital tools. Here, teachers deliver most of the syllabus through face-to-face but arrange online learning on a case-by-case basis that is only certain students in a given class would participate in any form of Blended Learning, to supplement or enhance teaching. Online learning is usually delivered in the back of the classroom or in a technology lab. Of all the Blended Learning models, face-to-face driver is very close to a typical school structure. This model helps students to progress at their own velocity using technology in the classroom.

ii. ***Rotation Model*** – In this model, students rotate between a programme of independent or self–paced online study and face-to-face class time with a teacher. The online learning can take place remotely or on-site which is supervised by the face-to-face teacher. This model is mostly used in between the traditional face-to-face classroom and online learning since it involves a split between the two modes and, sometimes, between remote and onsite.

iii. ***Flex Model*** – In this model, most of the curriculum is delivered via a digital platform and teachers provide face-to-face consultation and support through tutoring and small group sessions. In this approach, material is mainly delivered online. Although teachers are in the room to provide on-site support as needed, learning is primarily self-guided, as students independently learn and practice new concepts in a digital environment. This model is commonly used for dropout programs.

iv. ***Online-Lab Model*** – In this model, the entire curriculum is conveyed via a digital platform but in a reliable physical location. The courses are usually guided by online teachers, and the lab is overseen by a paraprofessional. Students who take part in an online lab program often take traditional courses in addition. This model of Blended Learning helps to eradicate the problem of tighter resource constraints and helps students to complete courses. Here, students get to learn totally online but has to travel to a dedicated computer lab to complete their coursework. This allows courses for which no teacher or not enough teachers are required, also helps students to work at a pace and in a subject area that suits them without affecting the learning environment of other students.

v. ***Self-Blend Model*** – In this model, students choose to supplement their traditional learning with online course work. It helps students to take classes beyond what is already offered at their school. Though they attend a traditional school environment but they opt to supplement their learning through online courses offered remotely. To be successful in this model, students need to be highly self-motivated. This model is perfect for the student who wants to take extra courses and has interest in a subject area that is not covered in the traditional course. Normally, the online learning course is always remote, distinguishing it from the online-lab model; yet, the traditional learning takes place in a brick-and-mortar school.

vi. ***Online Driver Model –*** In this model, all curriculum and teaching are carried by means of a digital platform and face-to-face meetings are planned or made available if necessary. Students work remotely, and may or may not have sporadic face-to face check-ins where students can usually chat with teachers online if they have questions. It is the opposite version from face-to-face driver. This model of Blended Learning is ideal for students who need more flexibility and independence

in their daily schedules. Some of these programs also provide brick and- mortar components, including extracurricular activities.

To start a Blended Learning program, it requires a study of the need. Based on the need, the model that is right is used. For different course format, different models are being used. Following points show for which format which model should be used.

A. For Traditional Universities, But With Online Options

a. Online Lab Model

b. Self-Blend Model

B. For Blended Universities

a. Rotation Model

b. Flex Model

C. For More Virtual Than Traditional Universities

a. Online Driver Model

b. On/Off-Site Rotations

3.5 TOOLS AND TECHNOLOGIES OF BLENDED LEARNING

Blended Learning is a flexible approach to course design offering some of the amenities of fully online courses without the complete loss of face-to-face contact. Blended Learning provides instructors and learners with an ample learning model of physical classroom formats such as lectures, books, labs, handouts and the amalgamation of telecommunication technologies to support teaching and learning processes. There exists a wide range of tools and technologies whose services can be considered under Blended Learning. According to Allan (2007) tools and technologies of Blended Learning are divided into five main parts such as Technologies in the Classroom, Virtual Communication Tools, Social-Networking Software, E-Learning Systems and Mobile

Learning. These ranges of tools should not be taken as the only ones, as tools and technologies tend to grow rapidly with time. Every new day comes up with latest trends in Blended Learning tools. Figure 3.5 represents the overview of Blended Learning tools and technologies.

