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CHAPTER I

INTRODUCTION

1.0.0 INTRODUCTION

Learning is a prerequisite to one's growth. Our ability to learn and our intellectual capacities are intangibles. However, these intangibles are one's greatest assets because everything we do to reinvent and update our knowledge allows us to grow from where we are today to where we want to go. Learning helps a person to make informed choices about life and the societies that they live in. If we are to ever progress in any area of our life, we must heed the call to lifelong learning. Learning is something well beyond formal schooling thus it encompasses our entire life cycle. In one way, learning means deciding about our own lifestyle. Learning becomes fruitful when the learner can decide to incorporate any knowledge, skill or attitude into their own set of values and behaviors (lifestyle), or else it is not meaningful. Learning happens from everywhere. It depends on the learner whether he grasps it or not. Thus, it can happen outside the classroom as well as within. Some learning results from teachers and some does not. Some learning is intended and some is accidental. Learning is therefore part of life which takes place at all times and in all places. It is a continuous lifelong process, going on from birth to the end of our life, beginning with learning from families, communities, schools, religious institutions, workplaces, etc. To provide this learning, we usually have three agencies of education and they are formal, non-formal, and informal educational systems. The modus of operation, the learning experiences provided, etc differ in all these settings. However, the learning experiences provided through these agencies can be equally powerful.

A more precise definition of formal education as supplied by Coombs (1973), “the hierarchically structured, chronologically graded educational system running from primary school through the university and including, in addition to general academic studies, a variety of specialized programs and institutions for full-time technical and professional training” characterizes the formal education as "pre-essential education", which necessarily involves the presence of teacher, the students and the institution. Such an institution has its own structure. Formal education institutions are administratively, physically and curricularly organized and require from students a
minimum classroom attendance. In formal system of education, the objectives, planning for instruction, transaction strategies, evaluation techniques and style of assessment are all determined in advance and continuous efforts are made to achieve the grade-specific objectives of education. Thus, the sum total of experiences represented by the curriculum is to be provided to the target group within a specified period of time to achieve the pre-determined objectives.

Non-formal education characteristics are found when the adopted strategy does not require student attendance, decreasing the contacts between teacher and student and most activities take place outside the institution - as for instance, home reading, home assignments, home projects, paperwork etc. Thus, non-formal education is more learners centered than most formal education. NFE tends to emphasize a cafeteria curriculum (options, choices) rather than the prescribed, sequential curriculum found in the formal setup. In NFE human relationships are more informal (roles of teachers and students are less rigid and often switch) than in formal setup. NFE focuses on practical skills and knowledge while formal education system often focuses on information which may have delayed application. Further, educative processes endowed with flexible curricula and methodology, capable of adapting to the needs and interests of students, for which time is not a pre-established factor but is contingent upon the student’s work pace.

On the other hand, we have our informal education system which deals with everyday experiences which are not planned or organized (incidental learning). When these experiences are interpreted or explained by elders or peers they constitute informal education. Informal education is quite diverse from formal education and, particularly, from non-formal education, although in certain cases it is capable of maintaining a close relationship with both. Informal education is aimed at students as much as at the public at large and imposes no obligations whatever their nature and it supplements both the formal and non-formal education.

Whatever might be the characteristics and purposes of these agencies of education, one has to accept that today their responsibility of being capable enough to provide lifelong education is growing. The need of the hour is to provide continuous
upgradation of skills so as to make/produce a person/manpower resource of the kind and the number required by the society.

1.1.0 LIFE LONG EDUCATION
Everyone accepts the fact that the learned facts and ways of learning are fast changing in this technology driven knowledge based competitive economy. The growth of our economy, blasting expansion of information and communication technology and the rapid globalization are adding more fuel in this direction. All these changes are cautioning us that there is going to be a massive change in the knowledge and skills that are required by the students who are coming out of higher education. According to the "Guidelines on Lifelong learning and extension during XI plan period" document of UGC (2007-12), "Lifelong Learning has become a fundamental goal of recent educational policies often advocated as a way to achieve socio-economic development and a tool for promoting knowledge based society, the UGC would extend support to this area during the XI Plan." The document emphasizes the point that private universities are being set up and international universities and educational institutions have already entered the country and Information & Communication Technology (ICT) is more frequently used in the field of learning by these institutions. Thus, the document states that in these scenarios a medium like e-learning can act as a powerful tool in promoting lifelong learning. On-line learning and e-learning are being adopted by select institutions of higher education. It is therefore essential that the university system and specially the Departments of Lifelong Learning (DLL) should take a positive advantage of all these factors and prepare themselves for lifelong learning. Lifelong learning is the learning that is flexible, diverse and available at different times and in different places. Lifelong learning crosses sectors, promoting learning beyond traditional schooling and throughout adult life (i.e, post-compulsory education). Thus, few characteristics of lifelong learning are flexibility, accessibility of learning anywhere and anytime, sharing of knowledge and development of a strong knowledge base.

Jacques Delors’ (1996) four pillars of education for the future proposed four characteristics of lifelong learners that would be the Pillars of a learning society:

- Learning to do (acquiring and applying skills, including life skills);
• Learning to be (promoting creativity and personal fulfillment);
• Learning to know (an approach to learning that is flexible, critical and capable); and
• Learning to live together (exercising tolerance, understanding and mutual respect)

1.1.1 LEARNING TO DO

We have entered into that age where now the individual is responsible for his learning and the educational institutions and other agencies are becoming a mere means of providing this learning. With the fast rate of developments happening in almost all the directions, the speed of learning is becoming a key differentiator for individual in the pursuit of the knowledge. Thus, the key concept now is one’s own “personal competencies”. It is the ability of the individual to apply his competencies in the real field which is gaining prominence than acquiring of simple knowledge. This necessitates that a students/individuals’ speed of learning has to match that of all round changes happening around them. Now an student/individual is more evaluated on his/her personal competencies rather than certified skills. Technological developments are enabling the people to operate and reach any geographical location in the world, transcending the borders of the countries and continents. The issue of distance is almost becoming dead. An engineering student sitting in one corner of India can on a click access the handouts and other study materials of an university located in UK or USA. The internet, computer and other networking technologies are proving as a boon to the students to keep their learning in pace with the speed of changes. To face with all such challenges and also to ensure that such advantages are available to everyone, the educational institutions have to wake up and take up the responsibility of preparing their students as per the developments happening in the society so that a student can feel confident enough to enter into the job world and work happily with the new work force.

1.1.2 LEARNING TO BE

The preamble in the report “Learning to Be, states that education should enable each person to be able to solve his own problems, make his own decisions and shoulder his own responsibilities. The challenge in educating a person would be to ensure that everyone always has the personal resources and intellectual tools needed to understand the world and behave as a fair-minded, responsible human being. Thus,
one of the main task of education would be to make sure that all people enjoy the freedom of thought, judgment, feeling and imagination to develop their talents and keep control of as much of their lives as they can. In this twenty first century, young persons should be offered with every opportunity for aesthetic, artistic, scientific, cultural and social discovery and experimentation.

1.1.3 LEARNING TO KNOW

Learning is considered both the means and end of human existence. In the present era it is the mastery of learning which is taking prominence than the simple acquisition of structured knowledge. People have to learn to understand the world around them, at least as much as is necessary for them to lead their lives with some dignity, develop their occupational skills and communicate with other people. The broader our knowledge, the better we can understand the different aspects of our environment. Such type of knowledge enables people to develop their own independent judgments on the world around them. Thus, the world around us has undergone a transition from the industrial age to the information age to the present knowledge age. In the knowledge age, knowledge based continuous learning will decide the success or failure of every individual. There should be a mechanism which will give an individual an immediate feedback regarding their various aspects of learning like what they learnt, how much they have learnt, where they are weak and where they are strong etc.

1.1.4 LEARNING TO LIVE TOGETHER

In the present era, the new media has the ability to provide the entire world with information and unverifiable reports on ongoing conflicts. Hence, education has to address the big question of “Can we educate ourselves to avoid conflict or peacefully resolve it?” Even though we all believe that education can address this question, however the challenge is a difficult one since people have a natural tendency to overestimate their own abilities and entertain prejudices against other people. In the present era, competitiveness and personal success are turning to be the highest values which are creating relentlessness in an individual. Education should overpass this state of affair and help the individuals to come above all these into a world where they can live for oneself and also for others.
These four pillars of knowledge cannot be anchored solely in one phase in a single place in a person's life. There is a need to re-think when in people's lives education should be provided, and the fields that such education should cover. The periods and fields should complement each other and be interrelated in such a way that all people can get the most out of their own specific educational environment all through their lives. The pillar of "learning to know" says that people have to learn to understand the world around them, at least as much as is necessary for them to lead their lives with some dignity, develop their occupational skills and communicate with other people. A truly educated person nowadays needs a broad general education and the opportunity to study a small number of subjects in depth. This two-pronged approach should be applied right through education. In the second stage of education and in lifelong education, the system of education should encourage involvement of students in common projects. This approach can prove to be an effective way of avoiding conflict or resolving latent conflicts. Thus, one of the essential tools for education in the twenty-first century will be a suitable forum for dialogue and discussion. Can a traditional system of education provide a scope for all this? How can the traditional system address the challenges of lifelong learning? An answer to this can be to some extent found in the e-learning platform. Providing a platform to anywhere, any time and any pace of education, e-learning can prove to be a powerful medium in the path of lifelong learning. Thus, in this era of lifelong learning it becomes inevitable for us to welcome computers, internet and other advanced components of educational technology into the system of education.

