A STUDY OF E-LEARNING IN GUJARAT

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Dr. JAISHREE DAS   **Y.VIJAYA LAKSHMI**

CENTRE OF ADVANCED STUDY IN EDUCATION (CASE)
DEPARTMENT OF EDUCATION
FACULTY OF EDUCATION AND PSYCHOLOGY
THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA
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CERTIFICATE

This is certified that the work contained in this thesis entitled **'A Study of E-learning in Gujarat'** submitted by Ms. Y. Vijaya Lakshmi to The Maharaja Sayajirao University of Baroda, Vadodara, India for the degree of **Doctor of Philosophy (Ph.D.)** in Education is a record of bonafide research work carried out by her under my supervision and guidance. The results embodied in the same have not been submitted elsewhere for the award of any degree or diploma. It is further stated that the doctoral research was carried out fulfilling the requisite attendance criteria as per O.Ph.D.:3 (i) of The Maharaja Sayajirao University of Baroda, Vadodara.

I find it fit for submission and evaluation.

26th November 2012   **DR.JAISHREE DAS**
Vadodara   **Associate Professor**
                Department of Education
                Faculty of Education and Psychology
                The Maharaja Sayajirao University
                of Baroda

ACKNOWLEDGEMENT

Vadodara   **Y.Vijaya Lakshmi**
26th November 2012   **Investigator**

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CHAPTER I

INTRODUCTION

1.0.0 INTRODUCTION

Learning is a prerequisite to ones growth. Our ability to learn and our intellectual capacities are intangibles. However, these intangibles are ones 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 loose 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 where 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 leaning 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 Assistancts (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
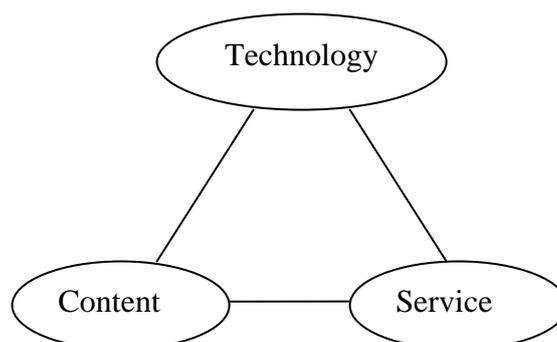
1.5.1 CONTENT

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

1980s	1990s	2000s	2010s
Media Intensive CD based training	CD to internet	E-learning with basic mentoring via email, intranet, WBTs	Technologically advanced E-learning with features like video/audio stream, virtual classrooms, dashboards, M-learning etc.
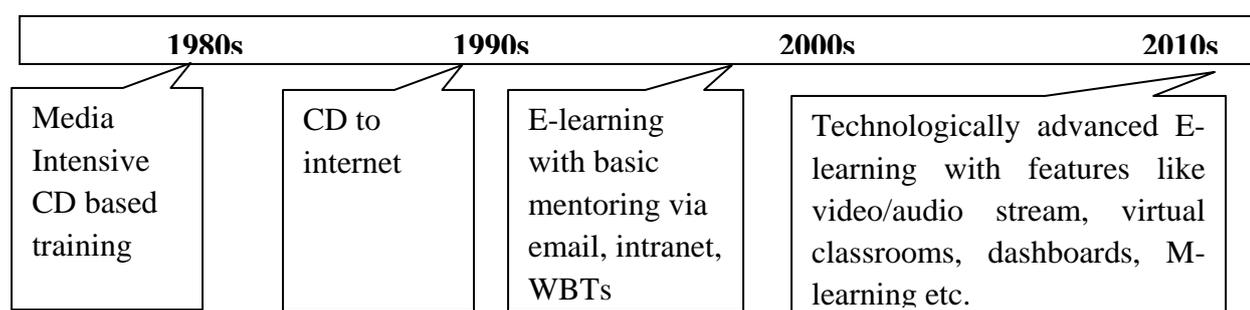
1.5.1.1 Content and its Dynamism

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 a 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

In his book "E-learning- A Guidebook of principles, procedures and practices" Somnaidu (2006) expressed the following points about 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 undertake. 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, inspite 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 (Massachussets 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/Prg/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-earning 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 facilitation 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 (DTH) 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.ncst.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 (WebIIT): 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 instituions 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 Vidyapeetham – 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 Kolkatta 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 stduents 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 pasges, 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 white boards, 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

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                    │     Chapter I       │
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                    │    Introduction     │
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                    ┌─────────────────────┐
                    │     Chapter II      │
                    │  Review of Related  │
                    │     Literature      │
                    └─────────────────────┘
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| Studies related to e-learning readiness, practices, status and its implementation | Studies related to e-learning tools | Studies related to comparison of electronic mode and face to face mode |

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                    ┌─────────────────────┐
                    │     Chapter III     │
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                    │    Methodology      │
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                    │     Chapter IV      │
                    │  Data Analysis and  │
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                    │     Chapter V       │
                    │      Summary        │
                    │        and          │
                    │    Conclusions      │
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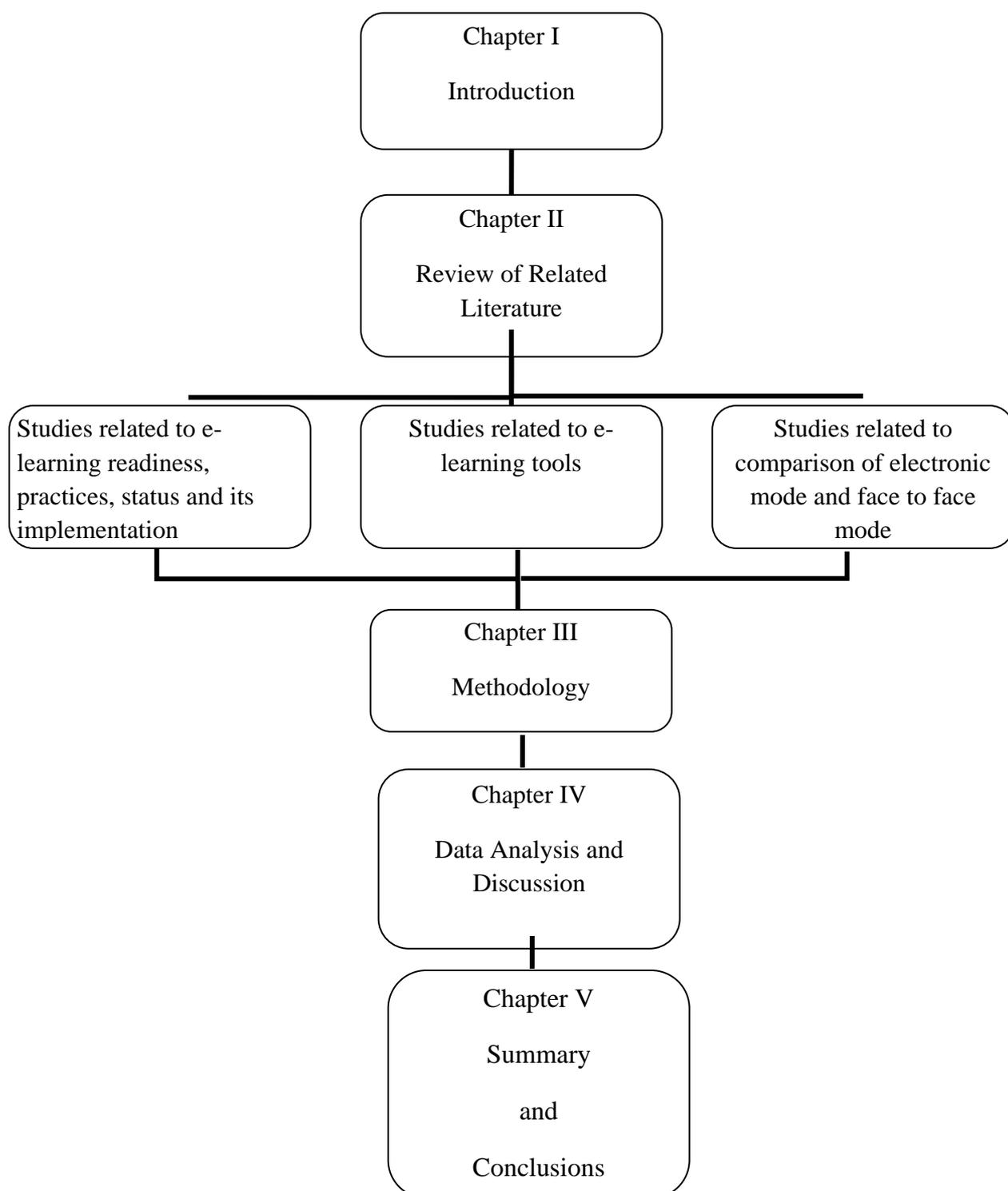
CHAPTER II

REVIEW OF RELATED LITERATURE

2.0.0 INTRODUCTION

2.1.0 E-LEARNING READINESS, PRACTICES, STATUS AND ITS

      IMPLEMENTATION

2.2.0 E-LEARNING TOOLS

2.3.0 COMPARISON OF ELECTRONIC MODE AND FACE TO FACE

      MODE

2.4.0 SUMMARY OF THE REVIEW

2.5.0 IMPLICATIONS OF THE REVIEW OF RELATED LITERATURE

      FOR THE PRESENT STUDY

CHAPTER II
REVIEW OF RELATED LITERATURE

2.0.0 INTRODUCTION

The literature relevant for the study was obtained through several different methods. The following process was used to locate appropriate research material. The first search tool was the use of ERIC website on the internet. A search containing the text "e-learning" was submitted in the ERIC database and found 2286 hits. A review of around 60 articles helped to find relevant information for this research topic which could be divided into categories like online learning tools, online learning, e-learning readiness, e-learning challenges etc.

A second internet query was a search under the keyword strings like "e-learning", "e-learning initiatives", "e-learning challenges", "e-learning vs traditional system", "virtual initiatives in the institutions" etc on google.com. In all together under such headings the researcher could find around 12,000 hits. There were many hits that overlapped with the ERIC digest, msn.com etc. The researcher tried to review atleast first 30 hits under each keyword string. The researcher also tried to review the studies from various other reference materials. Several websites were obtained from search engines like ask.com, yahoo.com, msn.com, google.com, wikipedia and many other blogs. Several books and articles on e-learning were reviewed from various libraries that were accessible to the researcher. Through all these steps the researcher could find many studies which were directly or indirectly relevant to the area of present study and gave the researcher a strong base to carry out the present study.

2.1.0 STUDIES RELATED TO E-LEARNING READINESS, PRACTICES, STATUS AND ITS IMPLEMENTATION

Reddy et al. (**2001**) conducted a study on students experience with virtual campus. The objective of this survey study was to analyze the attitude of the learners towards resource-based learning and to critically examine the utilization of the resources provided by the university; and to suggest measures for improving the effectiveness of resource-based learning.

The questionnaire that was mainly structured with a few close-ended (objective type) and open-ended questions was sent to the students of various tele-centers. Out of 1266 learners, 443 (35%) have returned the filled in questionnaires. Around ¾ of the respondents replied positively. Majority (68%) of them felt that they could construct their own individual knowledge base; 60% of them liked the flexibility in study routes; 46% improved their study skills; 29% could think more; 28 % found it interesting and stimulating; 42% enjoyed the independence, and 29% liked the choice of reading.

However, 25% of the respondents answered in the negative. They did not very much enjoy resource-based learning mentioning that they needed more guidance on what to do and how to do; they also expressed that pursuing courses through VC found tiresome and time consuming and feel drowning in a sea of information.

Jamlan (2004) has conducted a study on "Faculty Opinions towards Introducing e-Learning at the University of Bahrain". To assess faculty opinions on e-learning, a questionnaire was sent to 30 faculty members of the University's College of Education to determine how they perceive e-learning, and how they might choose to integrate it into their everyday teaching activities.

Data was collected and analyzed by using descriptive statistics. Results indicate that faculty generally perceive e-learning as a positive force in helping students' achieve their learning objectives. Answers to this questionnaire indicated areas of weakness like specifically those baseline technological and human resource prerequisites that are necessary to support e-learning are not yet available at the University of Bahrain. Other baseline prerequisites were: staff training, well prepared online courses and learning materials, sufficient groundwork for the smooth transition from traditional modes of learning towards e-learning delivery, and the implementation of a more robust technological infrastructure to support all the technical aspects necessary to launch and sustain e-learning.

Hiroshi (2005) conducted a study titled "Questionnaire-based Evaluation of e-learning Program Operated in National Institute of Public Health" in Japan. For the sake of more development of the e-learning program in NIPH, monitoring by

questionnaires of all trainees was carried out in 2005. Number of subjects posted was 298 and the valid response rate was 72%.

The results were as follows: 1) A large number of trainees were key staff engaging in the works of public health, environmental hygiene and social welfare and they pointed the advantage of the e-learning program joinable at any time and at any place; 2) Sixty percent of trainees entered the e-learning site while off duty; 3) Most of trainees learned for the purpose of improving of their own skills and not as the result of orders from their superiors; 4) They had a sufficient internet technical environment for e-learning; 5) Seventy percent of trainees who had completed at least one course of this program were satisfied with this program; 6) Though the certificate from the courses were recognized only in few workplaces, trainees could utilize their experiences from this program in their work; 7) Fifty percent of trainees advised their co-workers to apply for this program.

Newhouse et.al (2006) undertook an exploratory project titled "supporting mobile education for pre-service teachers" to develop skills and experience in using digital technologies among teacher trainees to support their teaching in schools. An additional survey was given to students at the end of the semester to ascertain the effect of their experience with the technology. The students were required to rate statements from strongly disagree (1) to strongly agree (4).

The outcomes of the project were positive however, it was not clear whether mobile education is a preferred solution when considering the range of digital device options available. The results indicate that students felt the use of a laptop computer assisted them in their learning, by providing increased access to resources and helping them to be independent and better organized. The feeling that it enhanced communication with the lecturer or with other students was not strong.

Proctor & Burnett et.al (2006) carried out a study with the objective to study ICT integration and teachers' confidence in using ICT for teaching and learning in Queensland state schools. A tool based on the 4 point likert scale was used to carry out the study. Descriptive statistics like percentage was used to study the objectives of the study. Inferential statistics like Chi square tests, Multivariate analysis of variance (MANOVA), univariate analysis of variance (F-tests) were used to test the

relationship between gender and confidence level, unconfident and confident teachers etc.

Results from 929 teachers across all year levels and from 38 Queensland state schools indicated that female teachers (73% of the full time teachers in Queensland state schools in 2005) were significantly less confident than their male counterparts in using ICT with students for teaching and learning, and there is evidence of significant resistance to using ICT to align curriculum with new times and new technologies. The study reflected that urgent investigation in order to address the factors that currently constrain the use of ICT for teaching and learning need to be carried out.

Smart & Cappel (2006) carried out a study titled "Students' Perceptions of Online Learning: A Comparative Study". This study examined students' perceptions of integrating online components in two undergraduate business courses where students completed online learning modules prior to class discussion.

The results indicate that participants in an elective course rated the online modules significantly better than those in a required course. Overall, participants in the elective course rated the online modules marginally positive while those in the required course rated them marginally negative. On the basis of the outcomes they suggested that instructors should be selective in the way they integrate online units into traditional, classroom-delivered courses. This integration should be carefully planned based on learner characteristics, course content, and the learning context. For most participants of the study (83 percent), this was their first experience completing an online learning activity or module. In addition, the largest dissatisfaction factor reported among the participants was the time required to complete the online modules. Future research is encouraged to explore: (1) how previous experience with technology and online learning affects students' attitudes towards and success with e-learning; and (2) the effects of interspersing online units that are considerably shorter in length into the traditional classroom model.

Alaa (2007) conducted a study to find out the readiness of faculty members of Egyptian University to develop and implement e-learning. In this study, a survey was developed, validated, and carried out to examine the readiness of academic staff at South Valley University in Egypt to develop and implement e-learning in their

teaching. The survey was also used to determine how support systems and procedures for staff could be further developed to enable the University to make the most effective and appropriate use of learning technologies to enhance the student and staff experience.

The results revealed that the majority of respondents, who came from a wide range of faculties across the University, considered themselves to have limited competence and little experience in e-learning. However, they perceived e-learning to be useful in general and to have the potential to support their teaching-related activities in particular.

Buenafe et al. (2007) undertook a project titled "The Provincial Business Education Project". The key objective of the project was to determine if e-learning could address the challenges associated with reaching students outside of Phnom Penh. Under this project, two 'semesters' of online business courses were delivered to students in five provinces. Two hundred seventy two provincial Cambodian students took advantage of one or more of the five online courses developed under the project to improve their knowledge of key business topics and over 75 percent of these individuals scored sufficiently high on exams and assignments to receive accredited certification.

According to the researcher, the results strongly suggested that e-Learning can be a successful approach to providing quality higher education to underserved provincial students in Cambodia, and that this approach can open new opportunities for educational institutions to reach out to underserved women and men in Cambodia via online courses.

Cheolil (2007) conducted a study titled "The Current Status and Future Prospects of Corporate e-Learning in Korea" This study argues that the main cause of this heightened interest in corporate e-Learning in Korea was not that companies needed to provide high-quality training programs through the Internet, but rather that the government took initiative to transform the state into an information-based society. The policies for quantitative growth with minimum levels of quality and uniformity have been dominant and have resulted in the lack of diverse e-Learning types for authentic practices in workplaces.

The study suggests that in order to cope with the new competency requirements of employees, corporate e-Learning should be guided both by governmental support and by company initiative.

Hasan (2007) conducted a study "Critical Success Factors for e-Learning Acceptance: Confirmatory Factor Models". This study specifies e-learning critical success factors (CSFs) as perceived by university students. The published e-learning critical success factors were surveyed and grouped into 4 categories namely, instructor, student, information technology, and university support. Each category included several measures. The categorization was tested by surveying 538 university students.

The results revealed 8 categories of e-learning CSFs, each included several critical e-learning acceptance and success measures. The level of criticality of each measure was represented by its validity coefficient. Confirmatory factor modeling approach was used to assess the criticality of the measures included in each CSF category.

Jennifer et al. (2007) conducted a study on "e-Learning: The Student Experience" The study attempted to draw an in-depth qualitative comments from students regarding an e-learning module on an M.Sc. in Information Technologies and Management, so as to develop a picture of their perspective on the experience. Questionnaires that yielded some basic quantitative data and a rich seam of qualitative data were administered. General questions on satisfaction and dissatisfaction identified the criteria that student used in evaluation, while specific questions of aspects of the module generated some insights into the student learning process. The criteria used by students when expressing satisfaction were: synergy between theory and practice; specific subject themes; discussion forums and other student interaction; and, other learning support. The themes that were associated with dissatisfaction included: robustness and usability of platform; access to resources such as, articles and books; currency of study materials; and, student work scheduling. Aspects of the student learning experience that should inform the development of e-learning included: each student engages differently; discussion threads and interaction are appreciated, but students were unsure in making contributions; and, expectations about the tutor's role in e-learning.

Leem et al. (2007) conducted a study titled "The Current Status of e-Learning and Strategies to Enhance Educational Competitiveness in Korean Higher Education". The purpose of this study was to examine the current status of e-Learning in Korean higher education and to find ways to encourage the further use and development of e-Learning systems that aim to enhance Korea's academic competitiveness. A total of 201 universities in Korea (27 national and public, 163 private, and 11 national universities of education) were examined in this study. The survey questionnaire was developed to study the objectives of the research and it was sent via email or mail, addressing to the officer or staff person in charge of e-Learning. Responses were collected via email, fax, or mail.

Findings from this study found that both teachers and learners alike, lacked meaningful support systems and opportunities to actively participate in e-Learning programs. Although such lack of support was found to be endemic, such lack of support and opportunity was found to be more acute in private universities, private colleges, universities of education, than mid-sized, small-sized, and provincial universities and colleges. Except for a few mid and small-sized universities and colleges, most large universities and colleges were equipped with technical support such as infrastructure and operational platforms. These same schools, however, did not provide institutional support, nor did they employ appropriate policies needed to further the quality and enhancement of e-Learning offerings. Also, there was no meaningful link found between schools and industry, nor was there adequate financial support in place for the implementation of e-Learning systems, simply because many universities failed to allocate sufficient funding for e-Learning. In conclusion, the strategies for enhancing university competitiveness through e-Learning were given as follows: 1) establishing support strategies according to the types of universities; 2) developing quality assurance systems for e-Learning; 3) enhancing support systems for professors and learners; 4) developing knowledge sharing systems between schools and industry; 5) enhancing international collaboration for e-Learning; and 6) developing and supporting e-communities of knowledge for research and education.

Nafukho & Muyia (2007) conducted a study "The Place of E-Learning in Africa's Institutions of Higher Learning". The study seeks to accomplish four objectives. The first is to examine the need for e-learning in Africa's institutions of higher learning.

The second is to discuss the policy, institutional, pedagogical, copyright, and quality assurance issues that need to be addressed. The third is to critically examine the advantages and disadvantages of e-learning in African universities. The fourth is to provide a practical partnership model for design and successful delivery of e-learning programmes. To achieve these objectives, a critical analysis of relevant literature and case studies was conducted. The literature search included computerized search of accessible and available material on e-learning in Africa and world over, manual search of existing literature, and communication with key subject matter experts to locate published and unpublished studies.

The results of the study showed that e-learning has a future in Africa's universities and that there is need to build e-learning programmes based on genuine partnerships from other successful partners within and outside Africa.

Yair (2007) conducted a study to compare the dropout rate and persistence in E-Learning courses. This study explores two main constructs: (1) academic locus of control; and, (2) students' satisfaction with e-learning.

Results show that students' satisfaction with e-learning was a key indicator in students' decision to dropout from e-learning courses. Moreover, dropout students (non-completers) reported to have significantly lower satisfaction with e-learning than students who successfully completed (completers or persistent students) the same e-learning courses. Additionally, results of this study showed that the academic locus of control appears to have no impact on students' decision to drop from e-learning courses.

Unwin (2008) conducted a study titled "survey of e-learning in Africa" and published a report summarizing the information about the status of e-learning in Africa, based on 316 responses to a questionnaire circulated in 2007 to people on the e-learning in Africa database. Respondents to the survey were from 42 different African countries, of those who responded to questions about e-learning and blended learning, 72% said they used e-learning (although this only represented 48% of all respondents) and 78% used blended learning approaches. The three main conclusions of the study are 1. there is a wide variety of different e-learning practices in Africa; 2. e-learning is still

very much in its infancy across most of the continent; and 3. there is much enthusiasm amongst respondents for developing the potential of e-learning in their countries.

However, respondents also identified key constraints in seeking to implement and develop e-learning strategies and practices, including the lack of infrastructure (particularly connectivity, and especially in rural areas), the need for appropriate training and capacity development, a lack of relevant digital content, and the cost of implementation. Majority of uses for e-learning were in the higher educational and vocational fields. 68% of respondents remarked that they thought that e-learning is, or could be, very valuable for their learning and teaching needs. The study also collected many suggestions from the respondents on how to make e-learning effective. Many respondents were unable to say which Learning Management Systems (LMS) they were using. Majority of those claiming to be using e-learning are not using an integrated formal learning management system at all, but are rather using basic digital technologies to enhance their learning.