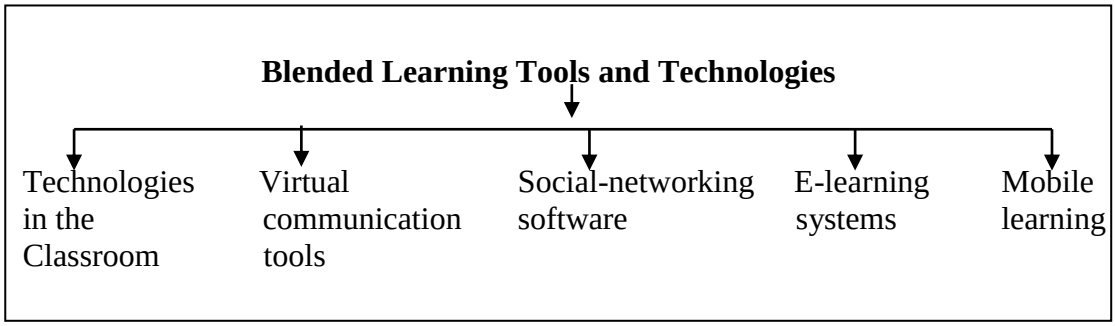

Fig 3.2: Overview of Blended Learning Tools and Technologies

The above mentioned tools and technologies are further described in details in the following paragraphs with examples.

i. **Technologies in the Classroom*:* -** This division considers those technologies which are commonly used in face to face learning condition. Examples of technologies which comes under this heading are

   a. ***PowerPoint*:** It is a comparatively simple communication tool to use. Its main purpose is to hold up a presentation rather than to replace the presenter. PowerPoint presentations often include an appropriate level of details, example screen shots, links to websites or databases and supplementary materials e.g. access to audio and video clips.

   b. ***Interactive whiteboards*:** It is also called IWB. It is a touch sensitive white board normally mounted on a wall which allows students and teachers to participate interactively in the face-to-face session. It has three parts: a computer, a data projector and a touch- sensitive screen or whiteboard. The computer can be controlled from the whiteboard, e.g. by individuals

pointing at icons with their finger or through the use of a special electronic pen. These actions are then transmitted to the computer.

c. ***Audience response system*:** These are usually seen on TV games programs where members of the audience uses a hand held device to answer multiple–choice questions or vote on a matter. This system has been gaining popularity in educational environments too, where lecture rooms are fitted out with appropriate technology.

ii. **Virtual communication tools*:*** These tools are used to exchange information and ideas, work together on a common theme or issue, and work collaboratively in teams. There are two major types of online communication process: synchronous and asynchronous. Synchronous (real time) domain enables people to communicate when they log on to the same system at the same time. It is also possible for learners to be in different places at the same time. They are immediate and live communication. Asynchronous (different time) domain enables people to communicate at a time that suits them. Here communication takes place over time rather than at the same time. Examples of tools under this heading are :-

a. ***Audio Files*:** These are asynchronous tools, which exchanges audio information. Embedding an audio file into a web page is a quick and simple way of enhancing web-based learning and teaching activities. They are used for disseminating mini lectures or interviews with specialists. It is simple and cheap to record telephone-based interviews or mini lectures and make them available to a wider audience. It is helpful for the people with visual impairment or dyslexia. It can be used in PowerPoint presentations.

b. ***Discussion Boards:*** These are asynchronous tools. Through it messages can be sent to groups. E-lists or discussion lists, bulletin boards and newsgroups

are the examples of discussion boards. They are all organized around a particular topic of interest and they allow conversation between many people who share the same rights in terms of accessing and using the system. Discussion boards are open to everyone who are interested in the topic and disseminated via open email systems or may be closed to a small group of people and disseminated within closed learning environments via private e-mail system.