1.2.0 E-LEARNING

The new generation is spending a lot of time on the WWW. Thus, the conclusion that people will learn where they spend most of their time is not an exaggeration. Education is a function of communication and the internet is the best tool of communication that mankind has ever seen. It can be safely assumed that the internet is where the education will happen and the new concepts like e-learning, m-learning, virtual learning etc are going to stay.

As it happened with the human being, the term e-learning also has undergone many evolutions. From CDs, DVDs, CBT along with the maturation of the internet the e-
learning has today evolved into this stage. It includes Internet-based Learning, Intranet-based Learning, Web-based Learning, Online Learning, virtual classrooms etc.

E-learning is an approach to facilitate and enhance learning based on, both computer and communication technology. It refers to the use of computer-based electronic technologies of internet, e-mail, websites to deliver, facilitate and enhance both formal and informal learning and knowledge sharing from any place at any time. The communication devices can also include digital television, personal digital assistants (PDAs), tablets, mobile phones etc. E-learning applications and processes include Web-based learning, computer-based learning, virtual classroom opportunities, digital collaboration etc. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.

E-learning is thus a planned effort towards providing interactive and experiential learning having flexibility in terms of time, place and pace; participation and accessibility; best resource at the learners’ doorsteps and personalised training as per the needs of the learner. E-learning includes the extensive use of computers and network( internet/intranet) to implement all the elements pertaining to teaching-learning such as:

- the syllabus for the course;
- administrative information including the details about the sessions, details of pre-requisites and co-requisites, credit information;
- a section for up-to-date course information;
- student registration and tracking facilities like their attendance records, their project submissions etc
- basic teaching materials. These may be the complete content of the course or the handouts of the lectures
• additional resources, including reading materials and links to outside resources in libraries and on the internet.
• e-portfolios of students
• e-news letters
• digital libraries
• online exams

Thus, e-learning is an intentional extension of so-called computer-based-training by connecting computers using network technology. The learning content is delivered to many users through different media, mostly over the Internet or on Intranets. It is a learning which is designed to be available anywhere at anytime, developed and delivered using information technology. It includes educational processes that utilize information and communications technology to mediate asynchronous as well as synchronous learning and teaching activities.

1.3.0 BASIS OF LEARNING IN E-LEARNING

The most visible and drastic factor that has impacted the educational landscape, is the IT revolution. The advent of computers and the internet has completely transformed our society. And education obviously could not remain untouched by this revolution. The transformation of the Industrial Age into the Information Age and then into the Knowledge Age has made education the most significant factor in economic growth and nation building. In this knowledge age, the age of knowledge is very short. It is these demanding aspects of the new economy that are driving us towards bringing new technologies like e-learning, mobile learning, virtual learning etc to the forefront. Technology today is playing the role of the enabler and helping the individual to do things in a better and efficient way. The four pillars of education inform us that gone are the days when people would get a stipulated degree and would use that learning for their entire lives and careers. Thus, education is no longer limited to short-term and long-term courses. It has acquired a life-long dimension due to the fact that the global economy today requires professionals to be highly educated, technologically updated, analytical and critical thinkers. The competitive advantage of individuals
will be determined by continuous learning and not by their educational backgrounds or brand images. Observing all these changes a question arises that “are the demands of learning and the needs of learners remaining the same?

The answer for the above question is a big No. If knowledge is going to be the driving force in determining our social and economic progress, our education of the day should also be responsive to this emerging need. In today's world, the kids in the school and the students in higher education have access and exposure to more information than one could have ever imagined even 10 years before. The focus is not on learning a piece of information by heart but the learning should enable learners to create something new. The students who complete their higher education are not going to spend their entire career doing the same or same kind of job. They are going to go through a cycle of distinct careers where each role requires a new set of skills and expertise. Hence, we are shifting from just-in-case learning to just-in-time learning. And those who are left behind in this process of continuous learning will become obsolete. The future will offer new technologies that were not even conceived when the education was acquired. Learning to use these technologies will become an integral part of every professional's life.

The manner in which technological intervention is occurring in all sphere of life is all set to create an environment where learning without the use of technology would be next to impossible. There will hardly be a learner in the educational or corporate arena who will not connect with fellow students or colleagues. This trend is already clearly seen in higher education institutions offering engineering, management and IT and other technical courses. Hitherto learning was delivered and acquired with a long gestation period of its application somewhere in future after 10 or 15 years. And this is known as just-in-case perspective of learning. However, the profession of IT has seen so many professionals from various fields that were never trained in IT but were picked up with just-in-time support, putting aside the years of education that they had attained, without using, for example, the knowledge they received doing a degree course in history or physics or psychology. Thus, now learning is available just-in-time. For example, just when you need to learn to create a word doc, you can take a little skillet (a small learning capsule) for the same. This skillet, which is available on
the web, will teach you just that. And we all should remember that learning happens when it is most needed and achieves precisely what it is supposed to achieve.

In the past a student would lose the support of teacher ones he/she leaves the school/college in the evening. Thus learner's interaction with their group or with the faculty was for a limited period of time. Now, when information and communication technology is entering into the roots of our higher education, concepts like e-learning, m-learning, internet, blogs, chat rooms etc can help in creating virtual learning communities the spectrum of which is very large and diverse. All these changes make us feel that near are the days when learning institutions, publishers, technology companies and learning providers will come together to consolidate the learning. The gap between the industry and the educational institutions might become very narrow, which implies that we are moving in the direction of achieving our vision of higher education. Thus, the final dictum is "an individual's ability to learn and translate that learning into action in the ultimate competitive advantage".

According to Chadha, G. & Kumali, S.M (2003), Learning, Then and Now can be summarized as follows:

Some of the key characteristics of learning in the industrial age are:

- Education synonymous with a one-time, three-year degree
- Learning, an avoidable expense
- Learners have to physically travel to classrooms
- Distance education, perceptibly administered from a very distant location
- Generic content; all learners treated as equals
- Brick and Mortar Educational Institutions
- Learning in case, in advance –just-in-case

Characteristics of learning in this new knowledge economy:

- Education implies continuous learning/lifelong learning
- Learning is a foundation for competence and competitiveness
- If a learner wishes, learner can stay put, learning content travels to them via technology
Distances education is a paradox; Learners seamlessly meet and work with peers dispersed in distant locations
Content gets personalized; Learners taught from their existing baseline competence
Branded education and celebrity professors come in touch with masses
Learning in need, on demand – just-in-time

1.4.0 E-LEARNING MODALITIES

E-learning can be basically adopted in the institutions in two modes i.e., mixed/blended learning and fully online mode.

1.4.1 BLENDED LEARNING/MIXED LEARNING/HYBRID LEARNING

Blended learning is a mix of online technologies, face-to-face medium and includes other resources, activities and media. The online technologies include Multimedia technology, Web-pages, Email, voicemail (or VoIP); Computer, audio and video conferencing and web casts, Virtual Classrooms etc. The face-to-face medium includes variety of acts like presentations, instructions, Workshops, discussions, One-to-one coaching and mentoring. Other resources, activities and media that can be included in blended learning are books and other printed materials, audio tapes/files and Videos/DVDs, telephone conferencing, Computer-aided learning (CBT), video streaming, Mobile learning (m-learning) with Personal Data Assistant (PDAs) etc. Thus, a blended learning approach combines face-to-face instruction with computer-mediated instruction. The ultimate aim of blended learning is to provide realistic practical opportunities for learners and teachers to make learning independent, useful, sustainable and ever growing.

1.4.2 FULLY ONLINE MODE OF E-LEARNING

It refers to situations where an individual learner can access learning resources such as a database or course content online via an Intranet or the Internet. Often fully online mode of e-learning is carried out in two forms i.e, synchronous mode and asynchronous mode.
1.4.2.1 Synchronous E-Learning

It refers to the situation where the learning is done in real-time with a live instructor facilitating the learning. Everyone logs in at a set time and can communicate directly with the instructor and with each other. One can raise their cyber hand and even view the cyber whiteboard. It lasts for a set amount of time - from a single session to several weeks, months or even years. This type of learning usually takes place via Internet Web sites, audio- or video-conferencing, Internet telephony, or even two-way live broadcasts.

1.4.2.2 Asynchronous E-Learning

Refers to self-paced learning, either CD-ROM-based, Network-based, Intranet-based or Internet-based. It may include access to instructors through online bulletin boards, online discussion groups and e-mail. Or, it may be totally self-contained with links to reference materials in place of a live instructor.