With respect to specific e-learning practices and methods that they used in their teaching/learning, the dominant practices seemed to be the use of the Internet, e-mail, CDs, the Web, video, chat, and presentations, Discussion forums were only mentioned by 3% of respondents, the use of digital libraries, messenger, and only 1 respondent specifically mentioned educational games. The study gave a conclusion saying that there is still not a particularly high level of sophistication in the usage of e-learning among the majority of the respondents.

Al-Fadhli, Salah (2009) conducted a survey to study the instructors' perceptions of E-Learning in an Arab Country. The purpose of this research was to study the pedagogical impact of e-learning on higher education, specifically the university-level educational institutions within an Arab university setting.

The study has come out with a finding that e-learning has an important role in the enhancement and development of students' critical thinking. As a result, if academic institutions wish to develop e-learning initiatives, they must be receptive to implementing effective strategies to support such a beneficial and innovative initiative for the benefit of student learning.

Fetaji & Fetaji (2009) conducted a research titled "e-Learning Indicators"**.** The main objective of this research was to develop possible approaches to systematic planning, development and evaluation of e-learning initiatives and their corresponding e-learning projects.

The study identified 18 factors as indicators of e-learning and used a questionnaire consisting of 23 questions related to these 18 factors. These factors were (1) learner educational background (2) computing skills level (3) type of learners, (4) their learning style and multiple intelligence (5) obstacles they face in e-learning (e-learning barriers) (6) attention (7) content (suitability, format preferences), (8) instructional desing, (9) organizational specifics, (10) preferences of e-learning logistics (11) preferences of e-learning design (12) technical capabilities available to respondents (13) collaboration (14) accessibility available to respondents (15) motivation (16) attitudes and interest and (17) performance-self-efficacy (the learner sense their effectiveness in e-learning environment) (18) learning outcomes. For the purpose of the study, questionnaires, surveys, focus groups, usability testing and other software testing groups were used.

Kaur & Abas (2009) conducted a study on "An Assessment of e-Learning Readiness at the Open University Malaysia". It was a study to determine the e-readiness of Open University Malaysia receivers and enablers. Data were gathered from a sample of 93 receivers and 35 enablers with the use of the e-learning Readiness Research Tool. The 60-item questionnaire consisted of two parts: 16 items focused on gathering demographic data and 44 items on exploring eight constructs, namely, learner, management, personnel, content, technical, environmental, cultural and financial readiness.

It was found that there was a greater degree of technological readiness in comparison to academic or cultural volition. Second, receivers were more positive about their own level of readiness in comparison to enablers' perception of learner readiness. Third, there appeared to be a preference for non-electronic channels of communication and modes of learning in comparison to learning through e-networks. Finally, many individuals were concerned about the status of qualifications attained through e-learning.

Kay. M & Seamus. F (2009) developed a paper titled "Strategies for Embedding e-Learning in Traditional Universities: Drivers and Barriers". In the paper they tried to address the question of "how can e-learning be embedded in traditional universities so that it contributes to the transformation of the university?". For the paper they tried to examine e-learning strategies in higher education, locating the institutional context within the broader framework of national and international policy drivers which link e-learning with the achievement of strategic goals such as widening access to lifelong learning, and upskilling for the knowledge and information society. The focus was on traditional universities i.e. universities whose main form of teaching is on-campus and face-to-face, rather than on open and distance teaching universities, which face different strategic issues in implementing e-learning.

In the paper they expressed the following views: 1. Realisation of the vision of ubiquitous and lifelong access to higher education requires a fully articulated e-learning strategy aims to have a "transformative" rather than just a "sustaining" effect on teaching functions carried out in traditional universities, 2. rather than just facilitating universities to improve their teaching, e-learning should transform how universities currently teach, 3. to achieve this transformation, universities will have to introduce strategies and policies which implement flexible academic frameworks, innovative pedagogical approaches, new forms of assessments, cross-institutional accreditation and credit transfer agreements, institutional collaboration in development and delivery, and, most crucially, commitment to equivalence of access for students on and off-campus. The insights in this paper are drawn from an action research case study involving both qualitative and quantitative approaches, utilising interviews, surveys and focus groups with stakeholders, in addition to comparative research on international best practice.

This study examined the drivers and barriers which increase or decrease motivation to engage in e-learning, and provided some insights into the challenges of embedding e-learning in higher education. While recognizing the desirability of reaching out to new students and engaging in innovative pedagogical approaches, many academic staff continues to prefer traditional lectures, and are skeptical about the potential for student learning in online settings. Extrinsic factors in terms of lack of time and support serve to decrease motivation and there are also fears of loss of academic

control to central administration. The paper concludes with some observations on how university e-learning strategies must address staff concerns through capacity building, awareness raising and the establishment of effective support structures for embedding e-learning.

Lee, Chai and Yen, Poh (2009) conducted a study titled "E-learning in Malaysia: Success Factors in Implementing E-learning Program". The main objective of the study was to identify successful factors in implementing an e-learning program. With the help of the existing literature the researcher enlisted the successful factors in implementing an e-learning program. These factors include program content, web page accessibility, learners' participation and involvement, web site security and support, institution commitment, interactive learning environment, instructor competency, and presentation and design. All these factors were tested together with other related criteria which are important for e-learning program implementation. The samples were collected based on quantitative methods, specifically, self-administrated questionnaires. All the criterions were tested to see if they were important in an e-learning program implementation.

All the criteria were found to be important to the respondents. Five criteria (program content, Web page accessibility, learner's participation and involvement, Web site security and support, and institution commitment) had a mean score of more than 4.0 while the rest were below 4.0 (interactive learning environment, instructor competency, and presentation and design).

2.2.0 STUDIES RELATED TO E-LEARNING TOOLS

Agboola (1999) conducted a study on "Assessing the Awareness and Perceptions of Academic Staff in Using E-learning Tools for Instructional Delivery in a Post-Secondary Institution: A Case Study". The study aimed at investigating the preparedness of the academic lecturers for the introduction of e-learning at the International Islamic University Malaysia. According to the researcher "e-learning is where the knowledge is delivered via electronic media (the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, CD-ROM)." The study employed two types of instruments. The first was "Lecturer E-learning Perceptual Survey Questionnaire (LEPSQ)" with 35 items on a 7-point Likert scale ranging from

"very strongly disagree" to "very strongly agreed", used for collecting data from a proportional stratified random sample of 324 academic staff of the International Islamic University Malaysia. Another was the "E-Learning Readiness Survey" questionnaire, with 20 items based on short answers that were designed to collect data from 26 Deans or Heads of department in each department of the University.

The collected data was analyzed qualitatively based on the analytic procedures. The researcher applied correlation analysis, ANOVA and linear regression to test for the interactions among the variables of the study. The response rate was 98% totaling 324 respondents. Initial findings revealed that e-learning training and e-learning confidence were statistically significant predictors of both e-learning adoption and e-learning readiness.

The study also revealed that academic staff was making progress, but more efforts would be worthwhile to overcome some hindrances, which were related to infrastructure and lack of personal capability. According to the researcher, e-learning confidence and e-learning training have a strong influence on both e-learning adoption and e-learning readiness when compared to the influence of the gender on e-learning adoption and e-learning readiness.

Hermann, A. (2001) has undertaken a meta-analysis review to study about the "Web-Based Instruction and Learning: What Do We Know from Experimental Research?"This narrative review examined the published findings from experimental studies dealing with web-based instruction (WBI) and measured learning effects. Particularly, the review divided relevant research into media comparison studies, into studies which tested conditions for successful WBI learning, and into studies focused on individual differences that exist in learner behavior to WBI. Results of the analyzed studies showed that WBI learning is at least as effective as traditional classroom learning, although there are many different factors contributing to these findings.

It was found that, more than new mechanism of web-based learning, traditionally known factors were tested to influence WBI learning. Also, conceptual and methodological shortcomings of the reviewed studies limit the generalizability of the findings in the field of WBI research.

Hong, Lai and Holton (2003) conducted a study to know Students' Satisfaction and Perceived Learning with a Web-based Course. The study explored students' responses and reactions to a Web-based tertiary statistics course supporting problem-based learning. The study was undertaken among postgraduate students in a Malaysian university.

The findings revealed that the majority of the students were satisfied with their learning experience and achieved comparable learning outcomes to students in the face-to-face version of the course. Students appreciated the flexibility of anytime, anywhere learning. Majority of the students were motivated to learn and had adequate technical support to complete the course. Improvement in computer skills was an incidental learning outcome from the course. The student-student and student-teacher communication was satisfactory but a few students felt isolated learning in the Web environment. These students expressed a need for some face-to-face lectures. While majority of the students saw value in learning in a problem-based setting, around a third of the students expressed no opinion on, or were dissatisfied with, the problem-based environment. They were satisfied with the group facilitators and learning materials but were unhappy with the group dynamics. Some of the students felt unable to contribute to or learn from the asynchronous Web-based conferences using problem-based approach. Some of the students were not punctual and were not prepared to take part in the Web-based conferences.

The findings have suggested a need to explicitly design an organising strategy in the asynchronous Web-based conferences using problem-based approach to aid students in completing the problem-based learning process.

Munoz and Duzer (2005) carried out a study titled "A Comparison of Satisfaction with Online Teaching and Learning Tools". This study compared the user experience between the leading proprietary solution, Blackboard (an e-learning tool), and the leading open source solution, Moodle (another e-learning tool). They established a control group that only used the proprietary solution and two study groups, a faculty group and a student group that used the open source solution, but had previous experience with the proprietary solution. The researchers also used online surveys to compare the user experience of the basic functionality of each system such as communication tools, student-student interaction tools, student-instructor interaction

tools. The study was conducted at California State University Monterey Bay and included five upper division courses with the learning management systems used as an adjunct to a traditional face-to-face delivery modality. They developed a questionnaire which consisted of the 20 questions to which the participant has to respond on a five-point scale. The survey came with the finding that most of the participants preferred moodle to black board.

2.3.0 STUDIES RELATED TO COMPARISON OF ELECTRONIC MODE AND FACE TO FACE MODE

Jeffrey. V (2000) This research asked whether there was a difference in student outcomes in courses taught in both Internet-based and campus-based formats. Thirty-four courses were offered in both Internet-based and campus-based formats at Nova Southeastern University (Florida) during fall term 1999, enrolling 1,613 undergraduate and graduate students.

Outcomes were evaluated on two dimensions: successful grades (D+ or better) and course completion rates (completers vs. non completers). Statistical analysis revealed that the campus-based format was the most successful for undergraduates, with grades 11 to 13 percent higher and completion rates 14 percent higher.

However, undergraduates' final grades were not significantly different in the Internet-based or campus-based formats. Graduate students performed better in Internet-based than in campus-based sections, for grades overall, for completion rates, and for final grades. The study found that both undergraduate and graduate students had high rates of success (greater than 75 percent for grades) and completion (greater than 80 percent).

Ladyshewsky (2004) conducted a study of comparing E-learning with face to face in terms of differences in the academic achievement of postgraduate business students. The objective of the study was to examine differences in electronic learning (EL) and face to face (F2F) learning. This study examined 1401 students performance (final grade) in nine units offered in both F2F and EL mode over the course of two years. Statistics like t-test, analysis of variance were used to examine various aspects of the study. The effect of age and gender was also considered.

Students, on average, did better in the EL mode although at the individual unit level there were minimal if any significant differences. Age and gender did not appear to moderate performance in any way except for those students under 33 who did better, on average, in the EL mode.

Benoit. William, Benoit. Pam and others (2006) conducted Meta-Analysis of the Effects of Traditional versus Web-Assisted Instruction on Learning and Student Satisfaction. They tried to report the preliminary findings for an on-going project investigating the effects of traditional versus web-assisted instruction through meta-analysis. They collected and meta-analyzed the results of a group of studies on the impact of web-assisted instruction on learning and student satisfaction.

Results of the sample of studies collected indicate that web-assisted instruction is not associated with significantly more learning than traditional instruction in these studies. On the other hand, student satisfaction is significantly lower for web-assisted than traditional instruction. The effect sizes for both variables were heterogeneous.

IGNOU (2008) is presently undertaking a research project to map the status and critical issues of current e-learning services in India against the current implementation of quality assurance methodologies for e-learning in Canada, Australia and Europe (at least three countries including Germany). The outcome of the project is expected to be a study on "Quality in e-learning services in India and e-learning quality guidelines" which would be of great use for the policy makers, e-learning services providers and quality assurance institutions in India. The study is considering to take into account the existing and upcoming national policies on "IT and Education" in India. The basic objective of the study would be to develop a study on e-learning services in India. Further details about the project can be found at http://www.ignou.ac.in/elearningservices/Home.htm.

2.4.0 SUMMARY OF THE REVIEW

The review of the literature strongly helped in supporting the views expressed in the first chapter. The studies reviewed can be categorized under following three categories:

- Studies related to e-learning readiness, practices, status and its implementation.

- Studies related to E-learning tools
- Studies related to comparison of electronic mode and face to face mode.

2.4.1 STUDIES RELATED TO E-LEARNING READINESS, PRACTICES, STATUS AND ITS IMPLEMENTATION

The studies carried out by Reddy at al (2001), Jamlan (2004), Hiroshi (2005), C. Paul Newhouse et.al (2006), Proctor and Burnett (2006), Smart and Cappel (2006), Buenafe et al. (2007), Hasan, Nafukho & Muyia (2007), Leem et al. (2007), Cheolil (2007), Jennifer et al. (2007), Alaa (2007), Yair (2007), Unwin (2008), Lee et.al (2009), Kaur and Abas (2009), Al-Fadhli (2009), Fetaji and Fetaji (2009), Kay and Seamus (2009) fall in this category. All the studies were survey studies and mostly questionnaire was used in all these studies. Apart from the questionnaire, some researchers also used focus groups, interviews, case studies etc to collect the data for their studies. The number of items included in these questionnaires ranged from 23 items to 60 items. The questionnaires consisted of both closed and open ended questions. In a study carried out in Africa, critical analysis of relevant literature and case studies was used as a tool for data collection. Most of the questionnaires contained questions related to various aspects like advantages of e-learning, effectiveness of e-learning, role of e-learning in improving the skills, satisfaction and dissatisfaction of the stake holders with reference to e-learning etc.

The positive findings of the studies are as follows:

- E-learning helps in construction of knowledge
- Its flexibility is its biggest advantage
- It provides independence to the learners
- E-learning proved to be a powerful tool in reaching the undeserved people.
- The studies also say that the factors for the success of e-learning can be studied under categories like instructor, students, information technology, university support etc.
- Most of the staff have positive opinion towards e-learning and believe that it has the potential to support their teaching related activities.
- One of the study even reveled that e-learning can play an important role in enhancement and development of students critical thinking.

- The study carried out by Fetaji (2009) suggested 18 factors as proper e-learning indicators. These factors are: These factors were (1) learner educational background (2) computing skills level (3) type of learners, (4) their learning style and multiple intelligence (5) obstacles they face in e-learning (e-learning barriers) (6) attention (7) content (suitability, format preferences), (8) instructional desing, (9) organizational specifics, (10) preferences of e-learning logistics (11) preferences of e-learning design (12) technical capabilities available to respondents (13) collaboration (14) accessibility available to respondents (15) motivation (16) attitudes and interest and (17) performance-self-efficacy (the learner sense their effectiveness in e-learning environment) (18) learning outcomes.

Some of the negative aspects that came out from the studies are:

- The time allotted to complete the modules was very less
- Robustness and usability of platform is a factor for dissatisfaction.
- In a study carried out in Korea, it was revealed that institutions have lack of meaningful support system and opportunities to participate in e-learning nor did they have proper institutional support or policies needed to improve the quality of e-learning.
- Staff feels that they have limited competence and little experience in e-learning.
- Factors like lack of infrastructure, lack of digital content, cost of implementation, lack of proper training etc acts as hindering factors in e-learning development.

Suggestions revealed in these studies are

- Technological and human resource pre-requisite supports should improve
- Staff training must be provided
- The integration of e-learning should be carefully planned based on learners characteristics, course content and learning content.
- Stake holders' satisfaction especially teachers and students play an important role in success of e-learning.
- E-learning can play an important role in providing lifelong learning.

- Universities will have to introduce strategies and policies which implement flexible academic frameworks, innovative pedagogical approaches, new forms of assessments.

2.4.2 STUDIES RELATED TO E-LEARNING TOOLS

Studies conducted by Agboola (1999), Hermann A (2001), Hong, Munoz and Duzer(2005) fall under this category. All these studies used survey questionnaire. In the study conducted by Munoz(2005) and others, they used online survey questionnaire. The number of items in these questionnaires ranged from 20 items to 35 items. They used rating scale ranging from 4 point scale to 7 point scale. The components in the questionnaires included e-learning confidence, e-learning training, facilitators' support, quality of learning material, technical issues, participants interaction etc. Descriptive statistics were mostly used in these studies, apart from this, in some of the studies correlation analysis, ANOVA, linear regression were also used to analyze the data. The major finding from these studies is that e-learning confidence and e-learning training have strong influence on e-learning adoption and readiness.

2.4.3 STUDIES RELATED TO COMPARISON OF ELECTRONIC MODE AND FACE TO FACE MODE

The studies conducted by Jeffrey. V, Ladyshewsky, Benoit and other fall under this category. These studies were also survey studies. Achievement test, collection of earlier conducted studies (meta analysis) were used as a tool for the study. From these three studies, it was observed that surveys could not come out with a strong finding on which mode is more effective. Also the difference found between these modes is minimal and so clear findings could not come.

2.5.0 IMPLICATIONS OF THE REVIEW OF RELATED LITERATURE FOR THE PRESENT STUDY

The review of related literature proved to be very useful to the researcher as it provided the researcher an in-depth knowledge and understanding about various

aspects of e-learning. Researcher could get an idea about the factors that play an important role in e-learning, about the factors that determine the success of e-learning, about the nature and type of the study that can used to pursue the current research. The studies also provided a clear direction about the type of the tool to be used, components to be included in the tool and also about the statistics that can be used to analyze the collected data. Studies conducted by Fetaji (2009), Hasan(2007), Jamalan (2004) etc. helped the researcher in providing guidance on the factors that should be studied. Thus the review of related literature provided a strong base and helped the researcher a lot. The studies conducted by Reddy et al. (2001), Jennifer et al. (2007) reveled that the real effectiveness of e-learning can be better judged by its various stake holders like, students, module developers etc. Hence, the investigator feels that there is a need to conduct research studies to study the experiences of various stake holders involved in e-learning. Further, the studies conducted by Leem(2007), Cheolil (2007) reveal that there is a need to conduct studies that focus on the status of e-learning in educational institutions and business organizations. These studies also bring front the point that, in order to measure the success of e-learning programmes and also to enhance the educational competitiveness of education system there is a need for carrying out more research studies on how e-learning is adopted in educational institutions and organizations. Further, study conducted by Leem. et.al, (2007) reveals that the tools used in the studies can be sent via e-mail and the responses can be collected via e-mail, fax, mails etc. It is also clear from the review that majority of the studies adopted normative- survey research method and Teachers, students, Instructors, subject experts etc constituted the sample of most of the studies. Majority of the researchers used questionnaires, opinionnaires and interview schedule as tools for collection of the data. Further, the studies also reveal that majority of the studies in the field of e-learning were conducted outside India in various other countries like Cambodia, South Africa, Korea, Egypt etc. Hence, in the present scenario where e-learning is becoming an emerging trend in our country investigator feels a strong need for the present study.

CHAPTER III

METHODOLOGY

3.0.0 INTRODUCTION

3.1.0 METHODOLOGY

3.1.1 POPULATION

3.1.2 SAMPLE

3.1.3 TOOLS FOR DATA COLLECTION AND ITS CONSTRUCTION

3.1.4 PROCEDURE OF DATA COLLECTION

3.1.5 DATA ANALYSIS

CHAPTER III
METHODOLOGY

3.0.0 INTRODUCTION

Descriptive studies often seek information that is not already available and hence, each and every step in this type of study right from identifying the topic to analyzing and interpreting the findings are very crucial and equally important. The present study "A study of E-learning in Gujarat" is a descriptive study where an attempt was made to study the scenario of e-learning practices with reference to teaching-learning, training, evaluation etc. in higher educational institutions of Gujarat. In this descriptive study, an attempt was made to assess the attitudes, opinions, practices etc. with reference to the area of study.

The present survey was designed to collect the data from the e-learning practitioners in the field of higher education of Gujarat State. In the present research, an attempt was made to study the e-learning practices of the institutions with reference to various aspects like the forms of e-learning used; the problems faced by them in using e-learning; views of the participants regarding the e-learning practices being adopted in their institutions; the views of stakeholders regarding the concept of e-learning, its advantages, its disadvantages etc.

3.1.0 METHODOLOGY

As a part of this survey research the researcher made an attempt to study the e-learning practices of the institutions with references to various aspects like, the forms of e-learning used; the problems faced by them in using e-learning; opinion of the participants regarding the e-learning practices being adopted in their institutions, their opinion regarding the advantages and disadvantages of e-learning, their opinion regarding the concept of e-learning, and other virtual initiatives etc. The methodology meant for survey research was adopted in the present study which is given as under.

3.1.1 POPULATION

The population for the present study consisted of all the faculties, students and lab administrators of higher educational institutions of Gujarat which are adopting e-

learning practices (blended or fully online) in teaching-learning, training, evaluation etc.

3.1.2 SAMPLE

An extensive search was made on the internet to obtain the list of higher education institutions in Gujarat. All those educational institutions which have there websites were contacted through e-mail for the purpose of the study. On receiving positive responses from them, an e-mail explaining the purpose of the study and requesting them to fill up the e-tool was sent to faculty, students and laboratory administrators. Thus, the request e-mail was sent to around 10 higher education institutions and to all the faculties and students whose e-mail IDs were available on the college website. Apart from this, the researcher personally visited 12 higher education institutions to study their practices and collected data from 22 colleges.

In the institutions which had Wi-Fi connectivity, the physical laboratory did not exist. However, in the institutions where there were physical laboratories, an attempt was made to collect data from laboratory administrators also.

An attempt was also made to contact the institutions which are using fully online mode of e-learning for providing a few of its courses. Inspite of many attempts as the researcher could not get any response from them, a detailed study of their websites was made and an attempt was to made report the gist of their e-learning practices. In carrying out this detailed study, researcher selected 10 such institutions that have credibility in terms of higher education, clienteles, popularity etc.

Thus, in the present study, the sample consists of 83 faculties, 153 students and 12 lab administrators belonging to 22 higher education institutions (i.e., 35 colleges) and 10 other institutions that are using fully online mode of e-learning for providing few of its courses. In this way, an attempt was made to ensure that the sample for the study was collected from all parts of Gujarat and included the institutions that use either blended approach of e-learning or fully online approach of e-learning.