- *E-lists:* Electronic mailing list or mail lists are asynchronous tools which help to exchange information, discussion, collaborative work, construction of knowledge, and follow up e.g. training sessions, coaching or mentoring sessions. There are a number of mail lists available on the internet and each is devoted to a particular topic and for a specific audience. It can be used for variety of ways like request for factual information and advice and opinions, information about new websites, products and publications, assistance with software or hardware problems, advise on buying and using new systems, conference and meeting announcements, and information about job vacancies. Joining or leaving a mail list is a simple matter of sending an email to the relevant subscription service.
- *Bulletin Boards and Discussion Groups:* These are internet sites where users can post comments about a particular issue or topic and reply to other users' postings. They can serve the same purpose as a physical bulletin board. These are asynchronous tools which enables individuals to enter and use a shared e-list feature that may be hosted on a website or as a part of a learning environment. It helps in

Blended Learning programs when a closed bulletin board or discussion group enables people to come together in different groupings to explore a topic and produce a group product. Many bulletin boards or discussion groups provide features whereby messages sent to the board are then forwarded to the private e-mail addresses of individual subscribers.

- *News Digest and News Groups:* It is an asynchronous tool having a one-to-many kind of interaction, which helps in information exchange. News groups are communities of like-minded people created in the virtual world to share thoughts, comment on a particular issue. The main motive behind the formation of these groups is socializing and extending the network in the internet domain. They are distributed via e-mail or RSS feeds. Use of this tool can also be beneficial in Blended Learning.

c. ***Chat or Conferencing:*** This is a synchronous tool. It is a one-to-one and one-to-many kind of interaction. Chat or conference software enables individuals to hold live discussions by sending each other short written messages. This involves two people (chat) or a group (conferencing). Chats may take in public chat arenas or else in private. Virtual learning environments include chat or conference software that enables these synchronous conversations to take place. It is immediate and text can be saved for future reference. It also helps people with hearing or speech impairments.

d. ***E-mails:*** It is an asynchronous tool having a one-to-one and one-to-many kind of interaction. It is a common and simple method of exchanging

information. E-mail is regularly used by information workers for both formal and informal learning and teaching activities. It can be used in Blended Learning programs. It is relatively cheap and accessible approach to contacting individual learners and can be accessed as part of day-to-day work activities rather than through a special site.

e. ***Polling, Questionnaires and Web Forms:*** These are asynchronous one-to-one and one-to-many kind of interaction whose main objectives is to collect information. Web forms or online forms are those form that individuals fill in to request information and help or in response to a survey. Again polling and questionnaire software are a more sophisticated approach to obtaining information online, which enables to quickly set up a survey or questionnaire and obtain feedback from a wide range of people. SurveyMonkey (www.surveymonkey.com) is an example of polling software.

f. ***Videoconferencing:*** This is a synchronous tool having one-to-one and one-to-a-few kind of interaction which enables exchange of information, discussion, knowledge construction, meetings. Videoconferencing packages have been developed and can be used on standard desktop computers and laptops. It also helps in the use of video calls as part of instant messaging and internet phone services. It may be used to facilitate meetings or training sessions when the participants are unable to attend a particular venue. Also it saves travel costs and time.

iii. **Social-networking Software*:*** This is extensively used for networking purposes by friends and families. Now it is being used in the context of teaching and learning

and it is likely that this will continue to expand rapidly in coming years. The tools under this heading are as follows:

a. ***Instant Messaging and Phone Calls:*** Instant messaging enables to send and display a message on someone's screen in a matter of seconds. One trainer can support a number of people using this type of system. Example of instant messaging software is MSN Messenger, Yahoo! Messenger. These services also offer video and voice calls to other computers as well as messages to mobile phones. Skype provides instant messaging, voice calls and video calls. Internet telephony is the ability to make phone calls via the internet. It enables to make long distance phone calls without incurring expensive phone charges. Also it enables to call regular landline and mobiles via internet connection. It needs to have a microphone for the computer, installation of internet telephone software and also some sort of payment. Skype is a commonly used instant messaging system with free computer-to-computer phone calls between users. It also allows calling in landline and mobile phones anywhere around the world as well as making video calls.