1.5.0 ELEMENTS OF E-LEARNING

According to Chadha and Nafay (2003), E-learning comprises broadly of three basic elements- Content, Services and Technology. “The content mix will consist of a combination of IT skills, business skills and interpersonal skills depending on desired competencies. The technology enables hosting the service and content management through Learning Management Systems (LMS). The service mix consists of collaborative tools including mentoring, threaded discussions, online seminars and subject matter led chat sessions.”

Figure 1.1: Elements of E-learning
1.5.1 CONTENT
In the knowledge era where knowledge management is a biggest challenge, it become increasingly complex for us to store and retrieve information. To ensure that we reach to correct information quickly and on time is of great importance. As the focus of learning is shifting from distributed learning to internet-based and mobile learning, the form of content being presented in e-learning is going through a metamorphosis. In short this metamorphosis of e-learning can be presented in following way

Figure 1.2: Metamorphosis of E-learning Content

<table>
<thead>
<tr>
<th>1980s</th>
<th>1990s</th>
<th>2000s</th>
<th>2010s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Intensive CD based training</td>
<td>CD to internet</td>
<td>E-learning with basic mentoring via email, intranet, WBTs</td>
<td>Technologically advanced E-learning with features like video/audio stream, virtual classrooms, dashboards, M-learning etc.</td>
</tr>
</tbody>
</table>

1.5.1.1 Content and its Dynamism
The success of e-learning depends on the content and its dynamism that it offers. Various forms of e-learning have various options of presenting the e-learning content and the development of teaching learning content differs greatly depending upon the form of e-learning that is adopted. In conventional educational settings, the generation and presentation of the subject matter content is the sole responsibility of the teacher. In e-learning, while the teacher may still be generating this content, for it to be made accessible to the learners, it needs to be modified, enhanced and presented in a form that is amenable to the technology that is in use. Hence, content generation and publishing is a team effort in e-learning. Further, content once generated will need to be updated in order to retain its relevance. For this to happen, academic staff and other content developers will need expert assistance with learning and instructional design activities. They will need to be supported in the design and development of such self-study materials in alternative media forms. In large educational settings, this will create a substantial amount of work, which will require enough trained staff and appropriate procedures and processes. One of the best advantages of e-learning is that
it offers an advantage of collaboration and connecting people. In e-learning, learners can take advantage of this feature and share their opinion and seek perspective of other learners in the community. The context of opinions and perspectives shared in the community may either be the content in the learning unit that is currently being accessed by all the learners or purely experiential sharing from daily life. In addition to sharing between learners, the collaborative form of learning also connects learners with experts, online. Usually the interaction between the learner and the expert revolves around the content and its application by the learners. In either of these cases – sharing among learners or discussions between the learners and the experts – the output is the creation of dynamic content. In the case of sharing amongst learners, dynamic content results in the form of discussion threads with loads of perspectives. If moderated well, the dynamic content generated in peer discussion could be of extremely high value. Similarly, the collaboration between the learners and experts generates dynamic content in the form of expert answers to both known and unknown problems. This will not only allow learners to resolve their queries but also enables the organization concerned to find an effective way of ensuring that learners have a window to seek help from whenever required. By providing such a window, organizations ensure that learners become competent with expert support, and share with experts some of the issues that may not be known to other learners or even the experts. These interactions between the learners and experts could result in the generation of FAQ’s that could be of great value in managing expert knowledge. Dynamic content ensures that the content does not suffer from the “leisure book syndrome” (Chadha and Nafay, 2003).

1.5.1.2 Just enough, Just-in-time Content

In this era of knowledge blast, providing just-in-time content is the need of the hour. In addition to providing knowledge close to the point of application, it is also advisable to structure the content into small learning units to be contextually sensitive for the learner. However, for the content presented to be effective and lead to maximum retention in the learner, it is very essential to interconnect these small learning units.
1.5.1.3 Content Publishing And Usability

The inter connection among various units of the content determine the success of the content. Further, the smaller the size of the content, the more specific could be the test items used to measure a particular skill. As a result, the institution will be able to manage their content much more effectively. Further, when it comes to publishing the content, to combine learning units into a topical learning unit automatically, it needs to be clear what each learning unit contains. To do so, each unit should have a clear tag (or label). This will provide the learner with options like learners can take a single learning unit or a complete topical unit for just-in-case learning. Thus, content publishing and usability needs to be done properly in e-learning.

1.5.1.4 Content Delivery Mechanisms

Content in the e-learning domain can be broadly categorized into many forms like: computer based content (CBC), web based content (WBC), virtual classroom etc.

1.5.2 SERVICES

The service aspect in the e-learning tripod is a key aspect. It is said that learning never stops. The source of learning, viz., the content, however, has traditionally been static, which leads to stagnation in learning. The problem with static content is that once created, it remains as it is for years and does not change with time. This wasn’t really an issue in the old economy wherein changes in the environment were not as dynamic as they are today, and hence updates to the content were not really required. On the contrary, in the new economy, learning must be updated every day, every moment; otherwise it would lose its relevance and importance. The services component of e-learning ensures that content keeps pace with the changes happening by constantly enabling the creation of new content over the static content. Essentially, services can be slotted into three categories namely Expert Service; Information Search Service; and Knowledge Creation and Conversion Service.

1.5.2.1 Expert Services

All the institutions offering e-learning may or may not have experts in-house but may yet want to utilize their potential and learn from them. In such case, institutions that do not have experts in-house or are not willing to have them on-board full-time, can
tap into expert services provided by service providers. Service providers can offer technology and knowledge assimilation services. The service provider set up expert communities within an organization where people can gain access to multiple experts quickly, and at a reduced cost to the institution. The service providers in the e-learning domain assimilate the knowledge by recording the problems and solutions discussed by the experts during the course of interaction. Later on, these problems and solutions are fed back into the static learning content as FAQ’s so that the content is updated with a new knowledge that was previously not covered in the static content.

1.5.2.2 Information Search Service
Today, when large data repositories exist, the problem is not as much lack of information as the excess of information. Learners today need to be given just-enough information, just-in-time. With so many resources available in internal and external knowledge repositories, using a search engine in the knowledge repository usually yields more than 100 results. Going through each one of them to get access to the information that is contextually correct, is extremely time-consuming, which a learner may not be able to afford. This is where information search services from the service provider in the e-learning domain can help.

The information search service accesses the content available in the internal and external knowledge base, intelligently links contextual pieces and serves the content to the decision-makers, on demand. In the process of info-searching on a specific context, a lot of new contextually sensitive content is created from the content already existing in internal and external knowledge repositories. This contextually sensitive content is then archived in the knowledge repository, ensuring constant updating of the existing static content.

1.5.2.3 Knowledge Creation And Conversion Service
During the course of collaborations among them, the learners as well as experts share their tacit knowledge or what is also known as the intellect. This tacit knowledge is shared in the context of a particular content or a piece of information and results in the creation of further enriched content known as the dynamic content. Services play a key role not only in the creation of dynamic content but also helps in managing and formalizing this dynamic content.
During these collaborations, though a lot of tacit knowledge is shared, it does contain a lot of noise in the form of unwarranted discussion. For example, in many discussions, time is taken up by noises such as feelings, flares and non-focused discussions. In order to ensure that the tacit knowledge generated in the discussions are properly presented to the learners as the content, dynamically as and when it is created, we need human intervention. Knowledge conversion services ensure that the noise from collaboration is separated from the real content and that the content is finally made available to the recipients in a usable format. As a matter of fact, any dynamic content, (or content created on the fly as in the case of expert services or information search service) follows through the knowledge conversion services to distill the real content from the noise. By drumming up the content every now and then, and in the process creating dynamic content, services also play a crucial role in ensuring that content does not suffer from the “leisure book syndrome”. Any content on the Net that is not going to change with time, bears a risk of not being taken seriously primarily because of it’s anytime accessibility.

1.5.3 TECHNOLOGY
In any educational technology initiative, the technology used acts as a tool for teaching and learning. On one side the technology need to be reliable, affordable and robust and on the other hand it is essential to ensure that the classrooms available are comfortable and has the necessary equipment. The non-working condition of computers, projectors, lights etc in the class would not only lead to agitation from students and staff but also would waste the precious teaching-learning time. Hence, care should be taken to provide sufficient and proper training to the staff and students before the deployment of e-learning technologies. The staff and the students should be properly oriented about the transparency and utility of various e-learning technologies. They should also be trained to provide hands on experience about various e-learning technologies. Staff should be properly oriented about the key principles involved in course design and development with respect to e-learning and on how this aspect differs from course design and development in a traditional face to face setting. In conventional educational systems, course design and development is the sole responsibility of the subject matter expert who is also the teacher, however it is not same in the e-learning system E-learning will require the delivery of that
subject matter content in alternative forms such as online or on a CD-ROM, teleconferencing mode etc. Even though if a teacher is able to produce content by themselves, it might not be the best use of their time and expertise hence in such cases an institution can adopt a team approach. A team approach brings together people with subject matter knowledge and experts in technology together. The technologies used within e-learning may be segregated into three categories namely Authoring; Delivery and Collaboration.