The following diagram gives a clear view about the sample of the study

Figure 3.1: Sample of the study
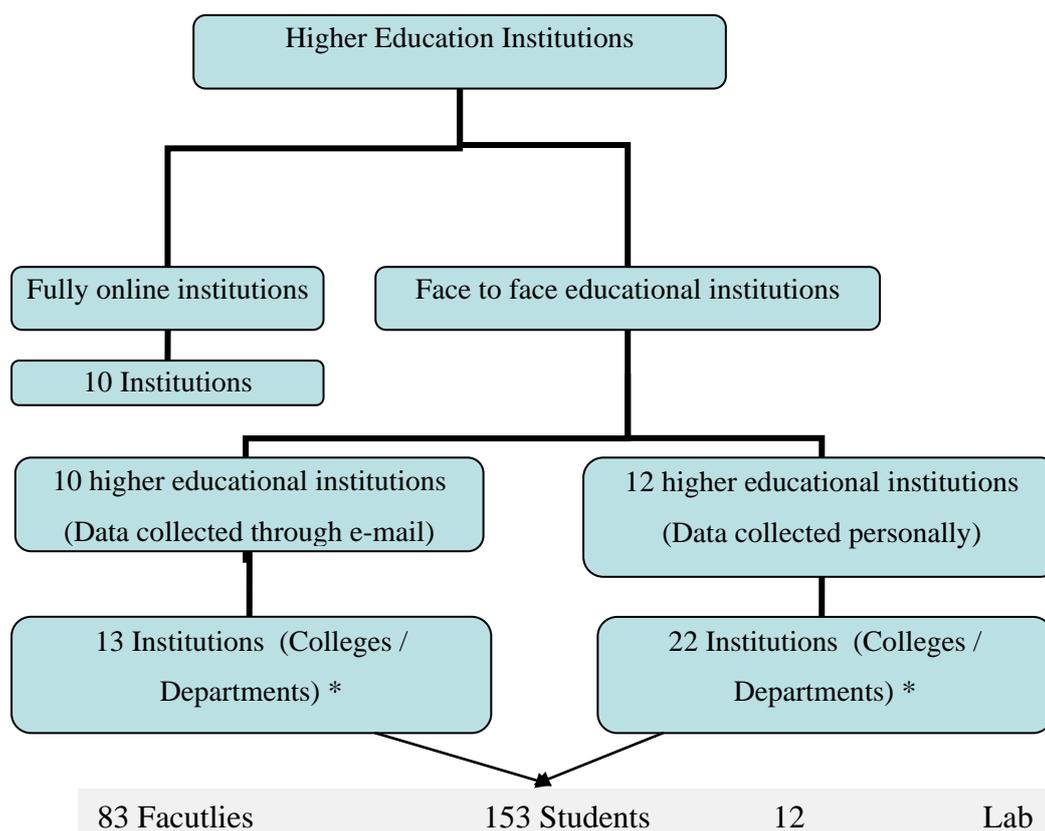
* A detailed list of institutions from which the data was collected is given in appendix IV.

3.1.3 TOOLS FOR DATA COLLECTION AND ITS CONSTRUCTION

Keeping in the mind the objectives of the study, an extensive search was done in the internet. Studies carried out in countries like UK, Africa, Europe, India in the area of e-learning provided both the background information and foundation information which is required to carry out this research. Internet in the form of various search engines was a great source of information to the researcher. All the reference books and numerous internet articles to mine through helped the researcher in the development of appropriate tools for the study. As the researcher wanted to collect data physically and online, two versions of the same questionnaire i.e., paper based and online based were developed (The e-version of the tools is attached with the thesis in form of a CD)

The first draft of the tool was shown/mailed to subject experts requesting for their suggestions/modifications if any. The following were some of the suggestions:

- To include the e-mail id of the researcher (at least two) in the e-tool.
- As e-learning is a very broad term, a suggestion has come up to include the operational definition of term e-learning in the tool.
- All the questions in which participants can select more than one option should be given the bold style, while in e-tool a different font colour can be used to highlight such questions

After making the changes in the tool as per the suggestions given by the experts, the tool was used for data collection. To ensure high response in a limited time frame, respondents for the paper-based questionnaire were given a minimum of 2 days and maximum of one week time to return the completed questionnaire. In case of online collection, a continuous reminder was sent to the participants to remind them about the filling of the questionnaire. Researcher also ensured to send a thanks letter to all those people who responded to the study either by filling the questionnaire or by giving suggestions or by giving the other contact persons email ids.

Separate tools were used for students, faculty and lab administrators. However, some items in the tool were common among students and faculty and among faculty and lab administrators. The tools developed contained a combination of items like Yes/No, rating scale items etc.

The tool developed for the students consisted of 20 questions. The questionnaire contained major aspects like:

- **Computer and Internet abilities of students**: This section contained questions related to students comfort in using computers, their hours of working on computers, their expertise in using internet etc.
- **Forms of e-learning and various e-learning practices**: This section contained questions related to the forms of e-learning being used in the institution and also the information regarding various e-practices that are being used in the institution.
- **Students' opinion regarding the e-learning practices being adopted**: Under this section, the researcher tried to study about the scenario of e-learning practices like how often the content is updated, how often students logon to intranet, do the

students get guidance with respect to these practices etc. An attempt was also made in this section to find out the opinion of the students regarding the e-learning practices being adopted at the institution.

- **Concept of e-learning**: Through this section the researcher tried to study the students' opinion regarding e-learning in general, its advantages and dis-advantages.

- **Future scope of e-learning**: Through this section the researcher tried to find out answers to the questions like whether the students want their institutional practices to be shared with other educational institutions and industry and if yes, on what basis they want this to be done.

The questionnaire developed for the faculty consisted of 29 questions and it covered following aspects:

- **Computer and Internet facility:** This section contained questions related to students comfort in using computers, their hours of working on computers, their expertise in using internet etc.

- **Forms of e-learning and various e-learning practices:** This section contained questions related to the forms of e-learning being used in the institution and also the information regarding various e-practices that are being used in the institution.

- **Opinion regarding the e-learning practices being adopted at the institution:** Under this section, the researcher tried to study about the programmes that are using e-learning practices, status of using these practices (i.e., mandatory/optional/ etc), training given to the staff for this purpose, points to be kept in mind while developing these modules etc. An attempt was also made in this section to find out 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.

- **Familiarity with e-learning technologies:** The faculties' familiarity with respect to various e-learning technologies and their self rating with respect to e-learning technologies.

- **Concept of e-learning:** Through this section the researcher tried to study the students' opinion regarding e-learning in general, its advantages and dis-advantages.

- **Future scope of e-learning :** Through this section the researcher tried to find out answers to the questions like whether the faculties want their e-learning institutional

practices to be shared with other educational institutions and industry and if yes, on what basis they want this to be done, barriers in adopting e-learning practices.

The questionnaire developed for the lab administrators contained utmost number of items i.e., 34 items. The tools tried to cover various aspects like:

- **Status of Computer lab:** This section contained questions to acquire information about the various facilities available in the computer lab like number of computers, type and speed of internet connection, type of network and its security etc.

- **E-learning practices being adopted and LA's opinion regarding them**: Under this section, the researcher tried to study about the programes that are using e-learning practices, status of using these practices (i.e., mandatory/optional/ etc), training given to the staff for this purpose, points to be kept in mind while developing these modules etc. An attempt was also made in this section to know their opinion regarding these practices.

- **Concept of e-learning and familiarity with various e-learning technologies:** Through this section the researcher tried to study the opinion of laboratory administrators regarding e-learning in general, its advantages and disadvantages. Laboratory administrators familiarity with respect to various e-learning technologies and their self rating with respect to e-learning technologies is also included in this section.

- **Future scope of e-learning:** Through this section the researcher tried to find out answers to the questions like whether the faculties want their e-learning institutional practices to be shared with other educational institutions and industry and if yes, on what basis they want this to be done etc.

The developed tools were tried out with five students, five faculties and two laboratory assistants. On the basis of their suggestions and easiness of attempting those tools, the modifications were done with the tools and in this process the final tool was developed.

3.1.4 PROCEDURE OF DATA COLLECTION

A list of higher education colleges in Gujarat was acquired through internet and the colleges which did not have their website were excluded from the study. A request letter informing about the nature of the study and also requesting the permission for

data collection was sent to the heads of colleges of those higher educational institutions which were having their functional website. Where ever, the email ids of faculty and students were available on institutions' website, a personal letter was sent to faculty and students requesting them to fill up the questionnaire.

Apart from this, researcher also acquired permission from few institutions for collecting the data personally. Researcher personally visited such institutions and observed their e-learning practices and also collected the data. Thus the data was collected personally from 12 higher education institutions (22 colleges & departments) and through e-mail from 10 higher education institutions (13 colleges & departments).

In case of institutions offering fully online courses, as mentioned earlier, as the researcher could not get any response from those institutions, an attempt was made to carry out a detailed study of their websites. In carrying out this detailed study, researcher selected 10 such institutions that have credibility in terms of higher education, clienteles, popularity etc.

Thus, the data was collected by the researcher for a period of one year from 2009 to 2010 through emails, personal contacts and study of websites.

3.1.5 DATA ANALYSIS

The data collected was analyzed using percentages, frequencies, intensity index etc. Intensity index is the statistical technique used to measure the exact point of intensity preferred by the sample as a whole in a 3 to 7 point of preference against any statement or item. It indicates the exact preference, like, or dislike about a situation in a Likert type of scale. Intensity Index was calculated using the following formula for an item in a five point scale arranging from higher intensity to lower intensity i.e. (strongly agreed, agreed, undecided, disagreed, strongly disagreed).

Intensity Index (II)= ((f1*5)+ (f2*4)+ (f3*3)+ (f4*2)+ (f5*1))/(f1+f2+f3+f4+f5)

Where f1,f2,f3,f4 and f5 are the frequency of respondents for strongly agreed, agreed, undecided, disagreed and strongly disagreed respectively.

The analyzed data was then synthesized and presented in form of tables and figures. In case of online survey, where the participants could not be reached personally, if

few questions were left unanswered in a questionnaire, that questionnaire was considered void and not used in the analysis.

The following analysis is split into various sections like, the first section tries to throw light on the infrastructure available in the institutions which are adopting e-learning practices, the second section highlights about the forms of e-learning practices adopted in the educational institutions, while the third section tries to project the e-learning facilities available in the institution. The fourth and the fifth sections highlight about the respondents feelings in general about the concept of e-learning and their opinion regarding the e-learning practice being adopted in their institution. The next section highlights about the abilities of faculties, students and lab administrators with respect to various e-learning tools. The last section highlights about the future scope of e-learning in higher educational institutions. The details of the data analysis procedure followed is given in the table 3. 1

Table 3.1: Objective wise tools and statistical technique used in the study

Objectives	Tools used	Statistical techniques used
Objective 1	Students, Faculties and Lab Administrators questionnaire	Frequency and Percentage
Objective 2	Students and Faculties questionnaire	Frequency and Percentage
Objective 3	Students, Faculties and Lab Administrators questionnaire	Frequency and Percentage
Objective 4	Students, Faculties and Lab Administrators questionnaire	Frequency, Percentage, Intensity Index and content analysis
Objective 5	Students, Faculties and Lab Administrators questionnaire	Frequency, Percentage and Intensity Index
Objective 6	Faculties and Lab Administrators questionnaire	Frequency, Percentage and Intensity Index
Objective 7	Students, Faculties and Lab Administrators questionnaire	Frequency and Percentage

CHAPTER IV

DATA ANALYSIS AND DISCUSSION

4.1.0 INTRODUCTION

4.2.0 DATA ANALYSIS RELATED TO OBJECTIVE 1

4.3.0 DATA ANALYSIS RELATED TO OBJECTIVE 2

4.4.0 DATA ANALYSIS RELATED TO OBJECTIVE 3

4.5.0 DATA ANALYSIS RELATED TO OBJECTIVE 4

4.6.0 DATA ANALYSIS RELATED TO OBJECTIVE 5

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CHAPTER IV
DATA ANALYSIS AND DISCUSSION

4.1.0 INTRODUCTION

Data analysis is the process of making sense out of the acquired data. Thus, it involves consolidating, reducing and interpreting what participants said and what the researcher had seen and interpreted. Data analysis is a complex process that involves moving back and forth between concrete bits of data and abstract concepts, between inductive and deductive reasoning, between description and interpretation. These meanings or understandings or insights constitute the findings of the study. (Merriam, 1998). In this chapter, the researcher attempted to study the data in a way that would illustrate the interrelationships among various components of data.

The respondents to the survey were from such institutions which claimed that they use e-learning practices in teaching-learning, training, evaluation etc. These practices were mostly reflected in engineering, management, computer application (MCA, BCA), and pharmacy colleges. However, these practices were also found in few medical and education colleges. The majority of identifiable respondents (faculty, students, lab administrators) were from colleges running professional courses.

4.2.0 DATA ANALYSIS RELATED TO OBJECTIVE 1

The objective 1 of the present research is "To study the infrastructure available in higher educational institutions adopting e-learning practices in Gujarat." In terms of infrastructure, following are the findings:

4.2.1 FACILITIES/RESOURCES AVAILABLE FOR ADOPTING E-LEARNING PRACTICES

A personal computer and an internet connection for it are considered to be the minimum facilities which are required for the faculties in the institutions which are adopting the e-learning practices. Hence, an attempt was made to study about this aspect. In this regard, 73% of faculties responded that they have individual personal

computers for them in their staff rooms. Among these, 90% of participants responded that their personal computers are connected to internet.

It was also observed that, many of the higher educational institutions have Wi-fi connectivity in their campus and hence in such institutions the concept of physical computer lab did not exist. However, the institutions which did not have Wi-fi connectivity in the campus had a minimum 2 computer labs and in some institutions they even have 4 or more computer labs. Almost all the higher educational institutions have more than one computer lab and in many of these institutions, there are sufficient number of computers as per their students' strength. The ratio of computers to students in all the institutions is around 1:2. Further, in 80% of the computer labs of the institutions, all the systems have internet connection. All the labs have cable or wireless or broad band connection for internet and no single lab has dial-up connection.

With regard to the infrastructure/resources available with the institutions for adopting e-learning practices, most of the institutions use fiber optics technology to establish their network. Further, 63.64% lab administrators claim that their institutions have software specialists for the purpose of adopting e-learning practices, and around 54.55% of lab administrators claim that they have the authoring tools which are required for the purpose of adopting e-learning practices. 100% of the lab administrators claim that their institutions have high bandwidth connectivity and much secured network connectivity. 90% of the lab administrators claim that they have free and unlimited internet access. With respect to connectivity with digital libraries, around 72.73% of the lab administrators claim that their network has connectivity with the digital libraries of their institutions and also other pay and use digital libraries. A higher percentage of lab administrator's i.e, around 72.73% of them said that latest software were available with them. However, only 36.36% of lab administrators expressed that they used LMS (Learning Management System) for providing e-learning practices and as high as 63.63% of lab administrators expressed that they used the basic digital technologies to provide e-learning facilities. In most of the institutions, the CMS/LMS (Campus Management System/Learning Management System) has facilities related to attendance, results of students, students assignments etc. The system also has important downloads of programmes and software's which

are useful to the faculty and students. CMS of a few institutions also provide access to the digital libraries of their institutions. Institutions use software and applications like Acado, google docs etc to download and upload assignments.

4.2.2 OPINION OF FACULTIES AND STUDENTS REGARDING THE INFRASTRUCTURE AVAILABLE FOR ADOPTING E-LEARNING PRACTICES

The level of e-learning initiatives in the institutions to a great extent depends on the availability of proper supporting infrastructure available with them. Hence, an attempt was made to know the reaction of faculties and students regarding this aspect. The following are the findings

Table 4.1: Percentage of Reaction of Faculties and Students Regarding the Favorability of Infrastructure for Adopting E-Learning Practices along with Intensity Index

	Strongly Agree (in %)	**Agree (in %)**	**Neither Agree Nor Disagree (in %)**	**Disagree (in %)**	**Strongly Disagree (in %)**	**Intensity Index**
Faculties	42.17	**46.99**	6.02	3.61	1.20	4.25
Students	21.57	**56.21**	11.11	8.50	2.61	3.86

From table 4.1 it can be observed that 42.17% and 47% of faculty strongly agree and agree respectively that the infrastructure available in their college was favourable for adopting e-learning practices, whereas, 6%, 3.61% and 1.2 % of faculty neither agreed nor disagreed, disagreed and strongly disagreed respectively in favour of the same statement.

When it comes to students, around 56.21% of the students agreed that the infrastructure available in the institutions was favourable in adopting e-learning practices. However, a less percentage of students i.e., 21.57% of them strongly agree to this aspect. While around 11.11%, 8.5% and 2.61% of students neither agreed nor disagreed, disagreed and strongly disagreed respectively to this statement.

The score of intensity index (4.25 for faculties and 3.86 for students) reflects that both the students and faculties agreed that the infrastructure available in their institutions is favourable enough to adopt the e-learning practices.

The data shows that, most of the faculties and students agreed that the infrastructure available in the institutions was favourable in adopting e-learning practices. However, the percentage of faculties and students falling in the category of strongly agree is very less, which shows that institutions have to put some more efforts in improving the infrastructure available with them.

Further, with respect to the infrastructure available in the institutions, the number of computers available in the computer labs, the network facilities available, the speed of data transfer, the security of the network etc was satisfactory in almost all the institutions. Free and unlimited internet connection was available in almost all the institutions. It was also observed that in the computer labs of most of the higher educational institutions they have sufficient number of computers as per the number of students registered. Moving further, as all the computers in the computer lab are connected in the network, this indicates a positive sign for adopting the e-learning practices. The data transfer speed in the network in the institutions ranged from 256kbps to 100 mbps which indicates that the basic technical requirements needed for adopting e-learning practices are satisfactory. Also during the data collection, the investigator observed that most of the institutions do not lack the infrastructure and in fact, in some of the institutions, the infrastructure required for implementation of e-learning practices is excellent. They have aspects like wi-fi campus, fully networked systems, excellent trouble shooting support system etc.

Points for Discussion

Most of the educational institutions are using the basic digital technologies to provide the e-learning facilities. However, if they put into practice the systematized aspects like LMS/CMS they will be able to easily track the performance of the students and will also able to make optimum use of other aspects of e-learning platform. Most of the institutions have sufficient level of infrastructure to adopt the e-learning practices. This is a very good sign. Hence, if the institutions develop a proper and systematized mechanism to make the optimum use of e-learning it would reap a lot of positive benefits in terms of improving the quality of higher education.

4.3.0 DATA ANALYSIS RELATED TO OBJECTIVE 2

The objective 2 of the present research is to study the forms of e-learning adopted in higher education institutions. The following are some of the findings related to the forms of e-learning adopted in higher education institutions.

4.3.1 E-LEARNING FORMS ADOPTED IN THE INSTITUTIONS THAT ARE USING BLENDED APPROACH OF E-LEARNING

The most used e-learning forms in the institutions which are using e-learning in the blended platform were as follows

Table 4.2: Percentagewise Distribution of Faculties and Students Response with Regard to E-Learning Forms Adopted in their Institutions

E-learning Practices Adopted	Faculties (in %)	Students (in %)
Intranet	66.27	64.71
E-mail	67.47	41.18
Blogs	25.3	24.84
Chats	19.28	16.34
Video Conference	20.48	35.95
CBT	37.35	23.53
WBT	20.48	22.88
Virtual Classrooms	16.87	22.22

The following points related to forms of e-learning adopted in teaching-learning, training, evaluation etc in the institutions can be observed from the table 4.2.

-66.27% of the faculties and 64.71% of the students expressed that intranet is used in their institutions as a part of e-learning practices.

-67.47% of the faculties and 41.18% of the students opined that e-mails are used as a part of their e-learning practices.

-25.3% of the faculties and 24.84% of the students responded that blogs are included in their institutional e-learning practices.

-19.28% of the faculties and 16.34% of the students responded that chats are being used in their institutional e-learning practices.

-20.48% of the faculties and 35.95% of students claimed that Video Conference is being used as a part of institutional e-learning practices.

-16.87% of the faculties and 22.22% of the students responded that virtual classrooms are used in their institutions.

Further, as seen in earlier section, around 63.6% of the lab administrators claimed that they use the basic digital technologies in their e-learning platform. Only a mere 36.3% of lab administrators responded that they use LMS/CMS for providing the e-learning facilities. It can also be observed from the table 4.2 that there is almost unanimity in the responses given by faculties and students. This scenario is further clear, from the figure 4.1.

Figure 4.1: Percentagewise Response of Faculties and Students Regarding the Forms of E-Learning Adopted in their Institutions
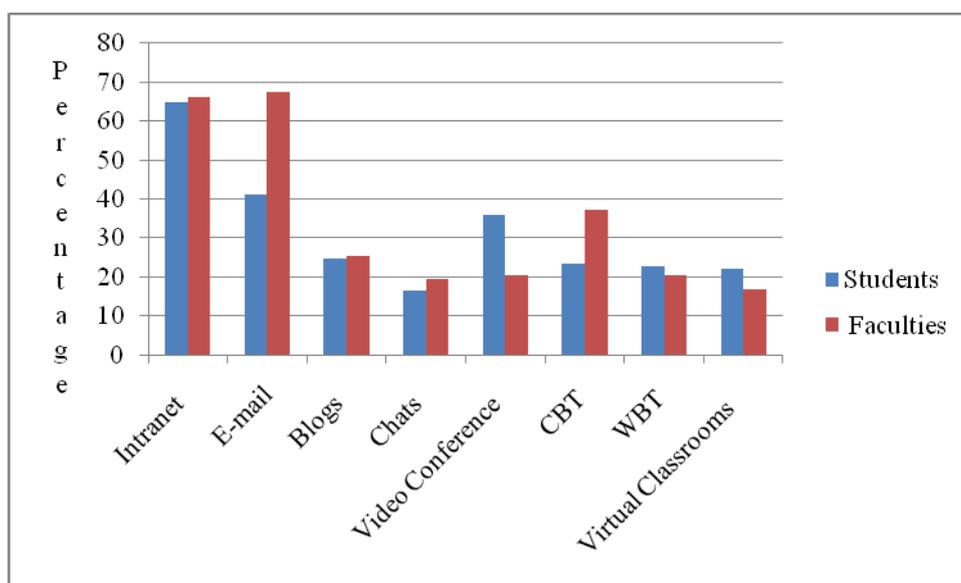
From the obtained results it was reasonable to deduce that majority of those claiming to be using e-learning were not using an integrated formal learning management system but were rather using basic digital technologies to enhance their learning. This was again reinforced by respondents in their answers to questions concerning the specific e-learning forms and practices that were adopted in their teaching/learning. Although it was difficult to generalize from the diversity of responses received, the dominant forms of e-learning in the institutions seemed to be Intranet, e-mail, CBT. This again reveals that there is still not a particularly high level of sophistication in the usage of e-learning among the majority of the respondents.

Points for Discussion

It can be observed from the table 4.2 and figure 4.1 that most of the institutions were using the basic form of e-learning like intranet and e-mail. Few institutions were using software like pen starter, turnite etc in their e-learning platform. On one side the faculties claim that they have favourable infrastructure for adopting e-learning

practices and on the other hand they are using only basic e-learning practices like e-mails, intranet in their teaching-learning process etc. Also, the least use of tools like blogs, virtual classrooms, and video conferences shows that either faculty are not interested in using the practices or they do not have sufficient expertise to use the e-learning practices. Another reason for this could be that, the nature of content to be transacted is such that it does not demand the use of such facilities.