b. ***Podcasts:*** Podcasts or netcasts are digital medium which consists of audio, video, PDF files and which are downloaded to computer or portable media player. It is a standalone file with an RSS feed. They are a useful tool in a Blended Learning program because they may be used for recording guest speakers or interviews, also used as an alternative method of disseminating information through mini-presentations. To set up it requires a microphone, computer and appropriate software. After recording and editing of audio files, it's then converted into MP3file. Then it is being uploaded and an RSS

feed created either manually or automatically and then it is published it in website or learning environment.

c. ***Social-networking sites:*** *These* are communication tools which enable individuals to create a personalize website where they post photographs, text, web links, host chat sessions and bulletin boards. Examples of social-networking sites include MySpace, Friendster, Facebook, Flickr etc. These sites are extensively used by millions of people providing a lively online community.

d. ***Video clips:*** This is a tool which can also be included in Blended Learning. Links of video clips that are relevant to a particular teaching situation, short talks or guest lectures can be send to students via e-mail so that they can have a look of those videos before or after class. A popular site named YouTube has wide range of videos. Through this site, individuals can easily disseminate their videos across the internet.

e. ***Weblogs:*** Weblogs (blogs) are websites which includes a log of information, specific topics or opinions. Links of stories and other websites with relevant information is linked to the blog bye the blog author (blogger). Every information is segregated according to the blog's topic or subtopic which is written in reverse chronological order, that means the current information or links are displayed at the top of the blog's home page. It is often updated with new information about particular topics. Weblogs may be used in a Blended Learning programme as an additional information source, as some weblogs provide high quality information by experts. It may be used as a learning journal. It can also be used as a means of capturing and reflecting on continuous professional development.

f. ***Wikis:*** Wiki is said to be a web page that can be edited by any reader. It gives an opportunity for a large number of people to contribute to a set of ideas and develop a resource. But it has a lacking as there is no editorial control over the material, so there is quality issue of the information. Wikis can be used as learning tools in Blended Learning program.

iv. **E-learning Systems:** It is an online environment where a wide range of tools are brought together to support e-learning, they can be also said as 'one-stop shop' for particular learning experiences. There are a number of approaches for providing an e-learning system like subscription based educational services as well as open source systems. The tools under this heading are discussed below:

a. ***Virtual Learning Environments (VLEs):*** It is an e-learning system which is provided specialist educational supplier either as a subscription basis or free open-source system. Examples of Virtual Learning Environments are Blackbooard, Bodington, Desire2LLearn, Fle3, Moodle, Sakari Project and WebCT. VLEs are being used across the world and have revolutionized the way of delivering teaching and learning. It supports teaching and learning within a single software environment. An institution owns these learning environments and is supported by specialist teams who manage and administer this large and complex system. VLEs typically provide access to the tools like structured learning programs, information sources, communication tools, assessment tools, personal management tools and administrator and tutor tools. It can be used to support Blended Learning.

b. ***Conferencing Systems:*** Another tool which comes under e-learning system is called Conferencing systems which can also be included in Blended Learning. This system generally offers subscription based services. iCohere

(www.iCohere.com) is an example of conferencing system. It is a learning management system (LMS) delivering e-learning education courses or training programs. It includes online meetings and webinars, e-learning management. It provides relationship building, collaborative learning, collaborative knowledge sharing and project management tools. Unlike VLE, conferencing systems looks more like corporate image than educational systems.

c. ***Group Collaboration Software:*** This is another kind of e-learning software which can be used in Blended Learning. Group collaboration software helps people who are involved in a common task to achieve goals. Example of group collaboration software such as Lotus Notes, owned by IBM software group. To develop an e-learning site, it may be used as a commercial software product. It provides a range of facilities like e-mail, threaded discussions, instant messenger, document management, project management and contact management databases. It also provides blogs, wikis, RSS aggregators and online help systems. It offers easy access to the types of tools required to support a Blended Learning program.