1.5.3.1 Authoring

Once the instructional design for the content has been established on the basis of the students profile and the content type, the next step is to select the right authoring environment. This largely depends upon the learner’s runtime environment and the treatment required by the content. So, for instance, if the learner’s authoring environment is Windows 98, it is prudent to check if the selected authoring environment can deliver content on Windows OS. Also, if the content required synchronous audio and animations, it would be advisable to check if the OS supports the run-time with such features developed through the selected authoring environment.

A number of tools are available to develop content in a specific web-playable authoring environment. Some of the popular authoring tools used for e-learning content development are:

a. HTML/ASP/XML;
b. Macromedia Authorware;
c. Macromedia Director; and
d. Java

The selection of the authoring tool depends upon a number of factors like:

Security of the content: The level of security to be provided for the content depends upon the nature of institution, its’ mission etc. For instance, an insurance institute going online may well want to spend a few more money to ensure that the content is not copied easily. This will not be the case of educational institutions deploying e-learning for the benefit of their own students and specific to their own course/products. While java is the most secure environment as far as content security
goes, HTML (and ASP) is the least secure. The content served via HTML can be easily saved onto the local disk, which puts the intellectual material at a great risk. The content secured through Java can be encapsulated in an applet and hence cannot be copied as easily as the HTML content. However, making content secure via Java may cost more than the HTML option and hence trade-off needs to be established prior to the selection of the authoring environment.

Time of Distribution: In this information age, it is imperative for the content to reach its beneficiary on time. This is especially true in field of education where the rate of obsolescence or addition of information is extremely high, and the speed of communication is exponential. It thus becomes important for institutions to distribute the content quickly. In case, time to distribution is extremely tight, institutions need to select the authoring environment that can quickly deploy the content. HTML/ASP score high on flexibility to deploy the content quickly. Further, numerous tools such as Front Page, Dreamweaver etc are also available for this purpose. These tools allow the content to be saved from a document to a web-playable format for quick and easy deployment. The maintenance and updating of content is equally easy and faster in this platform as compared to other authoring environment such as Macromedia Director, Macromedia Authorware or Java.

Plug-in: As not all the users of content are technology-savvy, it is advisable to either deploy content without any plug-ins or to stay within the range of standard plug-ins already deployed by the instructions. In a situation wherein plug-in is an issue, the best choice would be to go with plain and simple HTML, the ASP, because it is a server side and not a client side language, or Java due to its portability.

1 5 3 2 Delivery

Once authored and developed in an electronic form, the content needs to be packaged and delivered to the learners. The e-learning may be delivered either in a stand-alone mode or through an LMS.

Stand-alone: One of the most common ways is to deliver the web based content as a stand-alone content on a web-site (internet or intranet). Web based content can be hosted on a server on the internet/intranet and individuals may be allowed to access it via a URL to the server. The content may be delivered in this mode in case the
primary need is to distribute the content and not to track the involvement of learners in the content, or their performance. This is considered as the simplest form of e-learning.

LMS: In its entirety, the role of learning is to improve human performance. However, to be able to improve performance, it is imperative that just like a patient, learners must be diagnosed for their weakness and provided an antidote on the basis of their ailment. E-learning in the form of the Learner Management System (LMS), has the features that diagnoses the weakness in the abilities of the learner and provides an appropriate remedy. In addition, an LMS can also keep constant check on the performance of the learners every time the environment changes, and provides prescriptive advice. LMS is an important component of e-learning. Most LMSs will have the following features like, course content delivery capabilities, management of online class transactions, tracking and reporting of learner progress, assessment of learning outcomes, reporting of achievement and completion of learning tasks; and student records management. An LMS enables institutions to control and administer both the learning material and the learner even though learning is conducted via the internet. While most of the institutions use only basic features of LMS, a more sophisticated LMS may also enable to create skills to competency matrix, and to automatically assign the content based on the skill needs and the existing competence levels of a learner.

1.5.3.3 Collaboration
Communication technologies are generally categorized as asynchronous or synchronous. Asynchronous activities use technologies such as blogs, wikis, and discussion boards. The idea here is that participants may engage in the exchange of ideas or information without the dependency of other participants involvement at the same time. Electronic mail (Email) is also asynchronous in that mail can be sent or received without having both the participants’ involvement at the same time. Asynchronous learning also gives students the ability to work at their own pace.

Synchronous activities involve the exchange of ideas and information with one or more participants during the same period of time. A face to face discussion is an example of synchronous communications. Synchronous activities occur with all
participants joining in at once, as with an online chat session or a virtual classroom or meeting. Following are some of the communication technologies used in e-learning.

Virtual Classrooms: One of the key tools to implement synchronous e-learning is the virtual classroom (VCR). The VCR, as the name suggests, provides a virtual classroom-like atmosphere, wherein the instructor holds the class on the internet and can virtually see and interact with the learners attending the classroom. Learners can interact and collaborate with the rest of the class including their peers and the instructors.

Virtual classrooms and meetings can often use a mix of communication technologies. Participants in a virtual classroom use icons called emoticons to communicate feelings and responses to questions or statements. Students are able to 'write on the board' and even share their desktop, when given rights by the teacher. Other communication technologies available in a virtual classroom include text notes, microphone and breakout sessions. Breakout sessions allow the participants to work collaboratively in a small group setting to accomplish a task as well as allow the teacher to have private conversations with his or her students.

A typical VCR consists of two components:

a. Content Push: As a part of the content push, the instructor can upload the power point presentation in a pre-defined window. The instructor can then use the presentation to go through the content as in a normal class.

b. Interaction: The VCR offers a great intuitive interface to handle interaction during the class. The instructor can ask a question via the voice channel and prompt the learners to choose either of the yes/no buttons to respond to the question. Similarly, learners can ask the instructors a question via the voice channel and the latter can reply through the same channel. The conversation, meanwhile is open to other learners who can then "raise their hands" to ask a question or make a content.

In addition to these aids, VCR has a strong support for collaboration in white boards that can be used to quickly share ideas or options for sharing applications.
Chats: Chat softwares are popular tools for synchronous collaboration. It comes with options to create multiple chat rooms for different kinds of synchronous discussions. The software also allows chat administrators to save the chat as a file on the local machine of the administrator so that the same can later be used to create dynamic content.

Discussion forums: Discussion forums can be used to initiate asynchronous conversation on a topic or an area of interest. Learners then respond to each other’s comments to create a large conversation thread around a topic.

1.6.0 PRE-CONDITIONS OF E-LEARNING


E-learning, like any other organized educational activity is a very complex undertaking. Its successful deployment requires a great level of diligence and rigor in its planning, management and implementation. Furthermore, e-learning is neither a cheap nor an easy educational option. Negligence on the part of planning and implementation of e-learning can lead to it's under utilization. Educational organizations that have the flexible approach in employing alternative approaches to learning and teaching can easily capitalize and build upon. However, conventional campus-based educational organizations that have traditionally relied on residential face-to-face classroom-based learning and teaching activity have to re-look their values, mission and goals of educational provision in order to adequately accommodate the adoption of e-learning activities. For e-learning to succeed in any setting, there has to be complete support for the initiative from the highest levels to the lowest level. It is many times said that well planned is half done, so without adequate attention to these preconditions, we cannot make the optimum use of e-learning, no matter how robust and reliable is its technology and the infrastructure to support it.

Following are some of the pre-conditions of e-learning:
1.6.1 ADMINISTRATIVE REQUIREMENTS OF E-LEARNING

E-learning like any other educational activity needs to be managed very systemically. The technology and infrastructure that is needed to support e-learning take a foremost place in its deployment. It includes different approaches to course design and development and strategies for generating and managing subject matter content from that which is suitable in conventional educational settings.

1.6.2 IMPLEMENTATION REQUIREMENTS OF E-LEARNING

E-learning, enables the presentation and reach of subject matter content in alternative forms and thus helps in meeting the needs of both the teachers and various types of students. However, as implementation of e-learning is not an easy task and is a very costly affair, proper attention should be given in its implementation phase. This comprises attention to the recruitment, training of the stakeholders in various aspects of e-learning, facilitating and supporting learning, assessing learning outcomes, providing feedback to learners, evaluating the impacts of e-learning and a host of other issues related to these functions.

