CHAPTER 2: LITERATURE REVIEW

2.1 E-LEARNING: CONCEPTS AND PRACTICES IN HEIs

e-Learning is a trendy expression among the educators and learners of HEIs as far and wide as possible. Some discussion of it as a style while others aim to learn and incorporate ICT-devices in their showing and learning practices. e-Learning refers to any level of applying machines and related innovations in instructional method, learning and instruction administration. Case in point, the vast majority of the Teachers and Students in higher instruction use Internet for searching, messaging, visiting or whatever possible reason and consequently figure out how to add new angles to their showing and learning – this is likewise a sort of being included in e-Learning (Nawaz and Kundi) 76. Similarly, utilizing a machine to set up an address (by instructor), a chore (by learner) and writing and distributed a notice in a product (by administrator) or doing this on the web, as Virtual University does – all reflect e-Learning in action. The instructive applications of ICT are different; beginning from a straightforward data conveyance and completion with current employments of cognitive devices (Web 2.0 advances), which fit in with the group of adaptive innovations or frameworks that help and upgrade the learning methodology (Sirkemaa) 115. Wikipedia (2013), citing the pioneer of internet learning —bernard Luskin notes that "e" in e-Learning' remains for —exciting, energetic, enthusiastic, emotional, extended, excellent and educational in addition to electronic.114

2.1.1 Definition

e-Learning is widely researched in the perspectives of “higher education as well as corporate training” and explained as the application of electronic technologies in supporting, enhancing and delivering teaching and learning (Gray et al.) 34. ICTs represent computers, networks, software, Internet, wireless and mobile technologies to access, analyze, create, distribute, exchange and use facts and figures in a manner
that has been unimaginable hitherto (Beebe).\textsuperscript{13} A variety of concepts is interchangeably used to represent e-Learning including: computer-based instruction, computer-assisted instruction, web-based learning, electronic learning, distance education, distance learning, online instruction, multimedia instruction, online courses, networked learning, virtual classrooms, computer mediated communication, Technology supported education/learning and technology uses in education (Baumeister).\textsuperscript{12} e-Learning is an individualized instruction delivered over public (Internet) or private (Intranet) computer networks therefore, it was first known as internet-based training’ and then web-based training’(Manochehr).\textsuperscript{66}

The concept of e-Learning also has non-educational conceptions notes that the meaning of e-Learning varies with a change in the context: Political dimension denotes the modernization of whole education system; but Economic view defines e-Learning as a sector of eBusiness. In nutshell, e-Learning begins with a partial or supplementary use of ICTs in classroom then steps into a blended or hybrid use (a mix of face-2-face and electronic instruction), and finally, emerges as a fully online synchronous and asynchronous virtual learning environments serving physically dispersed learners (Sife et al.).\textsuperscript{96} However, it can never be possible to completely replace face to face learning and pedagogy with virtual education except some institutions may be operating completely online (distance learning) but rest of the institutions will continue blended use of educational technologies because this, in itself, serves the purpose (Kundi and Nawaz).\textsuperscript{75}

In short, e-Learning is a Technology supported education/learning (TSL) where the medium of guideline is computer technology. In higher education, the inclination is to make Virtual Learning Environments (VLE) joined together with a Management Information System (MIS) to make a Managed Learning Environment in which all parts of a course are taken care of through a client interface standard all through the foundation. A developing number of physical colleges, as well as fresher online-just
establishments, have started to offer scholastic degree and authentication programs through Internet (Wikipedia, 2013)\textsuperscript{114}.

\subsection{2.1.2 Evolution of E-Learning}

As said earlier, e-Learning ranges from a supplemental use of computers to entirely depending on ICTs for teaching, learning and education management. However, modern sophisticated uses of e-Learning in some parts of the world has not reached this level instantly rather along the development trajectory of the ICTs themselves. As the computers and communication technologies became more and more advanced and increasingly supportive in the education environment, the e-Learning models grew into more sophisticated tools for real eTeachers, eStudents and eAdmininistrators. The modern e-Learning refers to —much broader sense than computer-based learning of 1980s (Wikipedia, 2013)\textsuperscript{115}.