Thus, it reveals that there is still not a particularly high level of sophistication in the usage of e-learning among the majority of the institutions.

4.4.0 DATA ANALYSIS RELATED TO OBJECTIVE 3

The objective 3 of the present research is to study the e-learning facilities available in the educational institutions that are using the e-learning platform. The following are the findings about the e-learning facilities which were available in the higher educational institutions that were using either blended approach of e-learning or fully online approach of e-learning.

4.4.1 E-LEARNING FACILITIES AVAILABLE IN THE INSTITUTIONS THAT ARE USING BLENDED APPROACH OF E-LEARNING

The following e-learning facilities are available in the institutions that were using various e-learning forms through their blended approach of e-learning.

Table 4.3:Percentagewise Reply of Students, Faculties and Lab Administrators Regarding Facilities of E-Learning Available in their Institutions

Facilities of E-learning	Students (in %)	Faculties (in %)	Lab Administrators (in %)
Study Materials	83.01	66.27	90.91
Syllabus	56.86	63.86	81.82
Program Information	42.48	25.30	72.73
Examination scheme	22.88	26.51	63.64
Question Banks	28.76	25.30	63.64
Sample Question Papers	32.03	16.87	27.27
E-portfolios	26.14	20.48	54.55
Attendance Records	22.22	34.94	45.45
Results Information	56.86	28.92	54.55
Links to web pages	43.79	42.17	54.55

Assignment Postings	27.45	32.53	54.55
Assignment feedback	7.84	14.46	45.45
Tests or Quizzes	19.61	24.10	45.45
Open Forums	22.22	9.64	36.36
Chats	11.76	9.64	45.45
Application Sharing	13.07	18.07	72.73
Digital Libraries	36.60	37.35	36.36
Web Seminars	13.73	12.05	27.27

Most of the students expressed that Online Study Material (83.01%), Online Syllabus (56.86%), and Results Information (56.86%) are available in their institution. On the other hand, a very less percentage of students i.e., 7.84%, 11.76% , 13.73% and 13.07% respectively mentioned that facilities like Online Assignment Feedback, Online Chats, Web Seminars and Application Sharing were available in there institution.

More than 60% of the faculties expressed that the facilities of Online Study Materials and Online Syllabus were available in their institution. Only 9.64%, 9.64%, 12.05% and 14.46% of faculties respectively said that Open Forums, Chats, Web Seminars, and Assignment Feedback were available in their institution. This also shows that even though the facilities were available only very few faculties are aware about those facilities.

However, the awareness regarding the facilities available in the e-learning platform is more among the lab administrators than the students and faculties. This could be because in most of the institutions they are the people who manage the technical aspects of e-learning practices.

According to the lab administrators, the most available facilities of e-learning were Online Study Materials, Online Syllabus, Programme Information, Application Sharing, Examination Scheme, Question Banks, E-portfolios, Results Information, Links to Web Pages, Assignment Posting. For more clear understanding, the above discussed scenario is presented in the form of figure 4.2

Figure 4.2: Pictorial View of the Percentage of Response of Students, Faculties and Lab Administrators Regarding Facilities of E-Learning Available in their Institutions
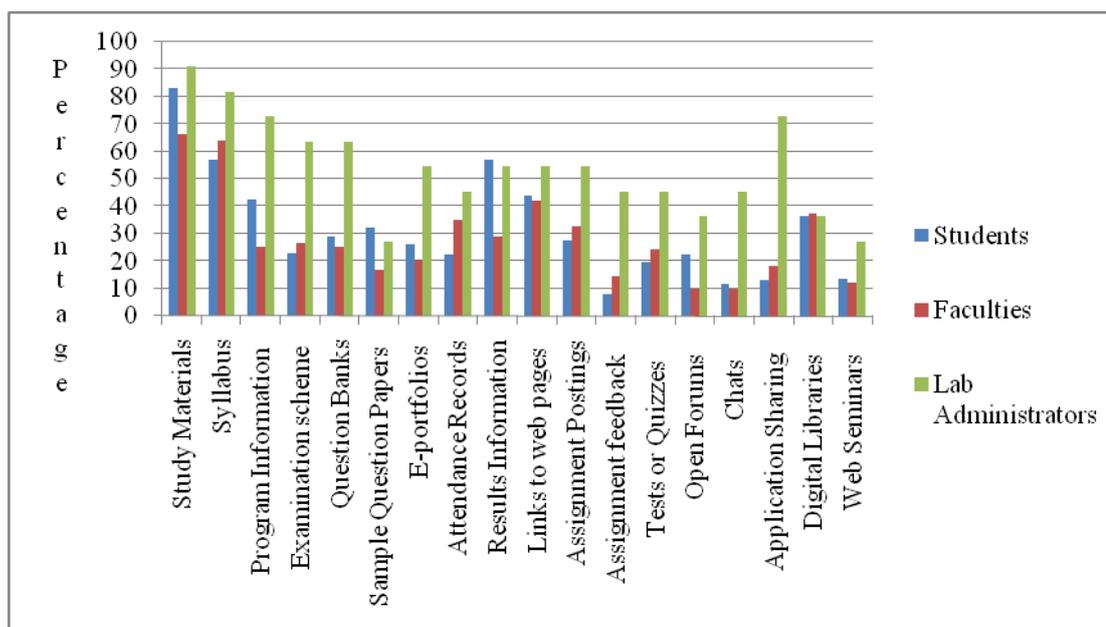
4.4.2 E-LEARNING FACILITIES AVAILABLE IN THE INSTITUTIONS THAT ARE USING FULLY ONLINE APPROACH OF E-LEARNING

Coming to the fully online approach of e-learning, a wide range of fully online initiatives were being taken up in higher education institutions. The institutions were giving various names for their online initiatives like ilearn, FlexiLearn, EduNxt, online learning etc. Some of the institutions were charging the students for the courses and the services that they were offering to them while few institutions were providing these services free of cost with the help of their institutional websites. Some of the institutions were using a mixed strategy i.e., to provide a few services free of cost and to provide some services with a payment. However, till date, most of these practices were visible in institutions offering professional courses like management courses, engineering courses, chartered accounts, company secretaries etc. Institutions like Reliance World, ICICI, NetVarsity.com were providing their online services in the form of their e-learning courses and modules and they do charge for their e-learning courses. However, institutions like IGNOU (Indira Gandhi National Open University), Dr. Babasaheb Ambedkar Open University (BAOU), Institute of Company Secretaries of India, Institute of Chartered Accounts of India etc were providing some features of the online facilities to registered users while some features

of online facilities were open to all. The glimpses of online activities being practiced by various educational institutions is as follows:

Virtual classrooms (VCR): Virtual classrooms are a learning environment that exists solely in the form of digital content that is stored, accessed, and exchanged through networked computers where the students may not even be in the same country as the instructor or teacher. In VCR, the students can choose to attend the lectures from a virtual classroom center, which is of their comfort. The VCRs have various features like peer interaction, replay of archived lectures etc.

Digital Repositories: Under the title of digital repositories, institutions were providing a wide range of services like

* **Counseling chats**: Counseling chats address both general issues and subject specific issues. General issues include queries related to aspects like admission process, examination process, online payments etc. While under the subject specific issues, students try to clarify their subject related doubts by coming in touch with their faculties. Most of the institutions provided this facility during their working days in working hours. Most of the institutions provided their chat sessions schedule well in advance so that students can take maximum advantage of it.

* **Links to useful websites:** Through this section, the institutions provided links for various useful websites and other useful documents.

* **Knowledge portal:** Institutions were taking a forward step in providing maximum digital repositories to its students in the form of their knowledge portal. In this effort, they provided online course content in the form of texts, power points, activities, and recorded video sessions. In addition to this, they also provided features like sample question papers, online assignments along with solutions, case studies, practical examples, project guidance, online books, lab manuals and live lectures. Some institutions have also taken a step further to provide online question banks to their students.

* **FAQ's/SMS services:** Frequently Asked Questions and/or SMS services were provided by most of the educational institutions either to provide answers to most asked questions or to provide information related to various aspects like admissions, examinations, last dates of assignments etc. Some institutions were also providing SMS services to students to clarify doubts related to aspects like subject terminology,

formulas etc. This service of the institution was referred by various names like prashnottari sewa, Gyan Bindu etc. Some institutions were also providing their students with facilities like blogs, wikis, tweets, dash boards, discussion forums etc.

* Other Services: Apart from the above mentioned facilities, some institutions were also providing their students with provisions like online enrollment, online updating of personal information, view and print their registration/exemption letters online, undertake online and on demand exams, e-mail response, sample questions papers along with solutions, student's feedback forms etc.

Points for Discussion

From the data obtained was clear that many e-learning facilities were available in the higher education institutions but the awareness about these facilities was lacking among the students and faculties. As a result of this, even though the facilities were available in the institutions, they are not being used by the stakeholders. The reason for this could be that the management of the institutions has taken decision on the use of e-learning mainly because everyone else is doing it and no special efforts are made at management level to focus on pedagogical and didactic aspects of e-learning. Another reason could be the lack of proper coordination between the lab administrators and faculties due to which most of the information which is uploaded by lab administrators is not even known to the faculties.

Moving further, in one of the institution that uses the blended approach of e-learning, the investigator saw that the students of the institution developed their self website (www.jagteraho.co.in) where they place all the information like previous question papers, job vacancies, tips for exams, study notes, FAQ's etc which is important for themselves, their seniors and juniors.

Regarding the fully online practices of the institutions, many higher educational institutions were making use of their institutional websites to adopt either blended approach of e-learning or fully online approach of e-learning. With respect to fully online initiatives of the institutions, investigator made many attempts to contact many virtual universities and other online institutions but could not get any response from this. This raises the questions regarding their response time, quality of content, troubleshooting support etc.

4.5.0 DATA ANALYSIS RELATED TO OBJECTIVE 4

The objective 4 of the present research is to study the opinion of Faculties, Lab administrators and Students regarding the e-learning practices being adopted in the institutions.

4.5.1 USE OF E-LEARNING PRACTICES

Around 51.42% of faculties expressed that the initiation towards adopting e-learning practices started since last three years. Around 30% faculties responded that this initiation started since more than 4 or 5 years. On the other side it was found that around 18.57% of the faculties said that this practice started in their institutions since less than one year. However, a few institutions adopted such practices as early as 1999-2000.

Further, around 45.78% of faculties said that, at institutional level, it was mandatory for them to use e-learning practices in their teaching-learning, evaluation and other aspects. However, around 54.22% of the faculties said that, at institutional level, it was not mandatory for them to use the e-learning practices in their teaching-learning, evaluation etc.

Regarding the programme levels at which e-learning was used, around 73.49% of faculties responded saying that e-learning practices were being used at masters level while 51.81% said that they were being used at bachelors level and 21.69% said that they were being used in executive courses and around 19.28% of them said that they were being used in diploma level courses. Around 3.61% of faculties said that e-learning practices were being used at Ph.D. level also. This matches in co-ordination with what lab administrators said. As high as 81.82% of lab administrators said that e-learning practices were being used at maters level and 63.64% of them said that they were being used at bachelors level. Around 36.36% of faculties said that e-learning practices in their institutions were being adopted at executive program level also.

This shows that in the institutions the e-learning practices were being used mostly at Masters, Bachelors and executive programme levels.

4.5.2 SUPPORT EXTENDED TO THE STUDENTS

As high as 75% of students expressed that the support extended by the in-charge faculties and the lab administrators for using the e-learning practices was very good. Many of them expressed that they readily get all the software which are helpful to them and also get immediate trouble shooting support from faculties and lab administrators.

In response to the statement on whether the faculty gives any guidance to the students regarding how to use various e-learning practices, as high as 67.47% of faculty expressed that they do give guidance to students regarding various aspects of e-learning, on the other hand 32.53% of faculty stated that they do not give any guidance to the students regarding the e-learning practices.

Those faculties who expressed that they do not give any guidance to the students did not mean that they deny giving guidance to the students regarding this aspect but they claim that the practices are so simple that students do not need any special guidance on using them. However, in case if some software is very unique or typical, they do give guidance to the students on how to use them.

However, among students, 45.75% of them said that they do get guidance from either lecturers or the lab administrators with regard to various aspects of e-learning practices. However, most of the students said that as the e-learning practices being adopted in the institutions were at basic level they did not need any special guidance from faculty.

4.5.3 E-LEARNING DEVELOPMENTS

Around 43.37% of the faculties said that their institution organizes training programmes for them, while 56.63% of the faculties said that their institutions does not organize any training programmes to orient them regarding various aspects of e-learning.

Further, with regard to the e-learning developments happening in the institutions, majority of the faculties i.e., around 67.47% of them felt that the developments are at moderate level and only 20.48% felt that the e-learning practices in their institution were at highly developed stage. Further, as high as 75% of the lab administrators

claimed that the e-learning developments in their institutions were at moderate level and very few i.e., around 17% of lab administrators claimed that the e-learning developments were highly developed. Around, 8.33% of lab administrators fetl that the e-learning developments in their institution were at infancy stage.

From the findings it can be interpreted that most of the participants felt that the e-learning developments happening in their institutions were at moderate stage and a very few of them felt that they were at highly developed stage. Hence, it is clear that the institutions are using very basic level of e-learning technologies and facilities. This shows that if the institutions want to really make the optimum use of e-learning technologies and not just for a show off, they need to make proper attempts in the direction of improving the quality of e-learning practices.

4.5.4 CONTENT POSTED IN E-LEARNING PLATFORM

Around 53% of the faculties responded that the teaching-learning content that is once posted on the intranet was available to the students throughout the year. Around 26.56% of the participants responded that the teaching-learning content that is once posted on the intranet was available for six months. While only 17.18% of faculty revealed that their content posted on the intranet is available to students for one month. Thus, in most of the higher educational institutions the teaching-learning content posted on the intranet was available to the students throughout the year. Around 33.08% of students expressed that the content that was posted on the intranet was updated once in a month, 26.92% of students stated that the content posted on the intranet was updated atleast once in 6 months.

Further regarding the content posted in the e-learning platform (more dominantly on intranet), only 45.1% of students felt that the content posted is developed keeping in mind the needs of students. Only 21.57% of students felt that the use of real time examples was made in the content that was posted on intranet and also only 14.38% of students felt that the aspect of being innovative was considered while developing the content for the e-learning platform. Overall, only 24.84% of students felt that the content posted on the e-learning platform was effective. Around, 36.34% of students felt that the content posted in the e-platform was sometimes an exact Xerox copy of text/reference book. Around 30.22% of students felt that the information posted on the

intranet was not updated frequently and 24.84% of students felt that they do not have any scope to clarify their doubts regarding the content that is posted.

The content that is posted on the intranet would be effective only when it meets the needs of the students. However from the above responses it could be seen that, majority of the students felt that the content that was posted in e-learning platform was not effective. This shows that faculties are not taking any special efforts to develop the content which suits the e-learning platform. The reason for this could be that either the faculties do not know about how to modify the content according to the e-learning platform or the faculties do not have readiness to work in the e-learning environment.

All this shows that, most of the institutions are not able to fulfill the administrative and implementation requirements (as mentioned in chapter 1 section 1.7.0) which are essential for the success of e-learning. If proper attention is not paid in solving this aspect, all the e-learning efforts being made in the institutions would go in vain.

When it comes to the faculty, as high as 79.52% of faculties felt that they keep the students needs in mind while developing the content in e-learning platform. Around 55.42% of the faculties claimed that they make the use of real time examples when they develop the content in e-learning platform. Around 48.19% of the faculties felt that they try to be innovative when developing content for e-learning platform. Approximately, 54.22% of faculties claimed that they considered the aspects like maintaining the course impact and the learning outcomes related to the content when they developed the content in e-learning platform.

Clear discrepancies can be seen in the opinion of the students and faculties with respect to the content posted in e-learning platform. Faculties felt that the content that they are posting on the intranet is according to the needs of students and also felt that they keep all points in mind to increase the effectiveness of content posted on intranet. However, majority of students felt that the content posted on intranet is not at all effective. Such clear discrepancies would surely decrease the overall efficiency of the e-learning practices and hence it is very essential for the institutions to develop a feedback and evaluation mechanisms which will solve such problems. Institutions should organize special trainings to develop readiness in the faculties to use the e-

learning platform and also to orient them regarding various aspects which should be kept in mind while developing the content for e-learning platform.

4.5.5 ROLE OF E-LEARNING IN IMPROVING THE EFFICIENCIES

Proceeding further, initiatives that take place in educational institutions get more acceptances when it develops efficiencies of its stake holders. E-learning is such a platform where students, faculties and lab administrators have ample scope to improve their efficiency. A question related to this was included in both the faculty's tool and students' tool. In response to the question regarding whether the e-learning practices being adopted in their institutions were helping in improving their professional/academic efficiency, the following is the data:

A very less percentage of faculties (32.53%) and students (12.42%) strongly agreed that the e-learning practices being adopted in their institutions were helping them in improving their professional/academic efficiency. However, majority of the participants agreed that the e-learning practices being adopted in their institutions were helping them in improving their professional/academic efficiency.

Table 4.4:Percentage of Response of Faculties and Students Regarding the Role of E-Learning Practices in Improving their Professional/Academic Efficiency along with Intensity Index

	Strongly Agree (in %)	Agree (in %)	Neither Agree Nor DisAgree (in %)	Disagree (in %)	Strongly Disagree (in %)	Intensity Index
Faculties	32.53	**56.63**	8.43	2.41	0.00	4.19
Students	12.42	**52.94**	20.92	6.54	3.92	3.54

The existence of around 10% of students in disagree/strongly disagree category and around 20.92% of students in "Neither Agree Nor Disagree" category shows that only to some extent students felt that the e-learning practices were improving their academic efficiency. A clear view of this scenario is presented in the figure 4.3.

Figure 4.3:Pictorial Presentation of Percentage of Response of Faculties and Students Regarding the Role of E-Learning Practices in Improving their Professional/Academic Efficiency
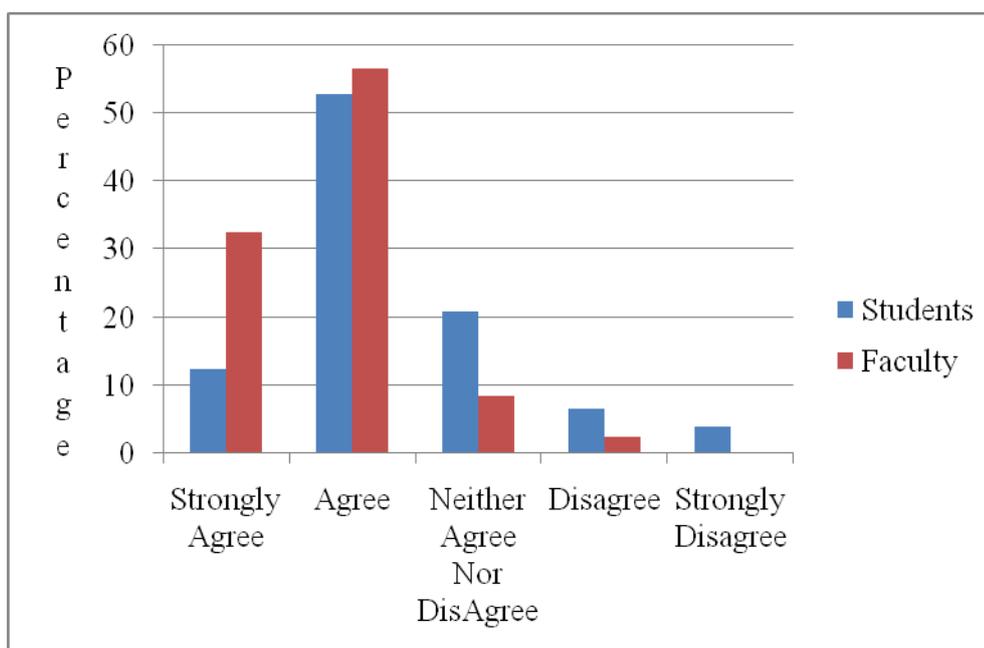
Factors like the basic level of e-learning practices being adopted in the institutions, the less effectiveness of the content that is posted on intranet, the moderate level of e-learning developments happening in the institutions etc, could be some of the reasons why both the faculties and students did not strongly agree that the e-learning practices were helping in improving their professional/academic efficiency. As mentioned in chapter 1 section 1.7.0, e-learning is a very complex and costly undertaking and hence institutions should take proper measures to see that they utilize the potentials of e-learning platform to the optimum extent. Hence, e-learning practices adopted in the higher education institutions should not only act as a medium to promote teaching-learning, evaluation, training and other aspects of institutions but it should also become a source for increasing the professional/academic efficiency of its stakeholders.

Moving further in the same direction, only 59.04% of faculties agreed that the e-learning practices being adopted in their institutions were improving the academic efficiency of their students. Thus, both faculties and students did not strongly felt that the e-learning practices being adopted in their institutions were improving the academic efficiency of the students.

4.5.6 SATISFACTION WITH REGARD TO E-LEARNING PRACTICES

The success of initiatives that are practiced in the educational institution depends on the satisfaction derived by its stakeholders. Keeping this point in mind, an attempt was made to know the satisfaction of students, faculties and lab administrators with respect to the e-learning practices being adopted in their institutions. The obtained results are as follows:

Table 4.5:Satisfaction Expressed by Students, Faculties and Lab Administrators (in %) Regarding the E-Learning Practices Adopted in their Institutions along with Intensity Index (II)

	Fully Satisfied (in %)	Satisfied (in %)	Neither Satisfied Nor Dissatisfied (in %)	Dis-satisfied (in %)	Fully Dis-satisfied (in %)	II
Faculties	12.05	**67.47**	15.66	4.82	0.00	3.87
Students	7.19	43.14	**28.10**	19.61	1.96	3.34
Lab Administrators	27.27	**54.55**	27.27	0.00	0.00	4.00

It can be observed from the data that very few percentage of students (7.19%), faculties (12.05%) and lab administrators (27.27%) are fully satisfied with the e-learning practices being adopted in their institutions. Most of the students (43.14%), faculties (67.47%) and lab administrators (54.55%) fall in the categories of Satisfied. The intensity index of 3.87 of faculties and 4.00 of lab administrators shows that both the faculties and lab administrators are satisfied with the e-learning practices that are being adopted in their institutions. When it comes to students, the intensity index of 3.34 shows that majority of students are Neither Satisfied Nor Dissatisfied with the e-learning practices that are being adopted in the institution. This scenario is more clearly visible from figure 4.4

Figure 4.4:Pictorial Presentation of Satisfaction Expressed by Students, Faculties and Lab Administrators Regarding the E-Learning Practices Adopted in their Institutions
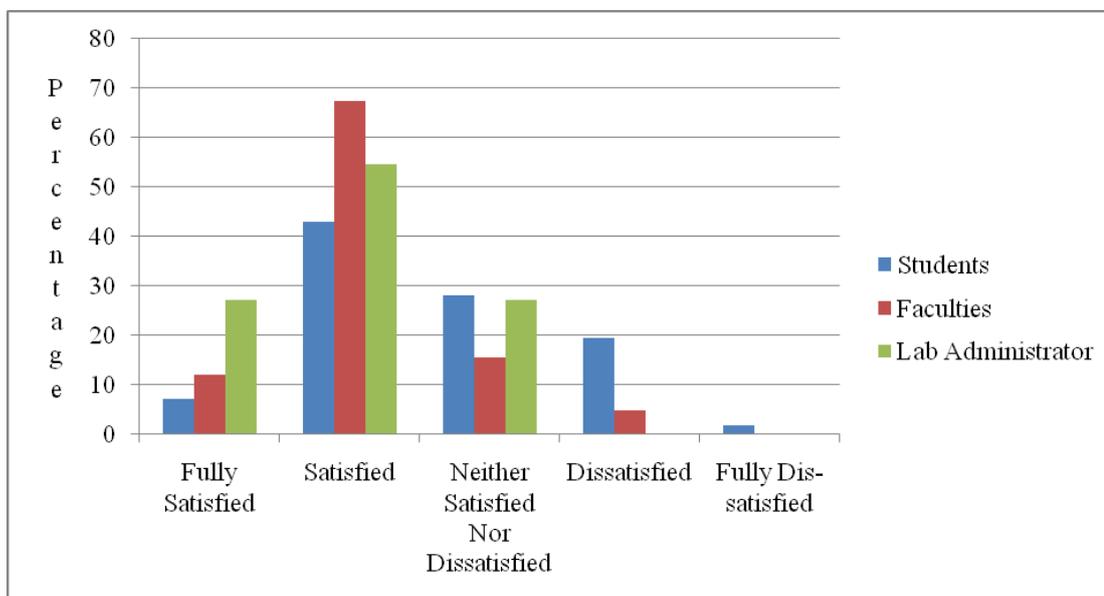
It can be interpreted from the data that both the faculties and lab administrators are satisfied with the practices happening in the institution but the students are in an undecided stage about their satisfaction. Even though the institutions have sufficient level of infrastructure and supporting resources like computers, network connectivity, internet connection, high bandwidth, secured network, software specialists, latest software etc the students are not satisfied with the e-learning practices being adopted in the institution. This shows that the physical facilities available in the institutions are not the reason for this dis-satisfaction among students.