1.6.3 EVALUATION OF IMPACT OF E-LEARNING

The strength, the weakness and other aspects of any initiation can be known only when it is properly assessed, evaluated. Hence, evaluation plays an important role by helping us to take proper decisions regarding the initiatives that are being undertaken. As a first step in the evaluation of impact of e-learning, we should remember that we need to gather data from all stakeholders (i.e., students, staff etc) using various evaluation instruments which should include all dimensions of e-learning. Wherever possible, we should also aim to collect a variety of data using a range of data gathering instruments. However, we should keep in mind that there should be flexibility in data gathering processes and it should also be as simple and as less intrusive as possible. Gathering feedback from users and other relevant groups during the implementation process helps in identifying the problems so that improvements and adjustments can be made during the implementation stages of e-learning.
1.7.0 BENEFITS OF E-LEARNING

E-learning is an approach to facilitate learning based on, both computer and communication technology having huge benefit for learners. Following are the benefits of e-learning.

1.7.1 ANYWHERE, ANYTIME
The knowledge delivered using internet technology will be accessible anywhere with a connection to a network. The users can access programs from home or when travelling. Learning will be available 24 hours a day, 7 days a week all around the world. Critical information and trainings can be delivered to multiple locations at the same time. E-Learning can augment traditional classroom offerings, thereby freeing up valuable resources and expanding the offering to greater numbers of campus-based students. In asynchronous mode students can access the online material at anytime, while synchronous online learning allows for real time interaction between students and instructors. Tutoring can be done at anytime and from anywhere. Study material can be updated, and learners can see the changes at once. If designed properly the learning systems can be used to determine learners' need and current level of expertise, and to assign appropriate materials for learners to select from to achieve the desired learning outcomes.

1.7.2 JUST-IN-TIME EDUCATION
E-learning can put valuable resources at the receivers computers just when they need them. Information can be updated at one location and spread quickly and conveniently to everyone simultaneously. The time required to roll out the teaching-learning material, assignments, projects and any other training materials can shrink dramatically.

1.7.3 FEEDBACK PROVIDES CONTINUOUS IMPROVEMENT
E-learning management tools allow us to track and monitor the users and provide them feedback immediately and thus also help us to gather feedback regarding the effectiveness of programs.

1.7.4 ENRICH THE LEARNING
E-learning can help in enriching the users learning as it:
• Provides access to content-rich learning materials and self-assessments to guide students’ learning processes. It also creates balance between different sources of information

• Offers links to useful learning materials and creates a flexible learning environment conducive to students’ busy lifestyles and employment schedules

• Facilitates dialog between and among teachers and students and thus facilitates interest via increased interaction

• Provides ongoing support for teachers

• Provides immediate feedback and positive reinforcement

1.8.0 PROBLEMS WITH E-LEARNING

There are many problems associated with e-learning today, however with a proper vision and planning these can be reduced to a great extent.

1.8.1 BORING, TEXT-HEAVY CONTENT

One of the roadblocks that can be faced with the e-learning is that there are higher number of chances that the content many times is static with very little scope for interactivity. Many of the times it tends to be just a replica of the pages of the book in e-form.

1.8.2 EFFECTS ARE HARD TO MEASURE

As pseudo users can easily login and do the work assigned to others, it becomes very difficult to gather real information regarding the performance of students and thus it becomes tough to assess the real impact of e-learning.

1.8.3 POOR OR INSUFFICIENT TECHNOLOGY

The fundamental obstacle to the growth of e-learning is lack of access to the necessary technology infrastructure, for without it there can be no e-learning. Poor or insufficient technology infrastructure can cause more damage than good to teachers, students and the learning experiences. While the per head costs of the hardware and software are low the costs of infrastructure support and its maintenance, and
appropriate training of staff to enable them to make the most of the technology can be high.

1.8.4 LEISURE BOOK SYNDROME
If the content that is presented in the e-form on the intranet/internet is not updated or is not removed frequently, the user might develop an habit of postponing the reading of the content and thus it might develop in them the leisure book syndrome.

Thus, in spite of its limitations, use of e-learning practices in educational institutions is gaining its importance all over the world. However, the intensity of these practices, the forms of practices and the areas where these practices are adopted differ from place to place. Hence, it is necessary for us to known about the global, national and regional level initiatives being taken up in the area of e-learning.

1.9.0 GLOBAL SCENARIO OF E-LEARNING
E-learning is a global concept spreading all over the world. The scenario of e-learning in different continents and countries may be different, but the concept and its usage is increasing day by day in the globe.

1.9.1 E-LEARNING SCENARIO IN EUROPEAN UNION
European Union (EU) defines e-learning as “the use of new multimedia technologies and the internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.” EU e-learning action plan encourages member states of the universities to experiment "new teaching methods and approaches and promote virtual projects and virtual transnational campus projects”. EU in one of its memorandum clearly illustrated the characteristics which e-learning must have in terms of operative conditions, monitoring and evaluation results. In year 2002, they have even issued a protocol of intent signed by the public administration for the "diffusion, use and quality of distance and e-learning training programmes." In 2004, directives were issued based on the guidelines for e-learning teaching programmes in the public administration.

The EU has initiated strategic framework, i2010 – European Information Society 2010, to promote an open and competitive digital economy and emphasize ICT as a
driver of inclusion and quality of life. The following are the objectives of this framework:

- improving digital literacy;
- developing virtual campuses;
- school-twinning on the internet;
- sharing of experience and good practice;
- developing analysis and forecasting tools.

Complementing this, research into technology enhanced learning aims to:

- support collaborative learning;
- study the use of virtual presence and simulation services;
- facilitate transfer and sharing of knowledge; and
- extend access to new learning opportunities independent of time and place.

The Commission has given a new impulse to e-learning and knowledge society skills in the i2010 initiative for the 2006-2010 period.

1.9.2 E-LEARNING SCENARIO IN AFRICA

The following presentation is made after going through various research studies and government documents pertaining to e-learning in African countries. From the studies and reports it is clear that e-learning has taken its first steps among the African countries. Tim Unwin, in a study titled “survey of e-learning in Africa”, tried to summarize information about the status of e-learning in Africa. He tried to gather information from those who were already most committed to the use of e-learning from around 42 different African countries. He gathered information from higher education institutions, primary and secondary schools, NGOs and vocational and technical institutions. He gathered information from the institutions adopting either fully online mode of e-learning or blended form of e-learning. The conclusions he could draw were: there is a wide variety of different e-learning practices in Africa, e-learning is still very much in its infancy across most of the continent, there is much enthusiasm among the respondents for developing the potential of e-learning in their countries, key constraints in seeking to implement and develop e-learning strategies and practices include the lack of infrastructure, lack of proper training and capacity development, lack of relevant digital content, and the cost of implementation.
E-learning Africa conference is being organized every year in Africa since year 2006. The latest 6th eLearning Africa 2011 was held in Lusaka, Zambia and the 7th eLearning Africa conference will be held in 2012. As a part of the conference, sessions, workshops and best practices would be displayed by various participant countries. The conference tries to provide a platform for high-level decision-makers from governmental agencies, experts and practitioners from universities, schools, human resources managers from companies, as well as private training organizations, development co-operation projects and investors. This shows that the African countries are working towards exploring the potential of e-learning.

David Hollow and ICWE in the year 2009, presented a paper titled “eLearning in Africa: Challenges, priorities and future direction”. The paper reported on a survey of 147 eLearning practitioners from 34 countries in Africa. Following are some of the points of the report:

- Clear priorities for eLearning practitioners relate to effective training and increased bandwidth. Significant limitations are the associated start up and maintenance costs, combined with the risk of equipment theft.
- The three most significant consequences of introducing eLearning are perceived to be possibility for higher student motivation, improved student attainment, and increased value of education amongst the community.
- Practitioners place clear emphasis on the importance of donor funding.
- Effective monitoring, evaluation and impact assessment remain a priority for the development of eLearning in Africa. This should be viewed as an integral aspect of each programme and structured in such a way as to contribute to the capacity development of participants.
- The promotion of collaboration and knowledge sharing through the development of transparent multi stakeholder partnerships is central to overcoming the significant challenges currently faced by eLearning practitioners.
- The overall rationale for eLearning in Africa is still overly grounded in technology driven agendas. There are encouraging signs that pedagogy is being increasingly prioritised but sustained work is required to ensure that the potential of eLearning
continues to progress beyond simply training for ICT and focus instead on educational outcomes.

Studies and reports from African countries indicate that these countries are taking a major interest in exploring and utilizing the potentials of e-learning.

Some other e-learning initiatives being taken in other parts of the world include:

British Open University is considered as one of the world's leading distance learning institution. One of the key factors as per analysts is that British Open University has a very strong process of collecting, analyzing and using course-correcting data about the courses and services of the university. It offers a comprehensive learning support service to students from initiation to completion of program. Further, it has experimented and used multiple technologies to make it work. Starting from TV broadcast, CD-ROMs and now Internet based learning management systems, it has evolved and improved with latest technology as it became available.