Broadly, e-Learning has gone through the following stages over the past decades:

1. In 1970s and 1980s, e-Learning was called computer-assisted learning, computer-based training or technology-based training. Pedagogically, early programs mostly involved electronic page turning and were didactic in approach with transmitted knowledge as the purpose. The teachers used to transmit the knowledge rather than facilitating the learner and learning process (Valcke). (traditional computer-based learning)\textsuperscript{110}

2. By the 1990s other forms of educational-media came into market to supplement old e-Learning and brought e-Learning at the public level offering discussions and debates through communication technologies – a kind of negotiated-knowledge (Gray et al., 2003). Email and discussion groups are playing key role in this kind of e-Learning (Valcke).\textsuperscript{110}

In the late 1990s, innovations in computer hardware, computer software, and Internet technologies introduced a line of education products that established the e-Learning industry (Baucus and Baucus). (blended learning).\textsuperscript{11}
3. Before the end of 1990s, Virtual Learning Environment (VLE) have risen with instruments and systems for the course-administration and intuitiveness of educators and learners through a long line of chances especially, the web-based applications, which empower not to basically convey information rather engage learners to create research abilities and exploit web to harvest learning. Jonathan Ezer battles that rather than instrumental instruction, liberal hypothesis encourages to collect the keenness and create expository and discriminating intuition in light of the fact that liberal training perspectives the quest for information as a dynamic and interconnected social movement and not just a memory of truths. (virtual learning).^32

Given this evolutionary situation of e-Learning applications, it gets to be clear that HEIs have been passing through three phases of development: 1. traditional computer-based learning (supplemental use of ICTs); 2. blended (mixed) learning; and 3. virtual learning. HEIs, especially in creating nations, are voyaging through distinctive levels of mixed learning with different trial applications of ICTs in instructing, learning and instruction administration because of the shifting accessibility and openness of instructive innovations and professionalism of their utilization (Manochehr).^66

a. Traditional Computer-based Learning

Conventional teaching emphasizes content where course is written around textbooks and teachers teach through lectures and presentations and so design the learning activities that the contents could be reviewed (Oliver)^80. Likewise, traditional computer-mediated instruction is based on a certain level of technical rationality and objectivist and behaviorist ideas, which emphasize that knowledge and reality exists out there therefore the pedagogy takes a the learner from basic to applied knowledge and ultimately into practice. In traditional computer-based learning there is low collaboration with teacher-centered learning contexts where there is one-way
communication from the teacher to the learner and learning materials are disseminated in print format (Allan). However, e-Learning is now moving away from the traditional computer based learning (CBL).  

b. Blended Learning

Blended learning is a combination of face to face and computer based teaching and learning or a combination of traditional classroom practice with e-Learning solutions. It is a shift from computer-based instruction where students learn from technology, to enabling students to learn with the technology. Blended learning is also called —multi-modal learning. It is a learning facilitation that incorporates different modes of delivery, models of teaching, and learning styles, introduces multiple media to the dialog between the learner and the instructor (Heinze and Procter).  

c. Virtual Learning

Virtual learning (VL) goes again to 1840, when Sir Isaac Pitman, the English designer of shorthand, invented the thought of conveying direction through correspondence courses via mail. In any case just with the advances of cutting edge technology has separation training developed to a multibillion dollar market (Spallek). Virtual Universities (VU) at is the best illustration of virtual learning with zero-physical contact yet for all intents and purpose 100percent associated with its eStudents. The VU is an intense vision for the fortune of higher training to use new ICTs and drastically rebuild higher instructive procurement. It is a university without dividers, an un-stuffed virtual organization therefore the University as a foundation, seizes to exist (Goddard and Cornford). Where substance and directions are conveyed through Internet, intranet, extranet, satellite TV and CD-ROM with media capacities The college, then, gets to be significantly all the more remotely situated, a middle person on the worldwide stage, going about as teammate, customer, designer and mediator of higher instruction administrations.
d. E-Learning 2.0

The shift from Web 1.0 to Web 2.0 has also lifted e-Learning to e-Learning 2.0. From this perspective, traditional e-Learning systems used instructional packets to deliver to the students through Internet. The learning consisted of readings and preparing assignments, which were evaluated by the teacher. In e-Learning 2.0, the new e-Learning places increased emphasis on social learning, collaboration and use of social software such as blogs, wikis, podcasts and virtual worlds like, Second Life Web Train etc. 44

2.1.3 E-Learning Technologies

The researchers (Dinevski and Kokol) have given a broader classification of educational technologies into:

1. Framework including Computers, Networks; Internet, Intranet and offices for disconnected from the net/online access and users interfaces.
2. Learning content management systems (LCMS) for delivery, tracking, management and reporting of online content.
3. Learning management systems (LMS) for performance management, employee development plans, financial and activity tracking/reporting, and integration with other systems.
4. Learning technologies for mentoring, chatting, forums, discussions, Web seminars, online meeting and virtual classroom sessions.
5. m(mobile)-learning technologies are just showing up that will enable learning anywhere and anytime.