d. ***Group Sites:*** Group sites are those sites which are freely available on the internet. Unlike VLEs and group collaboration software which needs a big budget to purchase or subscribe, group sites are freely available. They provide access to notice boards, space for sharing documents and photographs, blog facilities, e-mail facilities, discussion boards and chat rooms. Examples of group sites include Google groups, Yahoo! Groups.

v. **Mobile Learning or m-Learning:** It is also one of the tools which can be easily included in Blended Learning. There has been seen a growth in the numbers of

students who are using mobile technology such as mobile phones, laptops with integrated wireless cards, personal digital assistants (PDAs), tablet PCs and iPod. Students can use these tools and support mobile learning by using them in lecture room, to enhance group collaboration, access training on mobile device, to listen to podcasts containing lectures, watch short video clips, listen to audio books and newspaper, to send text messages, quizzes, to have hand held dictionaries. As new mobile technologies are hitting the market with least price, so it is expected that this field keeps on changing rapidly.

3.6. ADVANTAGES OF BLENDED LEARNING

Blended Learning offers the opportunity to combine best of two worlds (face-to-face learning & online learning) in constructing a program in terms of time, space and technologies of students and teachers for effective learning and teaching. Therefore the real significance of Blended Learning lies in its prospective. Blended Learning helps to create learning experiences that can provide the right learning at the right time and in the right place for each and every individual not just in schools, universities, work but also at home. Blended Learning is an approach generated from disappointment of online and traditional learning. It offers greater benefits to the instructor and learners in terms of the teaching and learning activities. Therefore, it would not be wrong to say that Blended Learning could become one of the most significant developments of the 21st century. The following are some of the benefits of Blended Learning:

i. One of the most important advantages of Blended Learning is that it offers flexibility enabling program designer a variety of approaches to meet the needs of the learners. Flexibility is offered in terms of organisation and delivery of program

along with teaching and learning methods. In a typical Blended Learning program we can find a rich mixture of face-to-face and e-learning; use of different media like text, audio or video podcasts; alternative approaches to learning like choice of reading materials, media, face-to-face and online activities; alternative approaches to assessment like written assignment, group assignment and multiple choice tests; alternative approaches of contacting with teachers like face-to-face sessions, e-mail and message systems, phone, online discussion groups.

ii. Blended Learning offers to extend the reach and mobility. It offers flexibility of time and space to both learners and teachers. The time used in face-to-face course may be reduced through the utilisation of e-learning activities. Students can create an individualised learning experience that meets their needs and demands. Through the use of mobile and wireless technologies, the time and place for learning can take place anywhere at any time. Blended Learning uses different delivery mechanisms, instructional approaches, technologies, and learning situations, which helps to support learning by making it individualized yet collaborative and interactive, which is timely and concentrating toward specific need of the students yet part of a lifelong learning journey. The flexibility and convenience of the Blended Learning course can offer students with multimedia-rich material at any time of day, wherever the student has Internet access.

iii. Blended Learning gives the opportunity for enhanced social interaction, communication and collaboration. It offers possibilities of forming new learning groups such as multi-professional and/or international groups enabling peoples to learn and work together, build and share understanding on a global basis across traditional boundaries of professions, organizations and geography. It provides interaction between learners and teachers, as well as learners with other learners

which helps to form online communities and learning practices where knowledge, ideas, experience and learning products are exchanged and valued.

iv. Blended Learning helps to enhance the engagement of learners by providing a rich mixture of learning opportunities. When learners are open to different approaches to teaching and learning, it is likely that they would be more interested and motivated. Thus when Blended Learning uses a combination of teaching and learning methods, learners get themselves engaged in learning experiences and explores and discusses their experience beyond a specific time frame. It provides opportunity for creativity among learners. It helps learners to be self directed learner

v. Blended Learning helps to achieve an improved pedagogy where teachers' roles include facilitation, student mentoring and using different instruction for individual learners. It increases the level of active learning, peer-to-peer learning and learner centred strategies. The use of online modules helps students to acquire the tool skills and technical information and F2F class time is used to focus on application, case studies, and develop decision making skills. The use of online environments brings a level of additional support to the traditional classroom experience. It helps in collaborative learning and problem solving environments because of the blend of live F2F elements with virtual reality.