MIT (Massachusetts Institute of Technology) OpenCourseWare (OCW) is a very popular e-Learning initiative from MIT, USA. It was started in 2001, and it hosts around 1800 courses. OCW is a free publication of MIT course material, covering most of the courses taught at undergraduate and graduate level at MIT. It is freely available on the internet, and its goal is to help educators plan, develop and improve their classes, and for students to use this material in conjunction with the courses they are taking. 80% of visitors rate OCW's impact as extremely positive. It also ensures standardization of content and works towards making content richer and deeper. OCW team has taken initiatives like engaging students to take notes, which are then transcribed by OCW staff. OCW staff also work with faculty to secure citation on third-party intellectual property. OCW team established a goal-based performance management system. Translation partnerships aim to increase the reach of OCW to users of other languages. Technology has been recognized as a key enabler for the OCW project. The two examples quoted above, which have been quite successful in achieving their objectives highlight that a successful e-Learning project requires a well thought-out plan and execution of the same. It involves strong well defined processes, access to great content, technology and finance to tie it up.
1.9.3 E-LEARNING SCENARIO IN ASIA

The genesis of the scenario of e-learning in Asia presented under the following section is based on the report prepared by Center of "The international cooperation for computerization (CICC), Japan (www.cicc.or.jp/Prj/pdf_ppt/elearning061129.pdf) (2006).

The scenario of e-learning in the Asia countries is also catching up the speed. Countries like Korea, Taiwan, Japan have long back released their white paper pertaining to e-learning some where in the year 2005-2006. Universities in countries like China, Korea, Singapore, Malaysia, Myanmar, Thailand, Vietnam, Philippines are using domestically developed or foreign developed LMS like CREsys, DUNET LCMS, NEP, Active Sone, WBTS, Moodle etc. Most of these LMS are based on SCORM 1.2, SCORM2004 standards. In a report titled "Report on IT in higher education in Japan (2005)" it was presented that 43% of higher education institutions are using e-learning whereas around 57% of the institutions are still not using e-learning. The Open Courseware Consortium in Asia consists of around 100 universities in Austria, Canada, China, France, Japan, Saudi Arabia, South Africa, Spain, Portugal, Thailand etc. The Consortium has many affiliated organizations like African Virtual University, China Open Resource for Education, National Institute of Multimedia Education (NIME), Japan etc. Various countries of Asia have e-learning related policies, act or activities like Brunei has a separate policy titled "e-education initiative" under its 8th and 9th development plan. China in an effort to enhance e-learning initiatives has its "China Education and Research Network, China Education Broadband Satellite net". Indonesia has also put forward its initiatives for e-learning in form of various policies and documents like Indonesia's Knowledge Based Society 2025, e-learning strategy Development 2002-06, Schools information network, one school one computer lab, e-dukasi.net etc. Korea has e-learning industry promotion act, EDUNET for promoting its e-learning initiatives. Myanmar has its e-education a thirty-year long term education development plan, Philippines is in the plan of issuing its policy framework and future directions for e-learning in the Philippines. It also has its national framework plan for ICTs in Basic Education (2005-10). Thailand also has many e-learning related activities like e-learning committess, schoolnet, uninet, e-learning centers (like National ICT learning center, Thailand Knowledge Center, One
temple one e-learning center, goodnet, national grid technology center). Taiwan has its e-learning industry promotion and development plan, its national science and technology program for e-learning (ELNP) (2003-2007). Vietnam has its target of applying and developing open source software in Vietnam for the 2004-2008 period, it also has its EDUnet.

Korean government's policy to bring up e-Learning has started since 1999 by the 'Internet Communication Training Program' of Ministry of Labor (MOL). In 2001, Ministry of Information and Communication (MOIC) established 'Law for developing On-Line Digital Contents Industry', which emphasizes digital contents for education and an urgent need of IT experts. As of December 2002, e-Learning programs formed 20% of total training programs. Ministry of Commerce, Industry and Energy, Korea gives higher priority in action to the establishment of e-Learning infrastructures, and this project includes supporting e-Learning technical standards development, and bringing up e-Learning experts. To bringing up e-Learning experts, the Ministry selected six universities equipped with professional skill and provides them with some fund in order to develop e-Learning contents and media of high quality and human resources as well. Since 2001 'Cyber University Foundation Law' was put in operation, and seventeen cyber universities are running in 2004. In reference to the Policy of "Education with ICT", every school in Korea has its own intranet and it has a plan to provide students with e-learning courses as many as 20% of total courses. In non-governmental agencies side, big companies such as Samsung, LG, Posco, and KT and so on, have intensified its training programs for employees and decided to choose e-Learning technology as methodology of the programs. Large investments are being made in e-Learning application and e-Learning content, and the e-Learning business in Korea.

According to the report prepared by CICC, some reflections regarding the e-learning practices in the universities of Malaysia are: higher education institutions have adequate e-Learning infrastructure however, there are major shortcomings related to planning and implementation of the teaching and learning component of e-Learning, approach to e-Learning is sporadic, nascent e-Learning leadership, the approach to e-
Learning tends to be technocentric, insufficient funding, lack of skilled and experienced faculty.

1.9.4 E-LEARNING INITIATIVES IN INDIA

India earlier was a source country for international students and now it has turned to be a competitor country for students, faculty, and institutions. India is one of the fastest growing countries and stands second largest in the world population. The number of international students coming to our country is at a rising rate and the proportion of population falling in the university age is also increasing. With a higher intensity of challenges in primary and secondary education, India is not in a position to afford public investment in higher education. As a result, today, 75% of higher education institutions in India now are private, 90% of college in engineering, management and IT are private. Over the last 10 years, there has been huge expansion in private sector provision and many private providers are using distance/online learning to leverage scarce resources, exploit economies of scale, (20th annual EAIE conference). Thus, the role of private sector and the technology are the two important factors responsible in bringing the drastic changes in higher education. Over the last 50 years, the Government of India has provided full policy support and substantial public funds to create one of the world’s largest systems of higher education. Realizing the need to incorporate the Computer Education and the use of Information Communication Technology (ICT) in education, many steps were taken in this direction. The UGC started the steps in this direction by providing PCs, introducing diploma and degree courses in computer science and providing research and higher studies in this field. Besides MHRD, Ministry of Information and Broadcasting, Department of Space, Department of Electronics and Finance Ministry augmented transmission facilities for educational programmes and set up educational channels. The CIET and UGC co-ordinated and monitored training and production facilities and State Governments were involved in the funding and management of educational technology programmes. The CIET and IUCEs have involved various NGOs to give a flip to the Educational Technology Programmes.

Moving further in this direction, many more efforts are being made in higher education system to explore and utilize the potentials of ICT in general and e-learning in specific. A big step in this direction is the India's NME-ICT (NME-ICT synopsis
document) initiation. The National Mission on Education through Information and Communication Technology (ICT) is a Centrally Sponsored Scheme to leverage the potential of ICT, in teaching and learning process for the benefit of all the learners in Higher Education Institutions in any time any where mode. This is expected to be a major intervention in enhancing the Gross Enrolment Ratio (GER) in Higher Education by 5 percentage points during the XI Five Year Plan period. The Mission has two major components: (a) providing connectivity, along with provision for access devices, to institutions and learners; (b) content generation.

It seeks to bridge the digital divide, i.e., the gap in the skills to use computing devices for the purpose of teaching and learning among urban and rural teachers/learners in Higher Education domain and empower those, who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy so that they can make best use of ICT for teaching and learning. The Mission would create high quality e-content for the target groups. National Programme of Technology Enhanced Learning (NPTEL) Phase II and III will be part of the content generation activity. The peer group assisted content development would utilise the wikipedia type of collaborative platform under the supervision of a content advisory committee responsible for vetting the content. Interactivity and problem solving approach would be addressed through “Talk to a Teacher” component, where the availability of teachers to take the questions of learners shall be ensured appropriately. Mission also envisage, on line, for promoting research with the objective to develop new and innovative ICT tools for further tactituation of teaching and learning process. It plans to focus on appropriate pedagogy for e-learning, providing facility of performing experiments through virtual laboratories, on-line testing and certification, utilization of available Education Satellite (EduSAT) and Direct to Home (DTN) platforms, training and empowerment of teachers to effectively use the new method of teaching learning etc.

On the other hand, the Department of Information Technology (DIT) is involved in the development and promotion of Information Technology and Electronics in the country. E-Learning is one of the thrust areas identified by the Department. The main thrust of the e-learning programme is to effectively integrate e-learning methodology and approach with the conventional classroom system to maximize the benefits
flowing from the traditional education system, increase its reach to more and more learners and spread e-learning from teaching of IT related subjects to other subjects in the curricula. In line with the recommendations of National Task Force on IT and 10th plan working group, DIT had initiated development projects leading academic and R&D institutions in the area of e-learning. In all, eight projects have been funded under this activity. The brief details are as under:

The e-learning initiatives being presented under this section would exclude one-way fixed schedule dissemination technologies like television and radio.

1. National Resource Centre for On-Line Learning: C-DAC, Mumbai. Under the project a comprehensive portal for on-line learning has been set up and is accessible at http://www.ncest.ernet.in/~vidyakash. The portal covers institutions, standards, on-line content, resource material (articles, papers, tutorials, etc), tools and development environment. The portal contains over 400 links. An international conference on on-line learning - Vidyakash, 2002 was also organized.