ICTs refer to not only the modern hi-tech computers and networks rather these technologies begin with radio as communication mediums to transmit information to remote places. So there are old and new ICTs where radio, television, telephone, fax, telegram, etc are now old while the computer-networks, Internet, e-mail, and leading-edge mobile learning. 27
a. Computer

The primary tool for e-Learning is the computer, which has traveled a long way since 1960s when UNIVAC in USA and Baby-Computer in UK emerged as the pioneers of a technology, which is now controlling almost every aspect of human life. The transformation from XT (Extended-Technology) to AT (Advanced-Technology) or Personal Computer (PC) in 1980 was the second big innovation making computers a personal gadget for everybody and anybody.\(^\text{115}\)

A computer is an intelligent-machine and a powerhouse for users in terms of its processing capabilities and speed (i.e., user command is executed on a click), storage capacity (hard-disk and from floppy to flash and XDrives), and graphic interfaces (i.e., graphical-user-interface GUI) to interact with different parts of the machine, like, activating a software, using CD-drive, printing a document or picture, copying a file from hard disk on a data-traveler.

b. Networking

Networking is connecting computers together to share resources and communicate across the network. Since networking has elevated the role of computers therefore a huge body of research is underway to make connectivity more and more powerful. Thus, networking is evolving from simple networks into complicated forms of Internet, intranet and extranet along with web-technologies thereby converting the world into a global-village, because networking eliminate the geographical and physical constraints in global communication and interaction. Networking technologies offer a massive amount of tools and techniques based on the communication-protocol of TCP/IP, onto which Internet is attached. According to Glogoff a network is a platform (internet, intranets and extranets) decorated with web-based tools of hypermedia and multimedia applications managed through learning and content management systems (LMS, LCMS)\(^\text{37}\). It is therefore marked that Internet is becoming an requisite tool for learning and
social life (Barnes et al.).

The Internet technologies like e-mail/conferencing on the Web, is usable in assisting teaching however, Web, and most recently WebCT (an online learning and content management system), remain the most popular mediums. Most education web sites provide basic course information such as syllabus, schedule, announcements, reading lists, synchronous or asynchronous communication, online testing, discussion groups, conferences, whiteboards, streaming audio, and video (Zapalska et al.)

(Mehra and Mital) asserts that the paradigm of networking in HEIs refers to delivering education through network by enabling learners to access study materials as well as establish communication channels between students and teachers. Thus, increased access to and use of the Internet is making a unique contribution to the teaching and learning process and will be an important part of future strategies to provide services to increased number of students in very diverse locations.

i. The Internet (Web 1.0)

With the Internet and computer technology available to most teachers, educational technology becomes increasingly indispensable in the field of education. Internet-based educational technology can contribute to substantial improvements in education (Laffey and Musser). Internet-based emerging communication tools, such as e-mails, bulletin boards, etc., provide more reflective and useful interactions among learners, instructors and resources (Arulchelvan and Viswanathan).

A major impact of the Internet has been to promote asynchronous access to online information, with traditional forms of technologies and gradually giving way to new forms of web-casting or video blogging (vlogging) (Klamma et al.). Internet technologies are now incorporating Web 2.0, virtual reality applications, videogames and mobile devices, which are used everyday for communication and entertainment as
well as learning (Chan and Lee).  

The use of broadband services has started to grow in homes and offices located in major cities. This trend is expected to accelerate. HEC (2013) has introduced a host of programs to establish a world-class ICT infrastructure for providing high-speed internet connectivity to universities all over the country. These digital initiatives create a platform to deliver a range of ICT-based educational services, including a Digital Library and Video Conferencing Facilities. In India, there are — 137,000,000 Internet users as on March 2012 (IAMA Annual REPORT2012/13).  

ii. Web 2.0

Web 2.0 is a situated of financial, social, and technology inclines that encourage an all the more socially associated Web where everybody can add to and alter the information space. On web 1.0, including substance was the forte of Internet architects utilizing technical language of computer programming yet now easy-to-utilize Internet locales engage clients to distribute their information on Internet without actually knowing HTML.  