vi. Blended Learning helps to achieve cost effectiveness. It uses a combination of delivery modes that helps in cost savings along with quality enhancements. Due to cost reductions in physical infrastructure and improved scheduling efficiencies it provides for cost savings. Though totally online learning helps in self-paced, media-rich, Web-based training content but they are too expensive whereas Blended Learning combining virtual sessions and face-to-face sessions with

simpler self-paced materials, recorded e-learning events, text assignments, and PowerPoint presentations may be just as effective or even more effective. It provides a chance for reaching large, distributed learners in a short period of time with least cost.

vii. Blended Learning helps students to develop technology skills, increased visibility of student learning & feedback. Blended Learning allows teaching to continue when institution gets closed too which helped the students to communicate their needs and interests to their teachers to become more successful. Student likes to have immediate feedback and knowing their position at any time. Also they can have some control on how fast they go through curriculum.

viii. Blended Learning helps to lessen the downbeat effect of poorly designed online course with high quality instructor-led face-to-face sessions.

ix. Blended Learning makes possible the creation of learning communities by necessitating interaction between students and peers and between students and teachers.

x. Blended Learning helps to support the curriculum by bringing in digital learning resources as needed. Digital training provides chance for students to practice skills individually and this helps teachers to focus on other things like depth of concepts and their application for teaching of higher order and thinking skills.

xi. Blended Learning by using computer-based instruction prepares students for success in a world where many portion of job training and education are shifting towards online.

xii. Blended courses help universities to compensate for limited classroom space and also help to think differently about encouraging faculty collaboration.

The above mentioned points have recognized the main benefits of blended instruction so that shortcomings of online instruction can be overcome and use various instructional strategies to increase learners' satisfaction and outcomes.

3.7 DISADVANTAGES OF BLENDED LEARNING

Despite of all the advantages and benefits of Blended Learning, there are sometimes looming obstacles with regard to human, finance and procedure which hold back its use. It's not that easy to adopt. Challenges in regard to culture, technology, infrastructure, skills, administration, and management are associated with Blended Learning. So noticeably there are challenges from the perspective of students, faculty and administrators. The disadvantages or challenges in offering Blended Learning are as follows:

i. ***Planning and Designing:*** The planning and designing of Blended Learning programmes is more challenging than that of traditional programmes. Its takes time and requires detailed negotiations. To design Blended Learning it requires instructional perspective of re-evaluation of teaching and learning to blend and bring in line the difference between the face-to-face and online learning. It raises question on Blended Learning definition and modality.

ii. ***Meeting expectations:*** Another challenge of Blended Learning is managing expectations of students. It is vital to practically make out the benefits of the Blended Learning course to them. Students take up the Blended Learning course with certain expectations regarding the type of learning experience which they are going to engage in and if their expectations do not met accordingly, they might get disappointed. Students also face problem like obtaining high-speed Internet access, lecture becoming redundant as most of the information are available on-line, lack

of incentive to finish coursework and difficult for students lacking time management skills as they would fall behind on coursework.

iii. ***Technological issue:*** Technological issue in Blended Learning come up in terms of access to and availability of appropriate technologies. Issues like firewall, technology fail can disrupt the aspects of e-learning systems causing delay to deliver the programme and frustration for the students and teachers. Students need to make sure they have the familiarity and convenience to resources necessary to be successful with the online components. Again because of constantly changing nature of technology, there is a problem in finding a balance between innovation and production**,** giving a constant challenge to those designing Blended Learning course.

iv. ***Time obligation:*** Another challenge of Blended Learning is that it takes lot of time for planning and developing a Blended Learning course in comparison to traditional face-to-face teaching learning. Also management of time becomes severe struggle for students in a blended course where online actions are necessary to be completed between the face-to-face classes.