Further, the data presented in table 4.5 shows that very few faculties are "Fully Satisfied" with the e-learning practices that are being adopted in their institutions. The reason for this could be that, faculties want to learn new things but the e-learning practices being adopted in these institutions are at very basic level that they are not helping them that much in increasing their professional efficiencies. This can be observed clearly in the section 4.7.0 where the ability of faculties and lab administrators with respect to various e-learning tools is shown.

Points for Discussion

The content that is posted on the intranet would be effective only when it meets the needs of the students. Hence, the faculties should take some special efforts to develop the content which suits the e-learning platform. For all this to happen, institutions should organize special trainings to the faculties to increase their readiness towards e-learning and also to orient them regarding various aspects which should be kept in mind while developing the content for e-learning platform. Further, faculties felt that the content that they are posting on the intranet is according to the needs of students and also felt that they keep all points in mind to increase the effectiveness of content posted on intranet. However, majority of students felt that the content posted on intranet is not at all effective. Such clear discrepancies would surely decrease the overall efficiency of the e-learning practices and hence it is very essential for the institutions to develop a feedback and evaluation mechanisms which will solve such problems. Factors like the basic level of e-learning practices being adopted in the institutions, less effectiveness of the content that is posted on intranet, the moderate level of e-learning developments happening in the institutions etc, could be some of the reasons why both the faculties and students do not strongly agree that the e-learning practices are helping in improving their professional/academic efficiency.

As e-learning is a very complex and costly undertaking the institutions should take proper measures to see that they utilize the potential of e-learning platform to the optimum extent. For all this to happen, e-learning practices adopted in the higher education institutions should not only act as a medium to promote teaching-learning, evaluation, training and other aspects of institutions but it should also become a source for increasing the professional/academic efficiency of both faculties and students.

Even though the institutions have sufficient level of infrastructure and supporting resources like computers, network connectivity, internet connection, high bandwidth, secured network, software specialists, latest software etc the students are not satisfied with the e-learning practices being adopted in the institution. This shows that the physical facilities available in the institutions are not the reason for this dis-satisfaction among students. The various reasons for this could be: the e-learning developments happening in the institution; the least level of satisfaction of the students with reference to the content posted on the intranet; and the simple level of

practices being adopted in the institutions which are not contributing much to the academic development of the students etc. Further, as the institutions did not make these practices mandatory, most of the faculties are still adopting the traditional methods and hence the full potential of e-learning is not still being explored/utilized in the institutions.

All this shows that if the institutions want to really make the optimum use of e-learning technologies and not just for a show off, they need to make proper attempts in the direction of improving the quality of e-learning practices. Once the institutions take all the measures to fulfill the administrative and implementation requirements which are essential for the success of e-learning, they can reap proper benefits from this platform. If proper attention is not paid in solving these aspect, all the e-learning efforts being made in the institutions would go in vain.

Since e-learning is a costly affair and as the institutions have already started implementing these practices, institutions should take some special efforts or develop policies to see that the stakeholders are motivated to use these practices. They should also put into practice certain mechanisms which will improve the quality of the practices and as a result improves the quality of whole educational process.

4.6.0 DATA ANALYSIS RELATED TO OBJECTIVE 5

The objective 5 of the present research is "To study the opinion of the faculties, students and lab administrators regarding the concept of e-learning". In this section, an attempt is made by the investigator to know the opinion of the participants regarding the concept of e-learning and its various features.

The attempt began with knowing the perception of the participants towards e-learning. The following is the response with reference to this point:

4.6.1 PERCEPTION REGARDING CONCEPT OF E-LEARNING

Table 4.6: Percentagewise Response of Faculties and Lab Administrators with Regard to their Perception on E-Learning

	Very Valuable (in %)	Valuable (in %)	Least Valuable (in %)	Not at all Valuable (in %)
Faculties	24.1	71.08	4.82	0
Lab Administrators	58.3	41.7	0	0

As high as, 71.08% of the faculties felt that e-learning is a valuable practice and around 24.1% of the faculties felt that e-learning is very valuable. Around 58.3% of lab administrators felt that e-learning is a very valuable practice. The existence of a high percentage of participants in very valuable and valuable categories shows that faculties and lab administrators believe positively in the value of e-learning. Most of the responded faculties believed that e-learning has a good value in teaching-learning. It indicates that the faculties were positive towards adopting the e-learning practices which is a good sign for higher education institutions in moving towards e-learning platform. The obtained results are in conformity with the studies of Nafukho & Muyia (2007), Buenafe et al (2007), Hiroshi (2005) etc where the investigators reported that the participants involved in their studies had a positive attitude towards e-learning.

Success of e-learning to an extent depends on learners' participation and involvement. (Chai, Lee and Yen,Poh (2009)) Hence, while taking up any form of initiative in the area of e-learning it is highly advisable to know about who and which type of students respond well to e-learning initiatives.

In this regard, 83.13% of the faculties felt that both boys and girls respond equally to the e-learning practices being adopted in the institutions. This shows that both boys and girls are equally inclined towards the use of ICT initiatives in higher education institutions. These results are in conformity with the study carried out by Richard K.Ladyshewsky (2004) where the investigator also reported that gender did not appear to moderate the performance of students in E-learning mode. However, this is in contradiction to study carried out by Proctor, Burnett et.al (2006) where the investigator reported that female teachers were significantly less confident than their male counterparts in using ICT with students for teaching and learning**.**

Moving further, 50.6% of the faculties expressed that academically well prepared students responded more positively to e-learning practices than academically less prepared students. However, 36.14% of faculties felt that both academically well prepared and academically less prepared students responded in same way to e-learning practices of the institution.

From the above points it is clear that most the faculty have a positive perception towards concept of e-learning. They also felt that gender does not appear to moderate the response of students towards e-learning. This is a good sign for the institutions which are using the e-learning practices and also for the institutions which are planning to use e-learning practices.

4.6.2 BENEFITS OF E-LEARNING

The following is the response of stakeholder with regard to the benefits of e-learning

Table 4.7: Percentagewise Distribution of Ranking for the Personal Benefits of E-Learning as Marked by Faculties along with Intensity Index (II)

Particulars	1st Rank (in %)	2nd Rank (in %)	3rd Rank (in %)	4th Rank (in %)	II
Spreading of information related to the content becomes easy and faster.	47.14	34.29	12.86	5.71	3.23
Students can learn at any place, pace, and any time	34.25	17.81	24.66	23.29	2.63
Re-use of content	17.57	21.62	29.73	31.08	2.26
Easy to update the students records	35.62	21.92	21.92	20.55	2.84

Table 4.8: Percentagewise Distribution of Ranking for the Professional Benefits of E-Learning as Marked by Faculties along with Intensity Index (II)

Particulars	1st Rank (in %)	2nd Rank (in %)	3rd Rank (in %)	4th Rank (in %)	II
Assist in maintaining transparency	19.12	19.12	30.88	30.88	2.26
Re-use of content	26.39	26.39	20.83	26.39	2.38
Easy to provide additional information regarding the course	29.85	40.30	19.40	10.45	2.90
Can reach more students in less time	52.70	25.68	10.81	10.81	3.20

The intensity index obtained for the statements regarding the personal benefits of e-learning ranges from 2.26 to 3.23. From the obtained intensity indices it is clear that,

most of the faculties felt that spreading of information related to the content becomes easy and faster in the e-learning platform and hence they ranked it first. Further faculties also felt that with the help of e-learning platform it becomes easy to update the student's records and gave second rank to this benefit. They also felt that e-learning helps the students to learn at their own pace at any time and in any place. Re-use of the content is also seen as one of the benefits of e-learning. In terms of professional benefits of e-learning, faculties responded that the highest advantage of e-learning is that they can reach more students in less time. Followed by this, faculties felt that in e-learning platform it is easy to provide additional information regarding the course to the students. However, most of the faculties felt that the least benefit of e-learning is its ability to maintain transparency.

During the process of data collection the investigator could observe that some faculties were using e-learning to its optimum extent both in teaching-learning and also in administrative works like sending notice/information to the students on various issues like availability of new content, notices related to hostels, examinations, assignments, providing additional literature etc.

Moving further, the following are the benefits of e-learning as expressed by lab administrators

Table 4.9:Percentagewise Distribution of Ranking for the Benefits of E-Learning as Opted by Lab Administrators along with Intensity Index (II)

Particulars	1st Rank (in %)	2nd Rank (in %)	3rd Rank (in %)	4th Rank (in %)	II
Spreading information becomes easy and faster	66.67	16.66	16.67	0	2.50
Helps in being upto date with professional needs	33.33	22.22	44.44	0	1.89
Assists in development of professional skills	33.33	44.44	22.22	0	2.11
Enables learning at any place, pace and any time	33.33	50.00	16.67	0	2.17

Just like faculties, even the lab administrators felt that spreading of information becomes easy and faster in the e-learning platform. The lab administrators also felt that enabling of learning at any place, pace and at any time is another best benefit of

e-learning. The benefit which is ranked 3rd by lab administrators is that they felt that e-learning helps in development of professional skills and thus it enables them to be upto date with professional needs.

When it comes to student's perception regarding the benefits of e-learning, the following are the findings

Table 4.10:Percentagewise Distributions of Ranking for the Benefits of E-Learning as Ranked by Students along with Intensity Index (II)

Particulars	1st Rank (in %)	2nd Rank (in %)	3rd Rank (in %)	4th Rank (in %)	5th Rank (in %)	II
Ease of access of information related to the course	27.21	17.6	21.3	28.7	5.15	3.33
Students can learn at their own pace	22.56	20.3	35.3	15	6.77	3.37
Enables learning at any time	25.55	38	24.1	10.2	2.19	3.74
Enables learning at any place	22.6	15.1	12.3	26.7	23.3	2.87
Assist in maintaining transparency	8.462	6.92	9.23	18.5	56.9	1.92

In terms of benefits of e-learning, students felt that the most important benefit of e-learning is that it enables learning at any time and at their own pace. Students also felt that in e-learning platform it is easy to gain access to the information related to the course. However, just like faculty, students also gave last rank to the option of "assist in maintaining transparency". This shows that just like faculties, even students felt that ability of e-learning in maintaining transparency is less.

In short, faculties, lab administrators and students all felt that access to information related to the course content becomes easy and fast in the e-learning platform and further it is easy to reach more students in less time. Also, they all almost equally felt that e-learning platform provides the scope for learning at own pace, at any time. However, both faculties and students felt that e-learning platform is not of that help in maintaining transparency in the system. On the part of the faculties, they felt that providing additional information regarding the course becomes easy in e-learning platform and it also becomes easy for them to reuse the content.

4.6.3 DIS-ADVANTAGES OF E-LEARNING

Along with the benefits of e-learning, the participants were also required to rate the dis-advantages of e-learning. The intensity indices obtained for statements which described the dis-advantages of e-learning as expressed by the faculties is shown in table 4.11

Table 4.11:Percentagewise Distribution of the Ranking for the Dis-Advantages of E-Learning as Ranked by Faculty along with Intensity Index (II)

Particulars	1st Rank (in %)	2nd Rank (in %)	3rd Rank (in %)	4th Rank (in %)	5th Rank (in %)	II
It is a costly affair	21.92	15.07	12.33	16.44	34.25	2.55
Handling and management of content is a technical affair	10.81	24.32	24.32	28.38	12.16	2.93
It reduces face to face contact and interactivity	40.00	22.67	18.67	12.00	6.67	3.77
As the content is available online for a long time, it reduces students interest	16.44	31.51	17.81	20.55	13.70	3.16
In e-mode, it is difficult to trace the students' actual learning.	26.09	20.29	27.54	14.49	11.59	3.35

The interpretation of the results shows that most of the faculties perceived that e-learning is not a costly affair. This shows a good sign for the institutions which felt that adopting such practices would increase their maintenance costs. The biggest dis-advantage as perceived by faculties with respect to the e-learning platform was that it reduces face to face contact and interactivity. Faculties also felt that in e-mode, it is difficult to trace the student's actual learning and that is why they rated least for the transparency aspect of e-learning. Further, as the content is available online for a long time, they also felt that it reduces student's interest in the content. Also some faculties felt that handling and management of content in the e-learning platform is a technical affair and hence it is seen as one of the disadvantages with reference to e-learning platform.

The information collected from the lab administrators matches almost with that obtained from faculties. Most of the lab administrators just like faculties felt that as the content is available online for a long time, it reduced the students interest with respect to that content, they also expressed that e-learning reduces face to face contact

and interactivity. Further, they also, just like faculties felt that in e-mode it becomes difficult to trace student's actual performance. This is clear from the table 4.12.

Table 4.12: Percentagewise Distribution of the Ranking for the Dis-Advantages of E-Learning as Ranked by Lab Administrators along with Intensity Index (II)

Particulars	Yes (in %)	No (in %)	II
E-learning reduces face to face contact and interactivity	58.33	41.67	1.58
As the content is available online for a long time, it reduces students interest	66.67	33.33	1.66
Often, effective\real learning does not happen	25.00	75.00	1.25
E-learning practices increase pressure on the original work	25.00	75.00	1.25
In e-mode, it is difficult to trace students' actual performance	58.33	41.67	1.58

The two aspects of e-learning, i.e., it increases pressure on the original work and also effective\real learning does not happen were rated as the least dis-advantages of e-learning. This shows a good sign that lab administrators also believed that e-learning has the power to promote effective learning. Further, even though they are the people who handle the technical aspects of e-learning and they do exactly know about the work pressure with respect to e-learning they still felt that it does not increase pressure on the original work.

Students also just like faculties and lab administrators felt that e-learning reduces face to face contact and interactivity and hence it is the biggest disadvantage of e-learning. Just like faculties and lab administrators, students also expressed that it is difficult to trace the students' actual learning in the e-mode. Thus, the two aspects, e-learning reduces face to face contact and interactivity and it is difficult to trace the students' actual learning were considered to be the highest dis-advantages of e-learning.

Table 4.13: Percentagewise Distribution of the Ranking for the Dis-Advantages of E-Learning as Ranked by Students along with Intensity Index (II)

Particulars	1st Rank (in %)	2nd Rank (in %)	3rd Rank (in %)	4th Rank (in %)	Intensity Index
E-learning reduces face to face contact and interactivity	31.75	31.75	14.29	22.22	2.73
As the study modules are available online for a long time, E-learning reduces students interest towards the modules	28.80	16.00	28.80	26.40	2.47
In e-mode, it is difficult to trace the students' actual learning.	21.77	27.42	33.06	17.74	2.53
Often, effective\real learning does not happen	23.02	24.60	23.81	28.57	2.42

Proceeding further, the intensity index of 2.47 and 2.42 for "longer duration of availability of study modules" and "real learning does not happen in e-learning" respectively shows that students felt that these were also dis-advantages with e-learning.

In short, all the stake holders felt that e-learning mode reduces face to face interactivity and it is actually very difficult to trace the actual performance of the students. They also said that as the e-learning modules were available for a longer time, it reduced students interest towards these modules as they developed the tendency of postponing their tasks. Further, a few faculties felt that handling and management of content in e-learning mode is a technical affair and thus it is also considered as one of the dis-advantage of e-learning. However, the positive sign came from lab administrators who felt that adopting e-learning practices does not increase the work pressure.

4.6.4 CHALLENGES/BARRIERS TO E-LEARNING

When asked about what do the faculties think are the challenges/barriers in adopting e-learning at institutional level, the intensity indices obtained for statements which described the challenges/barriers to e-learning are presented in table 4.14.

The intensity indices which were obtained on the basis of the responses of the faculties revealed that "lack of knowledge on how to use the e-content on the part of

students" is perceived to be the least causing barrier in promoting e-learning practices. This shows a positive sign that most of the students have sufficient knowledge to use the e-learning practices. Further, faculties also expressed that adopting e-learning practices would not increase their work load to a great extent and hence "increase in the work load of the faculty" was rated the second last barrier in adopting the e-learning practices. The two factors that were considered to be the highest barriers in adopting e-learning practices at institutional level by the faculties were unreliable technology and lack of interest and confidence on the part of faculties to use the e-learning practices. Hence, proper measures need to be taken at institutional level to resolve the network access/usage problems. Also immediate measures should be taken by the administration of the institutions to boost up the faculties interest and confidence in adopting the e-learning platform. However, faculties also felt that students lack self motivation in using the e-content, hence measures should be taken to identify the causes and solve this problem.

Table 4.14:Percentagewise Distribution of the Ranking Given by Faculty for the Challenges/Barriers to E-Learning along with Intensity Index (II)

Particulars	1st Rank (in %)	2nd Rank (in %)	3rd Rank (in %)	4th Rank (in %)	5th Rank (in %)	6th Rank (in %)	II
Students lack knowledge about how to use the e-content	10.67	13.33	13.33	28.00	12.00	22.67	3.15
Network access/ Usage problems (unreliable technology)	27.78	15.28	22.22	9.72	19.44	5.56	4.06
Students lack self motivation in using e-content	27.40	16.44	15.07	19.18	9.59	12.33	3.96
Faculties lack interest and confidence to use this technology in teaching environment	30.14	19.18	12.33	8.22	19.18	10.96	4.00
Increasing work load on the part of faculties	12.70	20.63	22.22	14.29	19.05	11.11	3.60

When it comes to lab administrators (as shown in table 4.15), lack of sufficient technical infrastructure to promote e-learning and the technical nature of handling and managing the content in e-learning platform were considered to be the biggest barriers

in implementing the e-learning platform. Further, lack of pre-training to the faculties regarding the e-learning practices also acted as a barrier in adopting e-learning. According to lab administrators, unreliable technology was considered to be the least barrier in adopting e-learning which is in contrast to the opinion expressed by faculties. The findings in this section revealed that management should take some serious measures to increase the technical consistency of the e-learning platform. Findings obtained at many points of the study also showed that there is a need for organizing proper trainings to the faculties with respect to e-learning platform.

Table4.15:Percentagewise Distribution of the Ranking Given by Lab Administrators for the Challenges/Barriers to E-Learning along with Intensity Index

Particulars	1st Rank (in %)	2nd Rank (in %)	3rd Rank (in %)	4th Rank (in %)	Intensity Index
Lack of pre training to the faculties regarding e-learning practices	20.00	10.00	40.00	30.00	2.20
Network access/ Usage problems (unreliable technology)	0.00	44.44	11.11	44.44	2.00
Lack of sufficient technical infrastructure to promote e-learning	44.44	0.00	33.33	22.22	2.67
Handling and management of E-learning is a technical affair	22.22	11.11	33.33	33.33	2.22

Thus, it can be seen that most faculties felt that adopting e-learning does not increase their work load and they also believed that students were capable enough to work in e-learning mode. Hence, the institutions can take further forward steps in adopting the e-learning platform. However, the barriers which were mentioned by faculties and lab administrators like network problems, lack of training etc should also be addressed on priority basis to reap the real benefits of e-learning practices.

Points for discussion

The objective 5 of the present research is "To study the opinion of the faculties, students and lab administrators regarding the concept of e-learning."

Most the faculty have a positive perception towards concept of e-learning and they also felt that gender does not appear to moderate the response of students towards e-

learning This is a good sign for the institutions which are using the e-learning practices and also for the institutions which are planning to use e-learning practices.

In terms of benefits of e-learning, it was observed that most of the students and faculties felt that e-learning helps to a less extent in maintaining transparency. Hence, there is a need to through more focus on this aspect to identify the causes and remedies to solve this issue. A good point that was observed from the obtained data is that faculties and students themselves felt that they are capable enough to work in the e-learning platform. Also faculties themselves directly or indirectly expressed that e-learning practices do not increase their work load and they are also interested in learning more about this platform. All these points show a positive sign to adopt e-learning practices in the institutions. However, the whole problem lies in orienting and motivating the faculties to use this platform. Various plans on how to train and motivate the faculties to use this platform should be developed by the institutions. Once this is done, the institutions will be able to reap the maximum benefits of e-learning platform.

All the above aspects highlight that the institutions are not lagging in terms of infrastructure which is required to adopt e-learning practices but they are not able to explore the potentialities of stakeholder to reap the maximum benefits of e-learning practices. Hence, if the institutions develop proper quality guidelines and work out in a proper planned way (like putting in practice an effective training system for faculties; encouraging the use of LMS/CMS; introducing more and more forms of e-learning; creating a motivating platform for the stakeholders (students, faculties, lab administrators) to work in e-learning platform; developing a proper evaluation and feedback mechanism etc.) they would be able to reap optimum benefits of this platform. Institutions should realize that just putting into action the e-learning practices would not give them the maximum benefits in terms of educational outputs but it is the real satisfaction on the part of the stakeholder that would give the success to this initiative.

4.7.0 DATA ANALYSIS RELATED TO OBJECTIVE 6

The objective 6 of the present study is to know the abilities of faculties and Lab Administrators with respect to use of various e-learning tools.