2. Virtual Campus Initiative: IGNOU, New Delhi. The PG Diploma Course in e-learning (PGDEL) is already running under this project at IGNOU, New Delhi.

3. Developing Web based Digitised Collection for Distance & Continuing Education in Information Technology (IT) - A Demonstrative Project on the Internet Based Online Interactive Courseware: IIT, Delhi

4. Design and Development of Internet Enabled Multimedia Courseware for a Virtual University: BITS, Pilani

5. Development of Interactive Multimedia Information Services over a Hybrid Internet and Broadcast Digital TV Networks. IIT, Kanpur

6. Developing Web based Intelligent Interactive Tutoring (WeblIT): IIT, Delhi

7. Design and Development of Component Based Functionality to e-learning tools: C-DAC, Hyderabad

8. Multimedia Digital Distance Education for IT & Other Critical Technologies: School of Education Technology, Jadavpur University
Further, in order to address the e-Learning issues, DIT has constituted a Working Group (WG) with experts from MHRD, industries, academic institutions, research labs, industry associations and other organisations working in the area (Source document: Background Note for Task Force on HRD in IT).

According to Manjul Sahay (2009) (http://www.ten.us.com/resources/CSICP.pdf), "The most talked about Indian e-Learning project is the NPTEL project". NPTEL (National Programme on Technology Enhanced Learning) was conceived in 1999 and funded by MHRD (Ministry of Human Resource and Development). Under the project, 7 IITs (Indian Institutes of Technology) and IISc (Indian Institute of Science) Bangalore, worked on the Rs 20.5 crore project from 2003 to 2006, to create 112 video courses and 116 web courses. All these courses are on undergraduate engineering topics, and made to meet most of the requirements of an engineering undergraduate program (at any Indian university). These courses are available to students, working professionals and colleges (both government-aided and private) at virtually no cost or very low cost. NPTEL video course details from YouTube – As per YouTube site, it is YouTube India's most subscribed channel with 10,148 subscribers and 353,632 viewers of the channel (as on 22nd January 2009, http://in.youtube.com/user/nptelhrd). One comment usually heard about the project is the students/institutions still need to be able to convert this into a usable experience, and improve their learning.

Another commercially successful initiative is MBA Programs being conducted for Working Professionals using Satellite Video technology, by institutions like IIM-Calcutta, IIM-Calicut, IIT-Delhi, IIFT, IIT Bombay, XLRI etc. This was done by these institutions using services provided by companies like HughesNet (formerly Hughes Direcway), Reliance Infocom and now NIIT Imperia. Premier institutes like IIMs, IITs, XLRI etc provided faculty who take the classes, run the program, ensure quality and institutes provide certificates to students. Institutes spend valuable faculty time and effort in creating and upgrading courseware specifically for these programs. The vendor companies opened centres across India, for students to come in and view lectures and attend classes. Satellite-based video technology is used to beam live lectures from the institute studio to the centres. Learning Management System
software is used to supplement this for giving assignments, reading material and collaboration among students and faculty. The companies also set-up studios in partner institutes to enable lecture beaming. Thus, it was a comprehensive solution encompassing content, great technology, and services (marketing, infrastructure etc) to meet student need.

Sakshat Portal from MHRD is another well-known e-Learning initiative. Modelled on lines of MIT OCW, it has been designed and developed by IGNOU for Ministry of HRD, as a repository of eBooks, eJournals, Digital Repository and other student-relevant information. Study material is classified into various topics.

Some of the other lesser known e-Learning initiatives/ projects in India are –

1. Amrita Vishwa Vidhyapeetham – This initiative launched in 2004 uses satellite technology to connect 4 campuses of Amrita University located in 4 cities of South India. There is a collaboration with US universities also, and the project was “expected” to expand to 200 universities. It was based on technological support from ISRO.

2. BITS Pilani – It has established a virtual university, with DIT sponsorship. BITS has been one of the pioneers in distance education. BITS has been providing courses for working professionals in distance education mode leveraging technology

3. Jadavpur University – It started a new inter-disciplinary “Masters in Multimedia Development” course in 2000-01 as a distance education course using print material, CD ROM, and web-based learning environment. Technology was provided by CDAC Kolkata and CMC.

4. Aligarh Muslim University – It worked on a project in 2006-07 to take its distance education program online, starting with a few courses which are industry-relevant.

5. Central Institute of English and Foreign Language, Hyderabad – It had a project for online learning software set-up and usage in 2006.

6. Many other universities and colleges had small projects/ initiatives where they bought software, hardware and other technology products, got content development done for e-Learning launch. It included the likes of Hyderabad University, Kerala University, Terna College Mumbai, MDI Gurgaon, etc.
E-learning, as additional support to existing courses, is gaining its importance in India. Tutor-Vista, a company set up in Bangalore provides Indian teachers in English, Maths, Physics, Chemistry and Biology for 3rd to 12th grade students in UK and the US charging less than half the local rates. The session is interactive with use of head phones and micro phone.

1.10.0 GUJARAT AND ITS ICT READINESS INITIATIVES

Gujarat state situated in the western part of India shares its northwestern boundary with Pakistan. Rajasthan, Madhya Pradesh and Maharashtra are the neighboring states of Gujarat. Gandhinagar is the capital city of the state and Ahmedabad is its largest city and the main commercial hub of the region. Gujarat houses a wide variety of industries and is considered one among the best industrialized states of the nation. The state has the fastest growing economy in India and it is also, one of the most industrialized states within the nation. Thus, making it the richest state with a GDP per capita income twice that of the country as a whole. In Vibrant Gujarat 2011 Summit, about 7936 MoUs were signed worth $462 billion in the two days. The only state to emerge as ‘Investor friendly’, Gujarat has achieved the distinction of being the top most industrially developed state in India in respect of investment in industrial sector and second among states in respect of value of production and value addition in industrial sector in India.

Gujarat is an aspiring leader with e-readiness Initiatives in the IT Policy 2006-2011. All departments in the state have prepared their IT Action Plan, which has a one-year focus and a five-year perspective. A fix part of the budget is committed to IT related activities. Each department has Chief Information Officer (CIO) who reports directly to Secretary of the department. The IT Policy aims at enhancing man power skills, collaborations and Business promotions. The policy also encourages mega projects, IT Parks, SEZ and spaces for IT/ITES promotions. Distance Learning Education is yet another Initiative that takes a major uplift. Use of existing educational infrastructure, including distance learning through satellite communication facilities is available at Bhaskaracharaya Institute for Space Application and Geo-informatics (BISAG). Awarded for Best e-Governance, Gujarat is a frontline State in the implementation of e-governance policies & projects and setting up of key infrastructure for E-governance. The state is also pro-active in its initiatives and ranks first state in the
country to have made e-Governance functional in all its Municipalities and Municipal Corporations.

Gujarat has been positioned at L2 Stage in Information Communication Technologies (ICTs) which is categorized based on Environment, Readiness and Usage Applications. It stands as an aspiring leader ranking to 31st Top Hotspots in the World and minimizing to reach the goal.

Gujarat is also home to some of the prestigious educational institutes of the nation. The same uniform structure of 10+2 education is followed in the schools of Gujarat. Coming to higher education, there are several state, central, private, deemed universities functioning in Gujarat which offer programmes ranging from undergraduate, postgraduate to doctoral programs in various disciplines. Institutions like IIM-A, CEPT, NID, IIT-G, IRMA, PRL,NIT have a nationwide recognition. Even in the private category there are many universities which are apprised for their good performance like NIRMA, DAIICT, PDPU, MICA, Teacher Education University, Police University etc. There are also especially dedicated universities like agriculture universities, Forensic University, children's university, Sanskrit university etc. Further, the state government of Gujarat is seriously inclined in using the potentials of ICT in the education system. In a circular released by the state government of Gujarat on 11/04/11 (No. CBC-262011-918-KH) with regard to implementation of Choice Based Credit System, it was clearly mentioned that ICT should be used effectively in the classroom processes. Following are some of the points mentioned in the circular:

a) Digital Education and Learning Laboratory (DEL) has been set up in 216 colleges and proposal to set up such laboratories in 170 more colleges is in pipeline. These laboratories shall work as learning centers for all the subjects.

b) Sandhan facilitates students to have an access to an interactive presentation by eminent academicians from across the nation. In addition it also covers aspects such as personality development, proficiency in English, research methodology and preparation for various competitive examinations. It is also going to function as a valuable repository of knowledge in the form of CDs and DVDs.
c) There is a proposal to set up an Audio-visual room in the colleges across the State. This would facilitate learning through programmes that would be telecast live.
d) There is plan to prepare E-content of various courses to be introduced as a part of CBCS. The motivation and support to develop E-content under NME-ICT has been provided to the teachers across the state and the response as well as result has been quite good. E-content will facilitate learning at anytime and for as many times as the student wishes.
e) The higher education department plans to set up 180 computer laboratories each having 100 computers and internet connectivity. Apart from being used as centers for On Demand On Line examination (ODOLE), these laboratories will serve as learning centers.