v. ***Clear Definition:*** Blended Learning lacks a clear definition, which creates a huge problem. There is hardly any clear cut definition and there exists some doubt on its potentiality. This is a major drawback. Blended Learning needs enthusiastic and energetic approach and also a sense of commitment to budge from theory to practical and develop learning solutions which meets students' and teachers' needs.

vi. ***Self Responsibility:*** Blended Learning allows for self responsibility of learning. But in a traditional course students are familiar of being passive learners so the idea of taking responsibility for one's own learning can be difficult for such students initially.

vii. ***Knowledge of technology:*** Using technology is still a new approach for many institutions and like any new initiative it takes time to get habituated to it. In a Blended Learning course students need to access online element of the course and correspond with the faculty for assignments and problems to make learning more effective. But some students due to their low knowledge of technology use find it complicated to get information from net, to access online component of course or to download big files etc.

viii. ***Professional development:*** Blended Learning course needs faculty to be familiar with new emerging technologies in designing and delivering such course. There should be faculty support for course redesign and learning new teaching and technology skills. Therefore, they need to acquire new teaching skills and develop themselves professionally. They have to overcome their qualms through practical experience with various tools and applications.

ix. ***Institutional Issue:*** Resistance to organizational change is a major drawback of implementation of Blended Learning. This implies that institutional administration can prevent changes in the curriculum, course structures, timetables and new strategies which are decisive to the success of Blended Learning. Therefore it has to have alignment with institutional goals and priorities so that administrators can be fully committed in integrating computing into campus culture. It calls for internal collaboration among students, teachers, administrators for a Blended Learning model to be successful.

x. ***Instructional complexity:*** A major challenge in Blended Learning is complexity of instructions as the instructor has a wide choice of delivery mediums to combine. The variety of combinations of technology and the lack of outline to follow for

particular mix creates pressure on the instructor and designer. Therefore this issue need to be addressed while designing the course.

3.8 ROLE OF BLENDED LEARNING IN LIS EDUCATION

Over the years, LIS departments, teachers, and students have adapted new technology in order to bring the best teaching and learning methods and application to their classes and LIS education as a whole. Nowadays the LIS sector is deeply rooted in digital technology, resulting in the use of digital technologies into pedagogy too. As such these changes lead to changes in curriculum content as well as in methods of teaching and learning. Recently, Blended Learning has mushroomed and has attracted considerable attention. It calls for blending of traditional face to face method and online learning method. This method seems to be best for imparting LIS education, without losing hold of basic knowledge and at the same time keeping track of the new digital skills for carrying out library housekeeping operations smoothly. In fact blended learning will help to keep LIS education at par with other courses and retain students to LIS courses in this ICT age. Blended Learning approach if maintained in LIS education then it would help the future librarians to cultivate in them the habits of handling electronic information beforehand joining the blended work environment. They can thus serve their clientele without any qualms. Compared to fully traditional and fully online learning, Blended Learning, in the true sense, is still new and emerging. Sooner the students and teachers of LIS get along with Blended Learning methods of teaching and learning; the better will be the position of LIS education in the near future.

The motive of building up Blended Learning program in library and information science education is that it would make it more accessible, engaging and relevant; providing more flexible learning opportunity, exploiting ICT and demonstrating the use of

leading edge technologies and keeping up with other library services. Like other students LIS students also want some technology rich and flexible learning and teaching. Moreover the way information and library services are changing their overall strategy, it became necessary to develop and prepare human resource as well in a blended leaning programme where they get exploited to variety of ICT and hands on training facilities along with the use of leading edge technologies. Now-a-days libraries are shifting their services making room for learning spaces in the library by expanding the traditional library along with IT facilities and services which include individual study spaces, group study spaces, meeting rooms and lecture rooms, more networked PCs, spaces for laptop and wireless use, an increasing array of self service facilities, 24 hour access. Blended Learning helps the students to be more professional and up-to-date through active engagement and collaborative learning while simultaneously exposing students to the skills in librarianship, information technology that are needed by blended librarians in this changing work scenario and society. It supports as a community of practice for effective learning environments and promote student growth related to core LIS concepts, practices, values, and leadership skills. Blended Learning also helps in retention of knowledge through classroom based refresher trainings where the initial training is provided in the class and thereafter learners are provided access to the Learning Management System where they can access the interactive training content and refresh their knowledge. This can help the passed out LIS students to brush up their knowledge from time to time. In a Blended Learning, as a student constructs knowledge through personal effort, so it is likely for them to show understanding ahead of sheer memorization, and to transfer to new work settings what he/she has learned. So it is seen that it will benefit the future librarians if this kind of learning is adopted by LIS departments.