4.7.1 FAMILIARITY WITH E-LEARNING TOOLS

In terms of working with computers, as high as 69% of the students said that they were very comfortable in working with the computers. More than 45% of the students work for more than 20 hours in a week on computers and around 19% of them work between 20 and 10 hours in a week on computers. Around 35% of the students use computers between 1 to 9 hours in a week. This shows that most of the students in higher education institutions were comfortable in using computers. In terms of using the internet, a majority of students consider themselves as experienced users. Around 23% of students consider themselves as very experienced users and around 9% of the students consider themselves as champions in using internet. As said in the earlier sections, most of the students are equipped with the skills that are required to use the e-learning platform. Hence, this is a very good sign for the higher educational institutions which are using e-learning practices. Most of the students logon to the institutions web site or intranet more than once a day. This shows that the students are ready to use the platform. However, the major barrier as seen in earlier sections is inferior quality of the practices that are adopted in the institutions.

When it comes to the use of e-learning tools by faculties and lab administrators, the following are the findings

The intensity index obtained for faculties with respect to Learning Softwares/ Virtual Tutorials, Computer Based Assessment, Virtual Learning Environment (Eg. WebCT, Blackboard), Video conferencing, Authoring web pages(for specific learning outcomes), Electronic White Boards were 2.51, 2.4, 2.01, 1.98, 1.96, 1.94 respectively. These figures show that, only with reference to learning software/virtual tutorials faculties claimed that they were familiar with it. With reference to all other e-learning tools, faculties claimed that they have tried them once. A meager percentage of faculties i.e., 9.64%, 8.43%, 3.61%, 6.02% fell under the category of expert users with reference to e-learning tools like Virtual Learning Environment (Eg. WebCT, Blackboard...), Video conferencing, Authoring web pages(for specific learning outcomes), Electronic White Boards.

Table 4.16:Faculties and Lab Administrators Response (in %) Regarding their Familiarity with E-Learning Tools along with Intensity Index (II)

E-learning tools	Faculty					Lab Administrator				
	Expert User (in %)	Use Regularly (in %)	Tried Once (in %)	Have Not Used (in %)	II	Expert User (in %)	Use Regularly (in %)	Tried Once (in %)	Have Not Used (in %)	II
Learning Softwares/ virtual tutorials	15.66	**45.78**	12.05	26.51	**2.51**	25	25	**25**	8.33	**2.33**
Computer Based Assessment	20.48	26.51	**25.3**	27.71	**2.4**	33.33	**33.33**	16.67	0	**2.67**
Virtual Learning Environment (Eg.WebCT, Blackboard)	9.64	26.51	**19.28**	44.58	**2.01**	41.67	**25**	8.33	8.33	**2.67**
Video conference	8.43	18.07	**36.14**	37.35	**1.98**	8.33	8.33	**33.33**	33.33	**1.58**
Authoring web pages(for specific learning outcomes)	3.61	31.33	**22.89**	42.17	**1.96**	25	**33.33**	25	0	**2.5**
Electronic White Boards	6.02	26.51	**22.89**	44.58	**1.94**	33.33	**25**	25	0	**2.58**

Around 45.78% of faculty expressed that they used learning software/virtual tutorials regularly. Around 31.33% of faculties were familiar with authoring web pages and in case of all other e-learning tools the intensity indices show that most of these faculties have tried this tool once.

Moving in the same direction, around 44.58% of faculties are not familiar with electronic whiteboards and other tools of virtual learning environment hence they did not use these tools any time. Even with reference to all other e-learning tools, around 25-45% of faculties have never used them.

The intensity index for each of these tool revel that most of the faculties have   tried these tools once or have not used them at all. A very meager percentage of faculties

claimed that they were expert users with reference to their familiarity with the mentioned e-learning tools.

From the above table it is clear that very few faculties felt that they were expert users in terms of using various e-learning tools. On the contrary, this scenario is observed to be better with lab administrators.

The intensity indices obtained for the e-learning tools for faculty and lab administrators show that lab administrators were more familiar with these tools than the faculties. On one hand, the reason for the above scenario could be that most of the higher education institutions were using only basic e-learning facilities and hence might be the faculty did not get any opportunity to use these tools, or it could be that faculties did not have proper expertise to explore and use these tools. The other reason could also be that in most of the institutions managing the e-learning platform is considered as a technical task and hence it is mostly handled by lab administrators. Whatever could be the reason, if the higher education institutions want to reap maximum benefits from the e-learning practices that they are adopting, they should create a platform where their faculties are exposed to latest e-learning tools and not only exposing them but it should also be mandatory for the faculties to use these facilities. Further, the institutions should now start focusing both on the technical and pedagogical aspects of e-learning.

4.7.2 EXPERTISE IN USING E-LEARNING TOOLS

Moving further, following are the views of faculties and lab administrators with respect to their overall expertise in use of various e-learning tools.

The intensity indices obtained with reference to this aspect as shown in table 4.17 helps to interpret that most of the lab administrators and faculties consider themselves at 3rd position in the rating scale of expertize with respect to e-learning tools. The figures also show that very little i.e., only 8.43% of faculties felt that they were champions in terms of their expertise with e-learning tools.

Table 4.17:Response (in %) Of Faculties and Lab Administrators Regarding their Overall Expertise in Using E-Learning Tools along with Intensity Index (II)

	Developer or Champion (in %)	Very Expertized (in %)	Expertized (in %)	Somewhat Expertized (in %)	No Expertize At All (in %)	II
Faculty	8.43	18.07	**27.71**	43.37	2.41	2.87
Lab Administrators	8.33	25	**16.67**	33.33	8.33	2.67

The probable reasons for this could be: the institutions e-learning practices were at very basic level that faculties were not getting any scope for using them; the faculties were not ready to learn and use such tools or in most of the institutions the faculties still felt that these all are technical aspects and so most of the work with respect to these tools is carried out by lab administrators. Whatever might be the reason, the figures in table 4.17 shows that the e-learning practices being adopted in higher education institutions are still at infancy stage and in most of the institutions the faculties are using only the basic e-learning practices like intranet and e-mail while the tools like electronic white boards, VLE etc are being least used by them. Many of the faculties have never used these tools even once in their teaching process. This clearly shows that the institutions have to take serious measures and organize trainings to enhance the faculties' e-learning skills which will in turn increase their confidence in using e-learning platform.

Points for discussion

The data obtained from faculties and lab administrators with reference to use of various e-learning tools shows that most of the faculties do not use these tools regularly nor do they consider themselves as expert users with reference to use of these tools. Thus when faculties themselves felt that they were not the champions in terms of using various e-learning tools we cannot expect that they will show interest in using these tools in teaching-learning. This again puts forward the point that institutions have just began this initiative of using e-learning practices and have not made any efforts to explore the full potentials of e-learning platform. It was observed during data collection that most of the faculties did not even know the names of these

e-learning tools and other concepts of e-learning and hence they did not even agree to fill up the research tool.

4.8.0 DATA ANALYSIS RELATED TO OBJECTIVE 7

The objective 7 of the present study is to study the future scope of e-learning.

E-learning is such a platform where the sharing of resources between the institutions can also be done very easily. This practice will not only increase the sharing among the institutions but it will also lead to improvement in the quality of the practices. Keeping this in mind, an attempt was made to know the opinion of the stakeholders regarding this aspect.

4.8.1 SHARING OF E-LEARNING MODULES

When asked about the opinion of the stakeholders regarding the sharing of e-learning modules with other institutions, most of them expressed a positive sign. The figure 4.5 shows the views of the participants. The figure shows that most of the participants wish that the institutions should adopt the practice of sharing the e-learning modules. Almost all i.e, students, faculties and lab administrators believed that this practice should be adopted.

Figure 4.5 Faculties, Students and Lab Administrators Agreement (in %) Regarding the Sharing of E-Learning Modules with Other Institutions
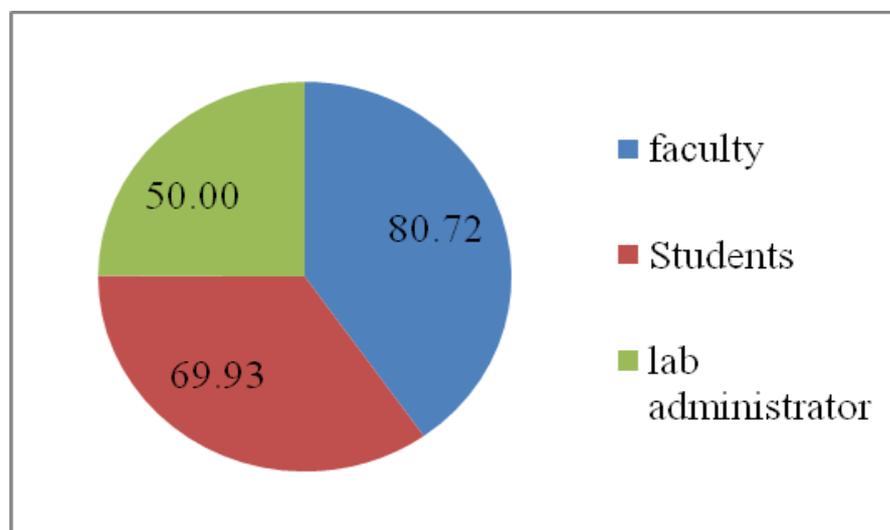
4.8.2 BASIS OF SHARING THE E-LEARNING MODULES

Further regarding the basis of sharing the e-learning modules, most of the faculties expressed that the basis of sharing these modules should be on "No profit No Loss". However, majority of students expressed that the basis of sharing should be "Free of Cost". Lab administrators are also more inclined toward sharing of these modules on "No Profit No Loss" basis. This shows a clear scenario that almost all the stakeholder wished that the practice of sharing the e-learning modules should be developed among the institutions. However, the basis of sharing can depend upon the terms and conditions existing among the sharing institutions.

Figure 4.6: Faculties, Students and Lab Administrators Views (in %) Regarding the Basis of Sharing E-Learning Modules with Other Institutions
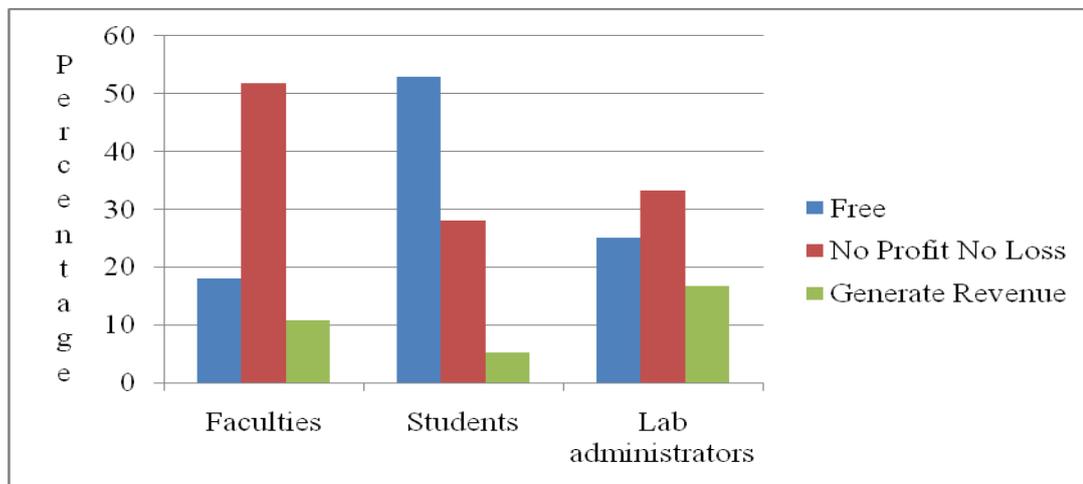
Points for discussion

In higher education system, where there is a severe shortage of efficient faculties, sharing of the e-learning modules among the institutions can act as a big boon not only to students but it will also improve the quality of higher education. The findings in this section showed that most of the stakeholders felt that the practice of sharing of the e-learning modules could be adopted by the institutions. This will not only improve the quality of the practices but all the stakeholders will be easily able to take the advantage of the expertize that exists in other universities/institutions. This practice will also give proper directions for improvement of e-learning practices and thus improve the overall quality of higher education.

CHAPTER V

SUMMARY AND CONCLUSION

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CHAPTER V
SUMMARY AND CONCLUSION

5.1.0   INTRODUCTION

In the era of knowledge explosion, the methods of imparting the knowledge are also experiencing a tremendous change. According to Chandogya Upanishad, for passing of the knowledge, the king said to the Brahman that I posses this knowledge and wish to pass this knowledge to you. This knowledge you should further pass on to a large number of students. For this, the king said, he would provide financial assistance and support him. Thus the journey of passing on the accumulated knowledge through teacher (Guru) started and has traveled millions of distance. The system of education has also seen tremendous changes in various dimensions i.e., social dimension, psychological dimension, physical dimension, technological dimension etc. Education is now turning into a partnership business between state, market and community. There are also sweeping changes in technology. The reaching of the unreached is becoming a reality with the revolution of technological advancements. The role of the teachers has changed from transmitter of knowledge to facilitator of learning. The globalization of education is adding fuel to this. All these sweeping dimensions of changes are demanding for the fast and massive changes in the content and also process of education. Hence, there is a need for designing of suitable technologies to facilitate the learning as per the demands of the society. The myths that the technology is only for elite class and education is only for a fixed period of time in the life are vanishing at a faster rate. This has also brought a major shift in the meaning and concept of literacy. Literacy is no more an on-off situation. Everyone will have to reliterate oneself every now and then. Learning to learn is the key to literacy. The days are changing in such a way that computer literacy along with the literacy of conventional form is becoming must for everyone. Yet, another technological development that has changed the system of education and partly supplementing or even substituting to some extent is internet. It has brought paradigm shift in the learning system which can be referred to as multi-channel learning for it alone is capable of carrying text, data, still and moving images, sounds etc. With the provision of interactive media through chat sessions, news groups, social-networking, e-mails etc, internet is proving to be the fastest and cheapest communication. Thus,

internet is more or less becoming the order of the day. The other inventions and innovations in the field of information and communication technologies are also trying their level best to show their power in the field of education. The cell phone revolution is already helping the knowledge flow from all directions where the learner has to choose from knowledge cafeteria. Thus, all these changes are also making the open and distance education to appear on the scene as an alternative to formal face to face learning and thus trying to break the boundaries between formal and distance education. Many virtual universities are already on their way to establishment and are running parallel with formal universities. On one hand, it is seen that conventional education is not able to do its best to address the need for education to prepare citizens of an information society and on the other hand, rapid advances in communication technologies are bringing powerful information technologies based on the merger of computers, telecommunication and broadcast video technology. This scenario has lead to the development of various technologies that include artificial intelligence, virtual reality, internet, e-learning, m-learning etc. Thus, we are today in the transition of becoming information societies and a new kind of education system needs to prepare people for the future environment and not the past.

5.2.0   RATIONALE

We all agree that education is a powerful gateway to human development. It is hence, very essential to observe the changes happening in the field of education with reference to larger socio-economic and technological contexts. In this newly emerging electronic learning era and knowledge network, what are the new dimensions of education? How is the role of books, teachers, teaching-learning materials, mode of communication with the students, community participation etc. changing? Moving further, with the introduction of CBCS (Choice Based Credit System) in universities of Gujarat the days have already come where we have to prepare the recipes for the cafeteria and deck them up, and advise the students about the taste and significance of each recipe. How should the educational organization respond to these changes? What should the higher education institutions learn from all these? In many parts of the world the conventional campus is either giving its way to virtual campus or is adopting the features of virtual campus where teachers load their lessons on internet or other forms of computer networks, students download the lessons and interact with

teachers through chat sessions at a predetermined time across the globe. To respond to all this, universities are adopting multi approach of offering same course through face to face mode, conventional distance education mode and e-learning mode. The concept of e-learning will allow students to access the courses to the best of choice, with flexibility of time, pace and space and it also gives an opportunity to interact with the best in the world. Thus, e-learning is the latest mode of approach that is being used in the educational institutions. However, the million dollar question is, can these technological changes provide solutions to many problems being faced in the higher education system? We all agree that technology, alone does not teach. It enables the delivery of teaching and shifts the responsibility of learning from teacher to learner. The concept of e-learning is an emerging virtual reality in the educational organizations and is posing a new challenge of transforming not only the institutional programmes and functions but the very ethos of the educational process and the system. Hence, there is a strong need to deliberate on this. As more and more institutions are facing the need to move towards virtualization, what and where would be the real changes happening in terms of staff, students, office procedures, curriculum, methods of teaching, curriculum transaction etc? Will technology management become equally important as office management, finance management, student and staff management etc. in every educational institution? As communication plays an important role in education, to what extent will these new modes of communication techniques help us to address the problems of classroom? The researcher would here like to mention the quotes mentioned by Tiffin and Rajasingham "Like the home and work educational environments, the classrooms might need to permit broadband, fully meshed, fully interactive communication that can be multimedia and address all sensory channels." (Tiffin and Rajasingham, 1995). Can the use of electronic learning system itself improve the quality of learning? How far is the faculty ready in terms of their skills to ensure that the power of these growing technologies are harnessed? Further, from our books, our education is migrating onto internet, leading to an increasing proliferation of internet-based virtual components into the traditional teaching-learning system. In an attempt to participate in the educational revolution, many institutions are tending to transform their classroom conventions of pre-established body of knowledge and practices on to the information super highways. They are attracted by commercial interest inherent in the globalization of education, technology push, rather than pedagogical rationale. While

powerful clusters of technology are increasingly available, the research feels that it is highly required for researching the experiences of the institutions in migrating onto the virtual experiences in the form of e-learning and study their scenario. The internet, multimedia, and virtual realities are seductive and hence it is very essential to examine its potential in terms of learning and various other dimensions.

According to Sherman and Judkins (1992), "most technologies at their outset are considered neutral. It is we people, who determine how, where and for what they are used. And as the world grows more sophisticated and its parts increasingly interrelated, so these decisions get more different and more important. Virtual reality is the most recent of links in this long chain, and like these other fundamental changes radio and TV included-it will offer us visions of hell as well as the more widely promised glimpses of heaven." Hence, for the implementation of any new technology, it is essential that there need to be paradigm shift with respect to various institutional level practices like –at management level, it need to create the vision and develop the strategic steps in order to achieve that vision, at pedagogical level, appropriate curricula and methodology need to be developed, teacher training and technical support systems are to be put into place so that teachers effectively integrate technology seamlessly into the curricula. With our higher education systems changing fast to adopt multi-channel learning and take the full potential advantage of information and communication technologies, researcher felt that there is a need to study about the scenario of practices being adopted in the higher educational institutions that are using e-learning practices in various aspects of its system. Hence, the researcher in an attempt to find answer to the many questions being raised in the mind, made an attempt to carry out the present study.

Whether one accepts or not, time has come for the education system and specially higher education to open their systems to take the advantage of these new technological revolutions. However, this is not a simple task as it requires large investments in hardware, software, training and content development. Hence, before claiming that higher education institutions must take up initiatives in this costly direction, it is very necessary to study about the institutions that are presently adopting such practices.

On the other side, realizing that e-learning would facilitate life long learning and sustain knowledge capabilities of the citizens of the country, the NKC (National Knowledge Commission) recommend establishment of a statutory body i.e., Indian Council of On-line Learning which also highlights the increasing importance of e-learning. Not only this, seeing the changing faces of virtual education in India, the University Grants Commission (UGC) (According to Press Trust of India Report on 24/12/2006, in order to meet the demand of higher education, UGC is planning to start virtual university and also offer on-line examinations) and the All India Council for Technical Education (AICTE) are also keen in promoting virtual campus. All these emerging trends in higher education in the area of e-learning have motivated the researcher to take up the study in this direction. Further, to utilize e-learning to its full potential, it is paramount that the results garnered by all the players in the field of e-learning should be explored and also they need to be shared. This will provide a view from a new dimension covering not only the achievements but also the gaps prevalent in the implementation of e-learning. The need of hour is to craft a platform for interchange of ideas and experiences so that a new perspective on e-learning concepts, implementations and technologies can be gained, leading to full utilization of e-learning's potentials. Hence, the investigator felt that the study would act like a platform to explore and share the ideas and experiences of higher education institutions that are using e-learning practices. Further, various initiatives being taken by the government of Gujarat (like developing a policy on ICT in school education, introduction of CBCS in universities, establishment of digital education and learning laboratories in colleges, proposal of department of higher education to set up 180 computer laboratories each having 100 computers and internet connectivity etc) and other higher education institutions of Gujarat in direction of using information and communication technology has also motivated the researcher for the study.

5.3.0   RESEARCH QUESTIONS

In this newly emerging electronic learning system and knowledge network, what are the new dimensions of education? How are the roles of books, teachers, teaching-learning materials, mode of communication with the students etc. changing? 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 forms of e-learning are 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 scenario of e-learning practices that are being adopted in these institutions?

- 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?

5.4.0   STATEMENT OF THE PROBLEM

A Study of E-learning in Gujarat.

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

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

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

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

5.6.0   DELIMITATIONS OF THE STUDY

The study is delimited to the higher education institutions of Gujarat which are adopting the e-learning practices.

5.7.0   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 pasges, 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 white boards, 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.

5.8.0   RESEARCH METHODOLOGY

The target group for the study consists of faculty, students and laboratory administrators belonging to the higher education institutions that are adopting e-learning practices in teaching-learning, evaluation, and training etc. either in blended mode or fully online mode. The   present study is a survey research where the researcher made an attempt to study the e-learning practices of the institutions with references to various aspects like, the forms of e-learning used; the problems faced by them in using e-learning; opinion of the participants regarding the e-learning practices being adopted in their institutions, their opinion regarding the advantages and disadvantages of e-learning, their opinion regarding the concept of e-learning, and other virtual initiatives etc. The methodology meant for survey research was used in the present study which is given as under.

5.8.1 POPULATION
The population for the present study consisted of all the faculties, students and lab administrators of higher educational institutions of Gujarat which are adopting e-

learning practices (blended or fully online) in teaching-learning, training, evaluation etc.

5.8.2 SAMPLE

In the present study, the sample consists of 83 faculties, 153 students and 12 lab administrators belonging to 22 higher education institutions (i.e., 35 colleges) and 10 other institutions that are using fully online mode of e-learning for providing few of its courses. In this way, an attempt was made to ensure that the sample for the study was collected from all parts of Gujarat and included the institutions that use either blended approach of e-learning or fully online approach of e-learning.

5.8.3 TOOLS FOR DATA COLLECTION

Questionnaires were prepared by the researcher to collect data from faculty, students and lab administrators. The questionnaires were available in two forms i.e., e-form when the data was collected through e-mail and paper form when the data was collected personally.

5.8.4 DATA COLLECTION

A list of higher education colleges in Gujarat was acquired through internet and the colleges which did not have their website were excluded from the study. A request letter informing about the nature of the study and also requesting the permission for data collection was sent to the heads of colleges of those higher educational institutions which were having their functional website. Where ever, the email ids of faculty and students were available on institutions' website, a personal letter was sent to faculty and students requesting them to fill up the questionnaire.

Apart from this, researcher also acquired permission from few institutions for collecting the data personally. Researcher personally visited such institutions and observed their e-learning practices and also collected the data. Thus the data was collected personally from 12 higher education institutions (22 colleges) and through e-mail from 10 higher education institutions (13 colleges).