Government of Gujarat has recently started a new program called “eMpower - Electronic Manpower” for all students who wants to get quality education as well as knowledge on various computer programs, softwares and technologies including Internet and Social Media like Facebook, Twitter, Linked In, Google+ (Google Plus), Orkut, Email Account, Blogging, Surfing etc.

All these changes and developments happening in the area of higher education in general and changes happening in higher education particularly in Gujarat aroused many questions in the mind of researcher which is presented in the following section in the form of research questions.

1.11.0 RESEARCH QUESTIONS

With these newly emerging electronic learning systems, knowledge networks, handy electronic devices etc what will be the new dimensions of education? How would the role of books, teachers, teaching-learning materials, mode of communication with the students etc. would change? How are our educational institutions responding to such changes? Such and many more questions aroused in the mind of the researcher and they are as follows:

- How comfortable are the students of higher education institutions of Gujarat in using the computers and internet?
- Does the staff in higher education institutions have proper computer and internet facility in their institution?
• What is the status of computer lab in the higher education institutions of Gujarat which are adopting e-learning practices?
• What are the forms of e-learning available in the higher education institutions that are adopting e-learning practices?
• What are the various e-practices that are being used in these institution for adopting e-learning?
• What is the opinion of the students, staff and lab administrator regarding the e-learning practices that are being adopted in the institutions?
• How expertized are the faculties and lab administrators in using e-learning tools?
• What is the opinion of various participants (staff, students, lab administrator) regarding the concept of e-learning and its other aspects?

With these questions in mind, the researcher is presenting the following rationale for the study.

1.12.0 RATIONALE

All over the world and especially in developing countries like India the role of education in national development is more focused today than was before. On one hand our education system has to attempt total literacy and on the other hand it has the challenges of integrating computers and other technological advancement into education to compete in the newly changing world setup. At present, with the globalization and information society movement, it is very essential that our higher education models need to be modified. This demands the inclusion of alternative supplementary models of education in the traditional system like campus networks, access to external networks, learning resource labs etc. Thus it is becoming essential to create a real virtual campus for effective teaching and learning. As tomorrow's economy will revolve around such innovations, it is high time to study about the scenario of such practices.

Further, the superhighway changes coming in the area of ICT can help our higher education systems to target at education beyond the text books and make students themselves address to the needs of the society at large. For all this to happen, the institutions of higher learning should make efforts in establishing educational
technology and instructional material development lab and encourage technology based learning. Are the educational institutions making attempts in this direction? And if they are doing, then how is the quality of these efforts? Hence, there is a need for the present study/

Observing all these changes, government of India has taken up and is taking up many steps to optimally utilize the power of ICT in higher education. One such step is from The University Grants Commission, which has accepted HRD ministry’s proposal to give broadband connectivity to nearly five lakh college teachers of central and state universities. As for teachers of private colleges, it has been decided to set up a regulatory mechanism before extending such facilities to them. At the same time, UGC will also help college teachers in acquiring computers by getting them cheap bank loans. (Sept. 9th 2007, Times Foundation Web Site). When the changes and initiatives are coming up at such huge level, it rightly demands a need for research in such directions.

Moving further, in a country like India which is facing many challenges in higher education, it is often said that e-learning would be a proper solution. It is believed that recorded classrooms of the expert lecturers are a real boon for students in those towns having no accessibility to experts. If the high quality of study material is already available to students at any time, students can be better prepared to the class and their absorption level also goes up. Besides, collaborative tools like, discussion boards and chat sessions supplemented by email can help in promoting collaboration among students and between students and teachers. It is further believed that e-Learning emphasizes continuous learning and promotes “just-in-time” and “just enough” learning, which is a boon for many busy professionals and students. This and many more are said about the benefits/advantages/positive points of e-learning. How far are these statements true? Are the institutions really utilizing these potential benefits of e-learning? What is the real scenario happening in the institutions with reference to e-learning? This study is an attempt in the direction to find answers to such questions.

A point to note here is, growing numbers of teachers are increasingly using information and communications technology to support their teaching. The contemporary student populations (often called the “Net Generation”) are also using
information and communications technology. Hence, will it be possible to utilize this interest of both the teacher and students in educational practices? Are the educational organizations able to visualize the advantages in making their programs accessible via a range of distributed locations, including on campus, home and other community learning or resource centers?

Adding to this, e-learning, like any organized educational activity is a very complex undertaking and hence demands the same level of diligence and rigor in its various aspects like planning, management and implementation. Its various components like technology, infrastructure, content etc require attention far beyond that is necessary in conventional educational settings. Does the institutions adopting the e-learning keep all these points in mind?

Moving a step further, how are the conventional campus-based educational organizations that have traditionally relied on residential face-to-face classroom-based learning and teaching are using these e-learning practices, do they get any guidance in using these technologies? Do they give guidance to the staff and students in using these technologies? How competent is the staff in using these technologies? What is the quality of their e-learning practices? The study is an attempt to explore answers to these questions.

Without adequate attention to these preconditions, e-learning is unlikely to achieve its full potential in any organization; no matter how robust and reliable are its technology and the infrastructure to support it. Hence, there is a need for research in this direction.

Finding an answer to all such above mentioned questions will not only have implications for funding allocation for any such new initiative, but also it would give a pathway to many other institutions which are planning to adopting e-learning practices.

The global scenario of e-learning presented in Chapter I, shows that e-learning practices especially in educational institutions in India is relatively at low level when compared to other countries like Korea, Malaysia etc. Hence, when the government of Gujarat is laying so much emphasis on use of ICT in higher education, it is very
necessary to know about the e-learning initiative being taken up in higher educational institutions of Gujarat.

The review of related literature also shows that already multidimensional studies have been conducted in the area of e-learning but such type of studies are at very nascent stage in India. Hence, the researcher feels that there is a strong need for the present study.

Above all, the growth and development of the Gujarat state, ICT readiness initiatives being undertaken in the state, existence of nationally renowned educational institutions encouraged the researcher to carry out the present study.

1.13.0 STATEMENT OF THE PROBLEM
A STUDY OF E-LEARNING IN GUJARAT.

1.14.0 OBJECTIVES OF THE STUDY

1. To study the infrastructure available in the institutions adopting e-learning practices in Gujarat.

2. To study the forms of e-learning adopted in higher education institutions in Gujarat.

3. To study the e-learning facilities available in the higher education institutions in Gujarat.

4. To study the opinion of faculties, students and lab administrators regarding the e-learning practices being adopted in the higher educational institutions in Gujarat.

5. To study the opinion of faculties, students and lab administrators regarding the concept of e-learning.

6. To study the abilities of faculties and laboratory administrators with respect to use of various e-learning tools.

7. To study about the future scope of e-learning in Gujarat.

1.15.0 DELIMITATIONS OF THE STUDY
The study is delimited to the higher education institutions of Gujarat which are adopting the e-learning practices.
1.16.0 DEFINITION OF THE TERMS

E-LEARNING: E-learning includes all e-based practices carried out for the purpose of teaching-learning, training, evaluation etc using internet/intranet in blended mode or fully online mode.

INFRASTRUCTURE: In the present study the infrastructure available includes personal computers, internet connection, its type, number of computers in the lab, network connection, its type and accessibility, data transfer speed in the network etc.

FORMS OF E-LEARNING: In the present study, the forms of e-learning include intranet, email, blogs, chats, video conferencing, computer based training, web based training, virtual classrooms etc.

E-LEARNING FACILITIES: In the present study, e-learning facilities include, online study materials, online syllabus, online programme information, online examination scheme, online question banks, online sample questions papers, e-portfolios of students, online attendance records, online results information, links to web pages, online assignment postings and feedback, online tests or quizzes, open formus, chats, web seminars, e-books, application sharing, digital libraries, video conferencing etc.

OPINION REGARDING E-LEARNING PRACTICES BEING ADOPTED: In the present study, opinion regarding the e-learning practices being adopted includes aspects like how often the content is updated, how often students logon to intranet, do the students get guidance with respect to these practices etc. It also includes the opinion of the faculty regarding the e-learning practices being adopted at the institution in terms of guidance, academic efficiency of students, their professional efficiencies, personal benefits, professional benefits etc.

OPINION REGARDING CONCEPT OF E-LEARNING: In the present study, opinion regarding concept of e-learning includes aspects like effectiveness of learning in e-learning, advantage and dis-advantages of e-learning.

ABILITIES: In the present study, abilities includes the expertise of the faculties and lab administrators in using computers, internet and other e-learning tools like virtual
learning environment, web pages authoring, video conferencing, electronic whiteboards, learning softwares, computer based assessments etc.

FUTURE SCOPE: In the present study, the future scope of e-learning would be known in terms of aspects like sharing of the e-learning modules with other institutions and its basis of sharing.

1.17.0 CHAPTERIZATION