In India, the information technology revolution has already taken its root and this has created profound insinuation for the information professionals. The designation of jobs has been changed to Web Manager, E-Publisher, Knowledge Manager, Information Manager/Officer, Internet searcher etc. To survive in this changed world, LIS professionals must be well educated and professionally competent with different skills. Underpinning the prevailing educational system, the library and information science education has undergone many changes from time to time.

Blended Learning has transformative potential. This transformation in library and information science can be achieved through restructuring and redesigning the curriculum. Here, the role of the teacher is to manage the environment (face-to-face or online) and facilitate learning. The teacher can impart LIS education by starting with a well-structured introductory lesson of the course in the classroom, and then proceed with follow-up materials online. The elements of face-to-face leaning and online learning like cognitive element, social element, and synchronous, asynchronous communication tools respectively should be well versed with the teachers.

Different authors have given different dimensions on which blending might occur like space, time, fidelity, humanness, technology, pedagogy, teacher, student, modes of delivery, chronology. Allan (2007) based on Sharpe et al.(2006)'s work, defined 8 learning modalities for the mix or blend which includes time, a place where learning takes place, different ICTs, relationship with others in the learning process, types of learners, pedagogy, focus, context of learning. Time refers to synchronous (real-time) or asynchronous learning activities and communication; place refers to on campus, in workplace, at home. It can go from live to face-to-face to mixed reality to virtual reality; different ICTs refers to CD/DVD, internet technologies, social-networking software or web

2.0 and other developing technologies which can incorporate sound, pictures, text; relationship with others in the learning process refers to individual learning, group learning or development of a learning community; types of learners refers to learners with different roles such as students or practitioners or multi-disciplinary or professional groups of learners and teachers; pedagogy refers to combination of a number of pedagogic approaches irrespective of learning technology use like tutor or student centred, behaviourist or constructivist; focus refers to the aims of learning process presented by tutors or aims agreed by individuals, groups or communities; context of learning refers to academic or workplace. So we see that the landscape of Blended Learning has in it those dimensions which when would be used by LIS education would bring more effectiveness to its teaching and learning process.

By engaging Blended Learning in LIS education it will not only support live-events, but also self paced learning, collaboration, flexible assessment and aid in materials. It blends the best aspects of face-to-face and online instruction. Blended instructional approach helps in scheduling flexibility and convenience for students along with gains in learning outcome and increased enrolment retention. It encompasses a wide range of content so there is no fixed rule to follow while blending. The blending will vary depending on the content, the needs of the students, and the preferences of the instructor of an LIS department.

3.9 CONCLUSION

In this chapter, an attempt has been made to discuss in brief the Blended Learning, its meaning, definitions, history, features, models, components, benefits, challenges, and its role in LIS education for effective and efficient teaching and learning and also in helping the future librarians by grooming them for the blended work environment. The confrontation faced by Blended Learning is not entirely sole to Blended Learning whereas

culture, technology, infrastructure, and skills are challenges faced by learning professionals in general which makes a Blended Learning a little tough to adopt. Developing teachers' knowledge and skills, funding, adequate technology hold up and infrastructure, administration, change of mind set and management all these if addressed then challenges associated with Blended Learning can be overcome. And there are many grounds that a teacher or learner might choose Blended Learning over other teaching learning options.