In case of institutions offering fully online courses, as mentioned earlier, as the researcher could not get any response from those institutions, an attempt was made to carry out a detailed study of their websites. In carrying out this detailed study, researcher selected 10 such institutions that have credibility in terms of higher education, clienteles, popularity etc.

Thus, the data was collected by the researcher for a period of one year from 2009 to 2010 through emails, personal contacts and study of websites.

5.8.5 DATA ANALYSIS

The data collected was analyzed based on percentages, frequencies, intensity index etc. The analyzed data were then synthesized and presented in tables, figures. In the event of missing data or invalid answers, the questionnaire was considered void and not used in the analysis. This was done to be consistent as the online survey could not be sent back to the participants and was therefore considered invalid if few questions were left unanswered.

5.9.0 MAJOR FINDINGS

INFRASTRUCTURE FOR E-LEARNING

- Most of the faculties in higher education institutions had individual personal computers with internet connection for them in their staff rooms.
- Almost all the higher educational institutions had more than one computer lab and they had sufficient number of computers as per their students' strength.
- Almost all the institutions had high bandwidth connectivity and much secured network connectivity with free and unlimited internet access in staff rooms and computer labs.
- Only few institutions were using CMS/LMS (Campus Management System/Learning Management System) for providing e-learning practices. On the other side, majority of institutions were using the basic digital technologies to provide e-learning facilities.

FORMS OF E-LEARNING

- When it comes to blended form of e-learning approach, most of the institutions were using the basic e-learning practices like intranet and e-mail while the practices like blogs, video conferencing, WBT, chats, virtual classrooms were adopted at a very minimal level in the institutions which are adopting the e-learning practices.

- Apart from this, many higher educational institutions were making use of their institutional website to adopt either blended approach of e-learning or fully online approach of e-learning. These institutions were offering many self paced courses in module formats in various areas of studies either through their institutional websites or through their tele learning centers. Some of the institutions also had virtual classroom. As a part of their virtual initiatives, many institutions uploaded their courseware, recorded video sessions, interactive tele-conferencing sessions, online counseling sessions, sample question papers, question banks, online assignments, lab manuals on to their website.

E-LEARNING FACILITIES AVAILABLE

- From the data collected, it was very difficult to generalize about the facilities of e-learning that were available in the higher education institutions. The most common available facilities of e-learning were Online Study Material, Online Syllabus. While Assignment Feedback, Tests or Quizzes, Open Forums, Web Seminars and Digital libraries were the least available e-learning facilities.

- Regarding the fully online approach of e-learning in higher education institutions, a wide range of fully online initiatives were also being taken up in higher education institutions under the titles like ilearn, FlexiLearn, EduNxt, online learning etc. Some of the institutions were charging the students for the courses and the services that they were offering to them while few institutions were providing these services free of cost with the help of their institutional website. Some of the institutions were using a mixed strategy i.e., to provide a few services free of cost and to provide some services with a payment. However, till date, most of these practices were visible in institutions offering

professional courses like management courses, engineering courses, computer courses, chartered accounts, company secretaries etc.

OPINION REGARDING E-LEARNING PRACTICES

- It was observed that most of the higher education institutions were using the e-learning practices since last three years and in very few institutions it was mandatory for the faculties to use e-learning practices in their teaching-learning, evaluation and other aspects.

- Both students and faculties felt that the e-learning practices adopted by the institutions were at very basic level and hence they did not need any special guidance in this regard.

- In many of the institutions, the faculties responded that the teaching-learning content that is once posted on the intranet was available to the students throughout the year and in most of the institutions the e-learning practices were being used mostly at Masters, Bachelors and Executive Programme levels.

- Further, a majority of faculties and lab administrators felt that the e-learning developments happening in their institutions were at moderate level and a less majority of the participants strongly agreed that the e-learning practices were helping in improving their academic/professional efficiencies. Factors like the basic level of e-learning practices being adopted in the institutions, the less effectiveness of the content that is posted on intranet, the moderate level of e-learning developments happening in the institutions etc, could be some of the reasons why both the faculties and students do not strongly agree that the e-learning practices are helping in improving their professional/academic efficiency.

- Majority of stakeholders are satisfied with regard to the e-learning practices being adopted in the institutions.

- Even though the institutions have sufficient level of infrastructure and supporting resources like computers, network connectivity, internet connection, high bandwidth, secured network, software specialists, latest software etc the stakeholders were not fully satisfied with the e-learning practices being adopted in their institutions.

OPINION REGARDING THE CONCEPT OF E-LEARNING

- Most of the responded faculties believed that e-learning has a good value in teaching-learning. A clear perception of the participants regarding the comparative efficiency of learning in e-learning platform and the traditional mode could not be obtained.

- According to respondents gender did not appear to moderate the response of students in e-learning mode and academically well prepared students respond more positively to e-learning practices of the institution than academically less prepared students.

- Regarding the benefits of e-learning, the stakeholders felt that access to information related to the course content becomes easy and fast in the e-learning platform and further it is easy to reach more students in less time. Also, they all almost equally felt that e-learning platform provides the scope for learning at own pace, at any time. However, both faculties and students expressed that e-learning platform is not of that help in maintaining transparency in the system. On the part of the faculties, they felt that providing additional information regarding the course becomes easy in e-learning platform and it also becomes easy for them to reuse the content.

- In terms of stakeholders' perception regarding the dis-advantages of e-learning, all the stake holders felt that e-learning mode reduces face to face interactivity and it is actually very difficult to trace the actual performance of the students through this mode. They also said that as the e-learning modules are available for a longer time, it reduces students' interest towards these modules as they develop the tendency of postponing their tasks. Further, few faculties felt that handling and management of content in e-learning mode is a technical affair and thus it is also considered as one of the dis-advantage of e-learning.

- In terms of challenges or barriers to e-learning, it can be seen that most faculties felt that adopting e-learning does not increase their work load and they also believed that students were capable enough to work in e-learning mode and hence these aspects were rated as least barriers. The two factors that were considered to be the highest barriers in adopting e-learning practices at

institutional level by the faculties were unreliable technology and lack of interest and confidence on the part of faculties to use the e-learning practices.

USE OF E-LEARNING TOOLS

- In terms of familiarity with various e-learning tools like virtual tutorial/learning software, computer based assessments, virtual learning environment tools etc, most of the faculties have tried these tools atleast once or have not used them at all. A very meager percentage of faculties claim that they are expert users with reference to their familiarity with the mentioned e-learning tools. Comparatively, lab administrators were found to be more familiar than faculties in this regard.

- Most of the lab administrators and faculties consider themselves as expert user with respect to e-learning tools. A very meager percentage of faculties feel that they are champions in terms of their expertise with e-learning tools.

SHARING OF E-LEARNING MODULES

- Most of the participants wish that the institutions should adopt the practice of sharing the e-learning modules. Almost all i.e, students, faculties and lab administrators believed that this practice should be adopted.

- Most of the faculties expressed that the basis of sharing these modules should be on "No profit No Loss". However, majority of students expressed that the basis of sharing should be "Free of Cost". Lab administrators are also more inclined toward sharing of these modules on "No Profit No Loss" basis.

5.10.0 EDUCATIONAL IMPLICATIONS OF THE PRESENT STUDY

The findings and interpretation of the data helped the researcher to derive following educational implications

- It was observed during data collection that majority of the institutions have started using the e-learning practices just as a routine exercise and they did not make any special efforts to orient their faculties regarding the benefits of such practices. As a result the potential of the institutions in terms of human and physical resources to adopt e-learning practices is not being used optimally.

Hence, it is very essential that the institutions should take proper measures to develop awareness and readiness regarding the e-learning practices among the faculties.

- Most of the educational institutions were using the basic digital technologies to provide the e-learning facilities. However, if they put into practice the systematized aspects like LMS/CMS they will be able to easily track the performance of the students and will also able to make optimum use of other aspects of e-learning platform.

- Majority of the institutions have sufficient level of infrastructure to adopt the e-learning practices which is a very good sign. Hence, if the institutions want to reap the optimum benefits of e-learning platform, they should develop and put into practice proper feedback and evaluation mechanisms to know opinion and performance of various stakeholders regarding the e-learning practices being adopted in their institution.

- The findings of the objective 2 and 3 of the study revealed that various forms of e-learning with many e-learning facilities were available in the institutions. However, all the stakeholders were not equally aware about these things. Hence, the institutions should take proper measure to ensure that all the stakeholders become properly aware about the forms and facilities of e-learning available in their institution.

- The content that is posted on the intranet would be effective only when it meets the needs of the students. Hence, the faculties should acquire the skills for developing the content which suits the e-learning platform. For all this to happen, institutions should organize special trainings to the faculties and orient them regarding various aspects which should be kept in mind while developing the content for e-learning platform. Institutions should thus take measure to increase the motivation of faculties towards this platform.

- Institutions should also take care to see that the e-learning practices adopted in the higher education institutions not only act as a medium to promote teaching-learning, evaluation, training and other aspects of institutions but it also becomes a source for increasing the professional/academic efficiency of its stake holders.

- During the study it was observed that optimum use of the e-learning platform was made in such institutions where it was mandatory for them to use the practices. Hence, institutions can also think about making the e-practices mandatory for both the faculties and students. Institutions can also think about mechanisms to boost up the motivation of the faculties towards this platform.

- Difficulty in tracing the real performance of the students is seen as one of the biggest dis-advantage of e-learning platform. Putting in practice the system of LMS/CMS by the institutions would help in removing this dis-advantage.

- Institutions can also on an experimental basis expose their students and faculties to the various e-learning courses, modules, virtual labs, webcasting, live lectures etc hosted by various organizations like IGNOU, C-DAC, WebIIT (by IIT Delhi), University of Virginia etc.

- The e-learning forms like blogs, chats, and virtual classrooms are very powerful and hence measures should be taken by the institutions to promote the use of these forms of e-learning both by students and faculties. Initially the use of these forms of e-learning can be introduced through initiatives like project work, assignments etc.

- The fully online approach of e-learning is also catching the speed. Institutions are promoting their fully online approaches under various headings and through this approach they are offering various facilities of e-learning. If the formal educational institutions develop a tie up with them to use their facilities it can improve the quality of higher education.

- As emphasized from beginning, e-learning is a powerful medium. If the institutions want to reap maximum benefits from this platform, it is very essential for them to develop feedback and evaluation mechanisms with regard to their e-learning practices.

Institutions thus should realize that just putting into action the e-learning practices would not give them the maximum benefits in terms of educational outputs but it is the real satisfaction on the part of the stakeholder that would give the success to this initiative.

5.11.0 PROPOSED E-LEARNING QUALITY GUIDELINES FOR HIGHER EDUCATION INSTITUTIONS IN THE STATE OF GUJARAT

If higher education institutions follow a set of e-learning quality guidelines, the inconsistencies which tremendously reduce the effectiveness of e-learning platform can be removed effectively. Such guidelines would help the institutions to improve the quality of their e-learning practices. On the basis of the observations made throughout the study, the researcher would like to suggest the following e-learning quality guidelines:

1. The institutions should have an operational website.
2. Institutions should have a proper vision and objective in using the e-learning practices.
3. Institutions should have necessary infrastructure to adopt e-learning practices.
4. Institutions should use various forms and facilities of e-learning.
5. Institutions should provide training to it faculties and students regarding various aspects of e-learning (like: in use of various e-learning tools; in developing content in e-learning platform etc.)
6. It should be mandatory for all the faculties and students to use the institutions e-learning practices.
7. Institutions should develop a systematized framework of feedback and evaluation mechanism to evaluate their e-learning practices.
8. Institutions e-practices should develop academic/professional efficiencies of stake holders.
9. Institutions should have proper plans for sharing their e-resources with other institutions.

5.12.0 SUGGESTIONS FOR FURTHER RESEARCH

The present research study helped the researcher to gain a deeper knowledge about the e-learning practices being carried out in higher education institutions. The study also raised a frequency of questions regarding the e-learning practices being carried out in higher education institutions. From the gained experience, the researcher would like to provide following suggestions for further research:

- Even though the institutions claim that they use the e-learning platform, it can be noted that still they are in the infancy stage. Here there is a need to carry out deeper studies to evaluate the objectives/mission/goal of the institutions in adopting the e-learning practices. Such studies can also focus to know about the measures being taken in the institutions to make the optimum use of the e-learning platform. The findings of such studies will act like a guide for the institutions that would like to adopt the e-learning practices.

- Studies focusing on the pedagogical aspects of e-learning like which form of e-learning suits which type of content, which techniques/principles should be followed while developing the content in the e-learning platform etc can also be carried out.

- Deeper studies can also be carried out to know more about the quality of the forms of e-learning being offered in the educational institutions. Such studies would help in development of in-depth e-learning quality guidelines.

- Research studies should also be initiated to know more about the real e-learning practices being adopted in the fully online mode of e-learning. There is a need to carry out research studies specially dedicated to the fully online initiatives of the institutions. The studies should not only focus of the facilities offered by them or what is projected on their websites but should also focus of various internal aspects like response time, quality of content, troubleshooting support, expertise of the resource persons and other relevant aspects. Deeper qualitative studies should be carried out to study if any gap exists between what is displayed and what is exactly happening in the fully online mode of e-learning.

- The number of institutions in India offering the same course in face to face mode and in fully online mode is on rise. Hence, comparative research studies to study the performance of students in traditional form of teaching-learning and fully online mode of e-learning can also be carried out.

- E-learning is a very costly affair. Hence, there is a need to carry out studies in various dimensions in this area. More directive and deeper studies can be carried out to obtain information on aspects like how e-learning is helping the participants, how it is contributing to the professional efficiency of faculties, how it is contributing to the academic efficiency of students etc.

- From the obtained data, the reason for why the faculties did not use the e-learning tools and why they considered themselves not as champions was not clear. Hence, the investigator feels that there is a need to carry out studies to know the attitude of the faculties towards these new technologies. Also there is a need to carry out studies to know the initiatives being taken up by these educational institutions to ensure the optimum use of this platform. Otherwise such initiatives would remain like a showoff without contributing to the real output.

5.13.0 CONCLUSION

In majority of higher educational institutions that are adopting the e-learning platform, faculties have individual personal computers for them in their staff rooms and most of these computers are connected to internet. Many of the higher educational institutions also have Wi-fi connectivity in their campus and hence in such institutions the concept of physical computer lab did not exist. In the institutions which did not have Wi-fi connectivity in the campus, there were sufficient numbers of computer labs. Almost all the higher educational institutions have more than one computer lab and in many of these institutions, there were sufficient number of computers as per the strength of students. Further, in majority of the computer labs of the institutions, all the systems have internet connection. All the labs have cable or wireless or broad band connection for internet and no single lab has dial-up connection. In most of the institutions they have a special software specialist for the purpose of adopting e-learning practices, and they also have authoring tools which are required for the purpose of adopting e-learning practices. The institutions also have high bandwidth connectivity and much secured network connectivity with unlimited internet access. Many of the institutions have the latest software with them. A very few percentage of institutions were using LMS (Learning Management System) for providing e-learning practices. The CMS/LMS (Campus Management System/Learning Management System) of the institutions has facilities related to attendance, results of students, students' assignments, downloadable programmes and software's which are useful to the faculty and students. CMS of a few institutions also provided access to the digital libraries of their institutions. Institutions use software and applications like Moodle, Acado, google docs etc to download and upload assignments. Most of the institutions

use basic digital technologies to provide e-learning facilities. This shows that there is still not a particular high level of sophistication in the usage of e-learning practices among major institutions. Both the students and faculties agreed that the infrastructure available in their institutions is favourable to adopt the e-learning practices. However, the percentage of faculties and students falling in the category of strongly agree was very less which shows that institutions have to put some more efforts in improving the infrastructure in order to improve e-learning practices. Also during the data collection, the investigator observed that most of the institutions do not lack the infrastructure and infact, in some of the institutions, the infrastructure required for implementation of e-learning practices is excellent. They have aspects like wi-fi campus, fully networked systems, excellent trouble shooting support system etc.

When it comes to blended form of e-learning approach, most of the institutions were using the basic e-learning practices. Few institutions were using software like pen starter, turnite etc in their e-learning platform. On one side the faculties claim that they have favourable infrastructure for adopting e-learning practices and on the other hand they were using only basic e-learning practices like e-mails, intranet in their teaching-learning process etc. The reason could be that either faculties were not interested in using the practices or they do not have sufficient expertize to use the e-learning practices.

Further, the tools like blogs, virtual classrooms, and video conferences were used to a very less extent by the institutions as a part of their blended approach of e-learning. The cause for this could be that either faculty were not aware about how to integrate the use of these forms in their teaching learning process or the nature of content to be transacted is such that it does not demand the use of such facilities.

Thus, it can be deduced from the above that the dominant forms of e-learning in the institutions were intranet, e-mail and CBTs. This again reveals that there is still not a particularly high level of sophistication in the usage of e-learning among the majority of the institutions.

The collected data shows that many e-learning facilities were available in the higher education institutions but the awareness about these facilities is lacking among the

students and faculties. It was also observed that there is discrepancy regarding the awareness about the facilities of e-learning available in the institutions among the students, faculties and lab administrators. The reason for this could be that the management of the institutions has taken decision on the use of e-learning mainly because everyone else is doing it and no special efforts were made at management level to focus on pedagogical and didactic aspects of e-learning.

Further, as most of the technical work related to the e-learning platform is done by the lab administrators, it can be clearly observed from the data that in almost all the cases the lab administrators were more aware about the available facilities than the faculties and students. On one side, the awareness in case of availability of facilities like online attendance records, online assignment posting and submission, assignment feedback, tests or quizzes is more among the faculties than students. This shows that might be faculties were doing it for the sake of doing it and were not taking efforts to inform students about this. On the other hand, the awareness about facilities like online study materials, online syllabus, sample question papers, results information is more with the students than faculties. This could be because, in most of the institutions such material were uploaded to intranet by lab administrators and not the faculties. In case of facilities like online results information, open forums the students were more aware about these facilities than faculties.

Coming to the fully online approach of e-learning, a wide range of fully online initiatives were being taken up in higher education institutions in various names like ilearn, FlexiLearn, EduNxt, online learning etc. Till date, most of these practices were visible in institutions offering professional courses like management courses, computer courses, engineering courses, chartered accounts, company secretaries etc. These institutions were offering many self paced courses in various areas of studies either through their institutional websites or through their tele learning centers in module formats. Some of the institutions also had virtual classroom. Some institutions were even providing the features like video on demand and video conferencing programmes on their websites. As a part of their virtual initiatives, many institutions uploaded their courseware, recorded video sessions, interactive tele-conferencing sessions, online counseling sessions, sample question papers, question banks, online assignments, lab manuals on to their website. Some of the institutions also offered

SMS alert services to its students. Some institutions also developed knowledge portals especially for its students and faculties.

Further, as a part of fully online initiatives, it can be seen that the institutions were taking many steps to make the optimum use of e-learning platform in their teaching-learning, evaluation and other purposes. The most commonly observed features which were being used in the institutions that were using fully online mode of e-learning were the use of WBT's, uploading of video conferencing sessions, virtual classrooms, digital repositories, SMS services, Chat services etc.

Also, during the process of data collection, the investigator observed that the virtual initiatives being taken up by the institutions like ICSI, IGNOU, BAROU etc were worth praising. They were making many efforts in the direction of making maximum use of both blended mode of e-learning and fully online mode of e-learning.

With respect to fully online initiatives of the institutions, investigator made many attempts to contact many virtual universities and other online institutions but could not get any response from them. This raises the questions regarding the aspects like response time, quality of content, troubleshooting support etc of these institutions.

It can be observed that most of the educational institutions have started using the e-learning platform from more that 3 or 4 years and in majority of these institutions it is not mandatory both for faculties and students to use this platform and hence still the traditional practices were being adopted in these institutions. However, in the institutions where it is mandatory to adopt e-practices, most of the work by the faculties and students is done through e-platform only. Faculties have to compulsory maintain their online students registers, they have to compulsorily post the students results on the intranet/website, they have to upload all the assignments on e-platform and even have to accept the assignment submissions through e-mode. E-mail is also used as an official medium of contact between students and faculties. All the material useful to the students like old question papers, syllabus, teaching-learning content, useful software should all be posted on e-mode. In some institutions this task was done by faculties themselves and in some institutions the lab administrators handle the technical aspects like uploading of content, updating the content etc. In majority of

the institutions the content that is posted on the e-platform was available throughout the year and in most of the institutions the content updation was done regularly. In many of the institutions the e-learning practices were being majorly adopted in bachelors, masters and executive level programmes. The e-learning practices being adopted in the institutions were at a very basic level. The supporting environment existing in the higher educational institutions that were adopting e-learning practices was also very good. Most of the faculties and students did not have any complaints regarding the support that was available to them to troubleshoot various problems that arise during the use of e-practices. Both the faculties and lab administrators felt that the e-learning developments happening in their institutions are at moderate stage. In majority of the institutions students were not really satisfied with the quality of the content that is posted on the intranet. In some of the institutions the content that is available on the intranet was just the xerox copy of the material available in the books and hence students did not find it to be very effective.

Proceeding further, a very less percentage of students and faculties strongly agreed that the e-learning practices being adopted in their institutions were helping them in improving their professional/academic efficiency. However, majority of the participants agreed that the e-learning practices being adopted in their institutions were helping them in improving their professional/academic efficiency. Regarding the satisfaction of students, faculties and lab administrators with regard to the e-learning practices being adopted in the institutions, both the faculties and lab administrators were satisfied with the e-learning practices that were being adopted in their institutions however, majority of the students were neither satisfied nor dissatisfied with the e-learning practices that were being adopted in the institutions.

A very high percentage of faculties and lab administrators believed positively in the value of e-learning. A good point that could be observed from the obtained data was that both male and female students respond equally to e-learning practices. Most of the stakeholders felt that spreading of information related to the content becomes easy and faster in the e-learning platform and the platform helps to reach more students in less time and in e-learning platform students get the chance to learn at any time and in their own pace. Re-use of the content was also seen as one of the biggest benefits of e-learning. With respect to dis-advantages of e-learning as perceived by stakeholders,

all of them felt that e-learning mode reduces face to face interactivity and it is actually very difficult to trace the actual performance of the students. Availability of e-learning modules online for a longer time reduces student's interest as they develop the tendency of postponing the work. Students did not feel that the content posted on the intranet is effective and hence they felt that often in e-platform real/effective learning does not take place. Thus the quality of the content that is posted in the e-platform was a big matter of concern for the students. A good point that was observed from the obtained data is that faculties and students themselves felt that they were capable enough to work in the e-learning platform. Also faculties themselves directly or indirectly felt that e-learning practices do not increase their work load and they were also interested in learning more about this platform.

The data obtained from faculties and lab administrators with reference to use of various e-learning tools showed that most of the faculties did not use these tools regularly nor did they consider themselves as expert users with reference to use of these tools. Thus, when faculties themselves feel that they are not champions in terms of using various e-learning tools we cannot expect that they would show interest in using such technologies in the classrooms. This again puts forward the point that institutions have just began this initiative of using e-learning practices and have not moved forward in improving the quality of these practices. It was observed during data collection that most of the faculties did not even know the names of these e-learning technologies and other concepts of e-learning and hence they did not even agree to fill up the research tool.

In the higher education institutions, many of the stakeholders were very positive towards the idea of sharing the e-learning modules among the institutions. If such practice is adopted, it can not only improve the quality of the practices but all the stakeholders will be easily able to take the advantage of the expertize that exists in other universities/institutions. This practice will also give proper directions for improvement of e-learning practices.

In the present scenario where the Government of Gujarat especially department of education is taking many policy initiatives to use ICT to its optimum extent in higher education, it can be observed that many of the higher education institutions of Gujarat

already have good infrastructure facilities to adopt e-learning practices. They also have many forms of e-learning along with many facilities. The students and faculty of these higher education institutions are positively inclined towards e-learning practices. In this scenario when every thing exists but it is not being used properly, there is an immediate need to take such measure which would develop the culture of using these practices in the institutions. Also, there is a need to carry out research studies which will reveal to the government regarding what exactly is happening in higher education institutions in terms of its e-learning practices. On the other hand, government especially department of higher education should develop e-learning quality guidelines and should make it mandatory for all higher education institutions to follow these guidelines. For this purpose, government can take the help of higher education institutions that are already using e-learning practices effectively.

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APPENDIX I

QUESTIONNAIRE FOR FACULTY

Dear Participants,

This survey is an attempt to elicit quantitative and qualitative information regarding e-learning from participating institutions. Any information you provide in the course of this study will be treated confidentially. I would assure you that at no time will raw data be published or will you or your institution be identified. Your participation will contribute to our understanding of e-learning practices and its potential impact on teaching learning and training**.**

In the present study, e-learning is defined as an electronic medium which is manifested in _one or more_ of the following forms and used in teaching-learning, training, skill enhancement, evaluation etc either through _internet or intranet_
a. Digitalized course outline\lecture notes outline **b**. Official use of e-mail **c**. Official use of online discussions/blogs etc **e** Digitalized assessment **f**. Digitalized projects announcements and submissions **g**. Virtual classrooms (VCR) **h.** Video conference **i.** Web based trainings (WBT) **j**. Fully online courses.

ALL THE QUESTIONS FOR WHICH MORE THAN ONE ANSWER CAN BE SELECTED ARE GIVEN IN BOLD STYLE

Personal Information:
Name (optional):-
*Institution:-
*Designation:-
*e-mail address:-
*Gender:- ☐ Female   ☐Male
* Official Address:-

Please provide the answers to all the questions. If a question seems not applicable to you, please enter, **"N/a".** I request you to provide the answers to all the questions.

1. Do you have individual personal computers in staff room.   ☐ Yes   ☐ No
2. Does it have an internet connection?   ☐ Yes   ☐ No

3. Which of the following forms of e-learning are adopted in teaching-learning, evaluation, training etc:

□ Intranet   □ e-mails   □ Blogs   □ Chats   □ Video Conferencing

□ CBT (Computer Based Training) through CDs etc □ WBT (Web Based Training)

□ VCR (Virtual Classrooms) □ Any other, please mention

4. Which of the following facilities of e-learning are currently available in your organization: (put a tick mark in appropriate boxes)

Online Study materials (lecture notes, ppts, etc.)		Online Syllabus		Online program information	
Online examination scheme		Online Question banks		Online sample question papers	
e-portfolios of students		Online Attendance records		Online results information	
Links to web pages		Online Assignment postings		Online Assignment feedback	
Online tests or quizzes		Open forums		Chats	
Digital Libraries		Video Conferencing		Application sharing	
Web Seminars					
Any Other, Please mention:					

5. From which year did your institution begin to use e-learning practices in various courses (if possible, give the details course wise)

6. In which of the following programs does your institution use e-learning practices

□ Masters Degree   □ Bachelors Degree   □ Diploma/Certificate Program

□ Executive Program   □ Any other, please mention

7. Is it mandatory for you to use the e-learning practices in teaching-learning, evaluation, training etc: □ Yes   □No

8. Does your institution organize any training programs for faculty with regard to e-learning: □ Yes   □No

9. How long have you been using the e-learning practices (in months)?

10. Which of the following points do you keep in mind while developing teaching-learning content for intranet/institution website:

□ Students needs   □ Use of real time examples   □Being innovative

□Maintaining the course impact □Learning outcomes of the content □Any other, please mention

11. How long do you keep the teaching-learning content related to your subject posted on intranet\institution website?

☐ Through out the year   ☐ Six months   ☐ One month

☐ Any other, please mention

12. The infrastructure available in your institution is favourable for adopting e-learning practices:

☐ Strongly Agree   ☐ Agree   ☐ Neither Agree not Disagree

☐ Disagree   ☐ Strongly Disagree

13. Do you give any guidance to students on how to use the e-learning practices:

       ☐ Yes   ☐No

14. How would you describe the e-learning developments in your organization?

☐Highly Developed   ☐Moderate should be developed further   ☐Infancy

15. How satisfied are you with the e-learning practices of your institution?

☐Fully Satisfied   ☐Satisfied   ☐Neither Satisfied Nor Dissatisfied

☐Dissatisfied   ☐Fully Dissatisfied

16. According to you, how satisfied are the students with the e-learning practices

☐Fully Satisfied   ☐Satisfied   ☐Neither Satisfied Nor Dissatisfied

☐Dissatisfied   ☐Fully Dissatisfied

17. E-learning practices of the institution are helping in improving your professional efficiency

☐ Strongly Agree   ☐ Agree   ☐ Neither Agree not Disagree

☐ Disagree   ☐ Strongly Disagree

18. E-learning practices of the institution are helping in improving students academic efficiency

☐ Strongly Agree   ☐ Agree   ☐ Neither Agree not Disagree

☐ Disagree   ☐ Strongly Disagree

19. Do you feel that learning is more effective in e-learning mode than traditional mode?

☐ Yes   ☐ No   ☐ Both Are Same   ☐ Never Thought About It

20. According to you, the e-learning practices are

☐Very Valuable   ☐Valuable   ☐Least Valuable   ☐Not at all Valuable

21. According to you, who respond more or less well to greater use of e-learning at your institution?   ☐ Boys   ☐ Girls   ☐ Both are same

22. According to you, which students respond more or less well to greater use of e-learning at your institution?

☐ Academically well prepared   ☐ Academically less prepared   ☐ Both are same

23. Indicate your familiarity with each type of e-learning tools (put a tick mark in appropriate box):

	Expert User	Use Regularly	Tried Once	Have Not Used
Virtual Learning Environment (Eg. WebCT, Blackboard...)				
Authoring web pages(for specific learning outcomes)				
Video conferencing				
Electronic White Boards				
Learning Softwares/virtual tutorials				
Computer Based Assessment				

Overall how would you consider yourself in the use of e-learning tools?

☐ Developer or Champion   ☐Very Expertized   ☐Experertized

☐Somewhat Expertized   ☐No Expertize At All

24. According to you, match the statements with ranks:

Personal Benefits of e-learning	Rank
Spreading of information related to the content becomes easy and faster.	1st
Students can learn at any place, pace, and any time	2nd
Re-use of content	3rd
Easy to update the students records	4th
Any other, please mention:	

25. According to you, match the statements with ranks:

Professional Benefits of e-learning	Rank
Assist in maintaining transparency	1st
Re-use of content	2nd
Easy to provide additional information regarding the course	3rd
Can reach more students in less time	4th
Any other, please mention:	

26. According to you, match the statements with their ranks:

Disadvantages of e-learning practices	Rank
It is a costly affair	1st
Handling and management of content is a technical affair	2nd
It reduces face to face contact and interactivity	3rd
As the content is available online for a long time, it reduces students	4th
In e-mode, it is difficult to trace the students actual learning.	5th
Any other, please mention:	

27. Do you think that your organization should share the e-learning modules with educational institutions □Yes □No

28. If your organization should share the e-learning modules with educational institutions, then it should be done :

□Free of Cost □ On, No Profit No Loss Basis □ To Generate Revenue

29. According to you, match the statements with their ranks:

Challenges/barriers to e-learning	Rank
Students lack knowledge about how to use the e-content.	1st
Network access/ Usage problems (unreliable technology)	2nd
Students lack self motivation in using e-content	3rd
Securing adequate funding to maintain intranet	4th
Faculties lack interest and confidence to use this technology in	5th
Increasing work load on the part of faculties.	6th
Any other, please mention:	

NB: The e-version of the questionnaire is given in the CD attached as Appendix-1 (E)

APPENDIX II

QUESTIONNAIRE FOR STUDENTS

Dear Participants,

This survey is an attempt to elicit quantitative and qualitative information regarding e-learning from participating institutions. Any information you provide in the course of this study will be treated confidentially. I would assure you that at no time will raw data be published or will you or your institution be identified. Your participation will contribute to our understanding of e-learning practices and its potential impact on teaching learning and training**.**

In the present study, e-learning is defined as an electronic medium which is manifested in _one or more_ of the following forms and used in teaching-learning, training, skill enhancement, evaluation etc either through _internet or intranet_

a. Digitalized course outline\lecture notes outline **b**. Official use of e-mail **c**. Official use of online discussions/blogs etc **e** Digitalized assessment **f**. Digitalized projects announcements and submissions **g**. Virtual classrooms (VCR) **h.** Video conference **i.** Web based trainings (WBT) **j**. Fully online courses.

ALL THE QUESTIONS FOR WHICH MORE THAN ONE ANSWER CAN BE SELECTED ARE GIVEN IN BOLD STYLE

Personal Information:

Name (optional):-

*Educational Qualification:-

*Parents Educational Qualification:-

*Pursuing course:-

*e-mail address:-

*Gender:- □ Female   □Male

* Institution Address:-

If a question seems not applicable to you, please enter, "**N/A**". **I request you to provide the answers to all the questions.**

1. How comfortable are you in working with the computers?
   □Very Comfortable   □ Comfortable   □Not Comfortable

2. How many hours do you use a computer (in a week)?
   □More than 20 hours   □ Between 20 to 10 hours   □Between 9 to 1 hour
   □Less than an hour

3. In terms of using the internet, you are:
   □ Developer or Champion □Very Experienced User   □Experienced User
   □Somewhat Experienced   □Not At All Experience

4. **Which of the following forms of e-learning are adopted in teaching-learning, evaluation, training etc:**
   □ Intranet   □ e-mails   □ Blogs   □Chats   □Video

   Conferencing   □CBT (Computer Based Training)   □WBT (Web Based

   Training) □ VCR (Virtual Classrooms) □ Any other, please mention

5. **Which of the following facilities of e-learning are currently available in your organization: (put a tick mark on appropriate boxes)**

Online Study materials (lecture notes, ppts, etc.)	□	Online Syllabus	□	Online program information	□
Online examination scheme	□	Online Question banks	□	Online sample question papers	□
e-portfolios of students	□	Online Attendance records	□	Online results information	□
Links to web pages	□	Online Assignment postings	□	Online Assignment feedback	□
Online tests or quizzes	□	Open forums	□	Chats	□
Digital Libraries	□	Video Conferencing	□	Application sharing	□
Web Seminars	□				
□ Any other, please mention					

6. The infrastructure available in the institution is favourable for adopting e-learning practices:
   □ Strongly Agree   □ Agree   □ Neither Agree not Disagree
   □ Disagree   □ Strongly Disagree

7. Do you get any guidance on how to use the e-learning practices:
   □ Yes   □No

8. How often do you logon to your institution intranet\institution web site to access its resources or information?
   □ Daily Once   □More than once a day   □Once a week
   □Atleast twice a week   □Any other, please mention

9. How often the teaching-learning content related to your course is updated on intranet\institution website?
   □ Once in a year   □ Once in six months   □ Once in a month
   □Any other , please mention

10. How satisfied are you with the e-learning practices of your institution?
    □Fully Satisfied   □Satisfied   □Neither Satisfied Nor Dissatisfied
    □Dissatisfied   □Fully DisSatisfied

11. E-learning practices of the institution are helping in improving your efficiency
    □ Strongly Agree   □ Agree   □ Neither Agree not Disagree   □ Disagree
    □ Strongly Disagree

12. Do you feel that learning is more effective in e-learning mode than traditional mode?
    □ Yes   □ No   □ Both Are Same   □ Never Thought About It

13. With regard to e-learning practices, the support provided by incharge faculty member is:
    □ Excellent   □ Very Good   □ Good   □ Bad   □ Very Bad

14. With regard to e-learning practices, the support provided by lab administrator is:
    □ Excellent   □ Very Good   □ Good   □ Bad   □ Very Bad

15. Regarding the teaching-learning content posted on intranet\institution website (put a tick mark on appropriate boxes)?

Advantages:
    □ It is according to students needs   □ Use of real time examples
    □ Innovative   □ Effective   □ Any other, please mention

Disadvantages:
□Delay in posting the content   □ It is removed in a short span   □It   is   not updated frequently   □Some times it is an exact xerox copy of text/reference book.
□ We do not have the scope to clarify our doubts □ Any other, please mention

16. According to you, match the following statements with their ranks:

Benefits of e-learning	Rank
Ease of access of information related to the course	1st
Students can learn at their own pace	2nd
Enables learning at any time	3rd
Enables learning at any place	4th
Assist in maintaining transparency	5th
Any Other, Please Mention	

17. According to you, match the following statements with their ranks:

Disadvantages of e-learning	Rank
E-learning reduces face to face contact and interactivity	1st
As the study modules are available online for a long time, E-learning	2nd
In e-mode, it is difficult to trace the students actual learning.	3rd
Often, effective\real learning does not happen	4th
Any Other, Please Mention	

18. E-learning practices of our institution helped me in increasing my academic performance:

☐ Strongly Agree ☐ Agree ☐ Neither Agree not Disagree ☐ Disagree
☐ Strongly Disagree

19. Do you think that your organization should share the e-learning modules with educational institutions   ☐Yes   ☐No

20. If your organization should share the e-learning modules with educational institutions, then it should be done :   ☐ Free of Cost   ☐ On, No Profit No Loss Basis   ☐ To Generate Revenue

NB: The e-version of the questionnaire is given in the CD attached as Appendix-2 (E)

APPENDIX III

QUESTIONNAIRE FOR LABORATORY ADMINISTRATORS

Dear Participants,

This survey is an attempt to elicit quantitative and qualitative information regarding e-learning from participating institutions. Any information you provide in the course of this study will be treated confidentially. I would assure you that at no time will raw data be published or will you or your institution be identified. Your participation will contribute to our understanding of e-learning practices and its potential impact on teaching learning, training etc**.**

In the present study, e-learning is defined as an electronic medium which is manifested in _one or more_ of the following forms and used in teaching-learning, training, skill enhancement, evaluation etc either through _internet or intranet_

a. Digitalized course outline\lecture notes outline **b**. Official use of e-mail **c**. Official use of online discussions/blogs etc **e** Digitalized assessment **f**. Digitalized projects announcements and submissions **g**. Virtual classrooms (VCR) **h.** Video conference **i.** Web based trainings (WBT) **j**. Fully online courses.

ALL THE QUESTIONS FOR WHICH MORE THAN ONE ANSWER CAN BE SELECTED ARE GIVEN IN BOLD STYLE

Personal Information:

Name (optional):-

*Institution:-

*Designation:-

*e-mail address:-

*Gender:-   ☐ Female   ☐Male

* Official Address:-

Please provide the answers to all the questions. If a question seems not applicable to you, please enter, **"N/A".**

1. Approximately, how many computers are there in your lab?

2.How many computers in your lab are connected in network?

3.Which type of network is maintained in your lab? □ LAN □ WAN □CAN □Any other, please mention

4.Which type of connection is maintained in the network? □Wireless □Wired

5.Is your network accessible to any other institutions? □Yes □No

6.If yes, give the names of the institutions to which your network is accessible:

7. What is the data transfer speed in your network?

8. How secured is your network? □ Highly Secured □ Secured

   □Not at all secured

9. The internet connection in your lab is available in

   □All the Computers □Most of the computers □Few Computers
   □Very few computers

10. Which type of internet connection do you have in your lab?

   □Dial Up □Cable □Wireless □Broad band □Any other, please mention

11. How regularly do you logon to intranet\college website

   □Throughout the working hours □Half of the working hours □As and when need arises. □ I Don't Know for Sure

12. From which year did your institution begin to use e-learning practices?

13. E-learning practices are being adopted in which of the following courses?

   □ Masters Degree □ Bachelors Degree □ Diploma/Certificate Program

   □ Executive Program □ Any other, please mention

14. What is your role in e-learning?

   □ Content Provider □ Content modifier □ Content updater □ Whole management of e-learning □ Any other, please mention

15. Please give a small description about your job i.e., area of responsibility and tasks performed by you with respect to e-learning practices.

16. Do you feel that learning is more effective in e-learning mode than traditional mode?

   □ Yes □ No □ Both Are Same □ Never Thought About It

17. According to you, e-learning is   □Very Valuable   □Valuable   □Least Valuable
    □Not at all Valuable

18. According to you, **match** the following statements to the ranks:

Benefits of e-learning	Rank
Spreading information related to profession becomes easy and faster	1st
Helps in being upto date with professional needs	2nd
Assist in development of professional skills	3rd
Enables learning at Any place, pace and any time	4th

19. What is your opinion regarding the following statements about e-learning:

   E-learning reduces face to face contact and interactivity □Yes   □No

   As the study modules are available online for a long time, E-learning reduces

   students interest towards the modules   □Yes   □No

   Often, effective\real learning does not happen   □Yes   □No

   E-learning practices increases pressure on the original work □Yes   □No

   In e-mode, it is difficult to trace students' actual performance. □Yes   □No

20. According to you, **match** the following statements to the ranks:

Problems of adopting e-learning practices	Rank
Lack of pre training regarding e-learning practices	1st
Network access/ Usage problems (unreliable technology)	2nd
Lack of sufficient technical infrastructure to promote e-learning	3rd
Handling and management of E-learning is a technical affair	4th
Any Other, please mention:	

21.   Which of the following facilities of e-learning do you currently provide:

Online Study materials (lecture notes, ppts, etc.)	□	Online Syllabus	□	Online program information	□
Online examination scheme	□	Online Question banks	□	Online sample question papers	□
e-portfolios of students	□	Online Attendance records	□	Online results information	□
Links to web pages	□	Online Assignment postings	□	Online Assignment feedback	□
Online tests or quizzes	□	Open forums	□	Chats	□
Digital Libraries	□	Video Conferencing	□	Application sharing	□
Web Seminars	□	e-books	□		
□ Any other, please mention					

22. How would you described the e-learning developments in your organization

☐Highly Developed ☐Moderate but should be developed further ☐Infancy

23. How satisfied are you with the e-learning modules:

☐Fully Satisfied ☐Satisfied ☐Neither Satisfied Nor DisSatisfied

☐Dissatisfied ☐Fully DisSatisfied

24. According to you, how satisfied are the students with the content posted on intranet?

☐Fully Satisfied ☐Satisfied ☐Neither Satisfied Nor DisSatisfied

☐Dissatisfied ☐Fully DisSatisfied

25. How far do you agree that putting the content on intranet has helped students

☐ Strongly Agree ☐ Agree ☐ Neither Agree not Disagree ☐ Disagree

☐ Strongly Disagree

26. Do you think that your organization should share the e-learning modules with educational institutions ☐Yes ☐No

27. If your organization should share the e-learning modules with educational institutions, then it should be done :

☐ Free of Cost ☐ On, No Profit No Loss Basis ☐To Generate Revenue

28. To provide online courses, your institution is using:

☐ Learning Management System (LMS) ☐Basic Digital Technologies

☐ Any other, please mention

If you are using LMS, give the answers to question 29 and 30, otherwise please go to question 31.

29. What are the facilities available in your LMS:

☐ Maintenance of employees records ☐ Maintenance of finance

☐ Maintenance of performance records ☐ Any other, please mention

30. Which LMS do you use?

31. Indicate your familiarity with each type of e-learning tools (put a tick proper in appropriate box):

	Expert User	Use Regularly	Tried Once	Have Not Used
Virtual Learning Environment (Eg. WebCT, blackboard,….)				
Authoring web pages(for specific learning outcomes)				
Video conferencing				

Electronic White Boards				
Learning Softwares/Virtual Tutorials				
Computer Based Assessment				

Overall how would you consider yourself in the use of e-learning tools?

□ Developer or Champion   □Very Expertized   □Expertized

□Somewhat Expertized   □No Expertize At All

32. What was the approximate initial cost for initiating the e-learning in the organization?

33. What is the approximate recurring cost (per month) for the maintenance of e-learning in your organization?

34. What infrastructure\resources are available for adopting e-learning practices?

□Multimedia Computers   □Networking thorough Fiber Optics   □Software Specialists   □Authoring tools   □High bandwidth connection   □Free   & unlimited internet access   □LMS   □Secured networks   □ connectivity with digital libraries   □Latest software   □Any other, please mention

NB: The e-version of the questionnaire is given in the CD attached as Appendix-3 (E)

APPENDIX IV

LIST OF PARTICIPANTS IN THE PRESENT SURVEY

Institutions from where data was collected personally

1. National Institute of Design (NID), Gandhinagar and Ahemdabad
2. National Institute of Fashion Technology (NIFT), Gandhinagar
3. Mudra Institute of Communications, Ahmedabad (MICA)
4. Indian Institute of Management ,Ahmedabad
5. Navrachan College of education, Vadodara
6. LDRP Institute of Technology and Research (Mechanical, Civil, Electronic), Gandhinagar
7. Dhirubhai Ambani Institute of Information and Communication Technology (B.Tech and M.Tech programmes) Gandhinagar
8. LD Engineering college (Mechanical, Civil, Electronic), Ahmedabad
9. Globsyn Business School, Ahmedabad
10. NIRMA (Management, Civil, Mechanical), Ahmedabad
11. Pandit Deendayal Petroleum University (PDPU) (School of Technology, School of Petroleum technology, School of Liberal Studies), Gandhinagar
12. Gujarat Law Society (GLS) (MCA and MBA), Ahmedabad

Institutions from where data was collected through E-mail

1. Atmiya Institute Of Technology & Science, Rajkot (Department of Mathematics).
2. Medical college, baroda (Department of Prevenitve and Social Medicine, department of surgery, Department ODP&SM).
3. G H Patel College of Engineering & Technology, Anand.
4. C K Pithawala College of Engineering & Technology, Surat.
5. Waymade College of Education, Vallabh Vidyanagar.
6. Sigma College Of Pharmacy, Baroda.
7. Computer Deparment, Mechanical department, Sankalchand Patel College of Engineering, Visnagar.
8. Shrimad Rajchandra Institute of Management and Computer Application (SRIMCA), Surat.
9. Institute of Rural Management Anand (IRMA), Anand.
10. Sardar Vallabhbhai National Institute of Technology,Surat.

INSTITUTIONS USING FULLY ONLINE MODE OF E-LEARNING THAT WERE COVERED IN THE STUDY

1. Netvarsity
2. Symbiosis
3. Aptech Online varsity
4. IGNOU (Indira Gandhi National Open University)
5. ICICI (Industrial Credit and Investment Corporation of India)
6. Reliance World
7. ICSI (Institute of Company Secretaries of India)
8. Dr. Babasaheb Ambedkar Open University
9. ICAI (Institute of Chartered Accounts of India)
10. Sikkim Manipal University