Through Web-based applications and administrations like Web logs (web journals), feature websites (vlogs), wikis, podcasts; anybody could be a piece of the Web 2.0. Among all web 2.0, informal communication destinations, Myspace.com and Facebook.com are exceptionally prominent on the grounds that these locales let parts make their own particular Web pages, fill them with individual profiles, photographs, and sites. Myspace group has more than 160 million parts and getting enlistment of in excess of 200,000 every day (Thompson, Wikipedia).
Table 2.1 Differences between Web 1.0 and Web 2.0

<table>
<thead>
<tr>
<th>Web 1.0</th>
<th>Web 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publishing (BritannicaOnline)</td>
<td>Blogging</td>
</tr>
<tr>
<td>Personal websites</td>
<td>Participation (Wikipedia)</td>
</tr>
<tr>
<td>Content management</td>
<td>Wikis</td>
</tr>
<tr>
<td>Directories (taxonomy)</td>
<td>Tagging (folksonomy)</td>
</tr>
</tbody>
</table>


2.1.4 Digital Literacy

The interest for a general computer-literacy proficiency originates from the courses in which ICTs are commanding diverse parts of the modern life and work. The promoters of social consideration through ICTs propose a concentrate on electronic literacy proficiency as a key to beating the computerized gap. Diverse gatherings of individuals: students, teachers, and employers -have distinctive thoughts regarding what computer literacy proficiency implies (Johnson et al.). In the middle of the most recent 25 years, a few models and methodologies of computer and information writing proficiency have begun to merged 50.

Presently, advanced education abilities are viewed as important for viable and careful adapting in the rising computerized situations. Individuals secure their technology education in two courses: formally through school programs or in the working environment, and casually, whether at home, from companions, or without anyone else. With the progressions in technology, the diverse components of computer literacy are inclined to change repetitively and thus it is imperative for teachers to always update the course to incorporate the most recent technology progression (Martin and Dunsworth) 67.
2.1.5 Computing Curricula

The curricula of any nation is seen as—a interpretation of the current state of learning. The most recent 20 years, there has been a huge development in the interest for ICT-experts. This development was part of the way determined by: 1. tremendous technological advances, for example, the systems administration, graphical user interfaces, Internet and WWW; and 2. greater recognition of ICTs by the individuals and organizations, and their widespread use by the individuals, with even no technical knowledge of ICTs (Ekstrom et al.).

2.1.6 Contributions of ICTs to Higher Education

At the point when utilized properly, ICTs get to be best instruments for teachers, students and administrators to attain the destinations of EFA and LLL through at whatever time, anyplace and for anybody. The computers and Internet have uprooted the obstructions of time and space for learning (Shimabukuro).

The research has reported the correspondence in the middle of ICTs and the positive scholastic results like, better performance to showing and learning (Haddad and Jurich). For instance, computer interceded correspondence can decrease low inspiration and sentiments of separations. e-Learning is more successful in separation instruction, where technology replaces vis-à-vis nature.

There is a misconception that ICT innovation necessarily has to end up in the commercialization of education (Pfeffer, 2004). However, there is a great polarization of views on the topic. Some traditional stakeholders in higher education: institutions, teachers’ unions, students, and scholars strongly oppose the commoditization of higher education (UNESCO, 2010, 2013).

The strategic use of ICTs can help to preserve old and to create new teaching, learning and
education management. Many traditional HEIs are using ICTs without aiming at the commoditization of higher education. During the last years the expectations in commercial prospects of online higher education were frequently frustrated. Huge amounts of money were lost, several high profile projects fail completely. Furthermore, the FOSS movement is making all digital resources available to the masses free of cost, which is obviously, a de-commoditization strategy for HEIs (Nawaz). 77

a. Learning and Teaching Roles

There are three general approaches to the instructional use of computers and the Internet, namely: 1. Learning about ICTs, where digital literacy is the end goal; 2. Learning with ICTs where technologies facilitates learning; and 3. Learning through these technologies thereby integrating technological skills development with curriculum. Literature confirms that ICTs are being deployed in university settings all over the world with the aim to equip the students with ICT-based skills so that they are ready to work in modern electronic office (Sahay) 91. The role of ICTs in HEIs are:

1. As an object: That is researching the technology itself. Courses are offered to get learning and create abilities about distinctive devices. This plans students for the utilization of ICTs in education, future occupation and social life (Jager and Lokman). 49

2. Assisting tool: ICT is utilized as an apparatus, for instance while making assignments, gathering information and documentation, conveying and leading examination. Here ICTs are connected freely from the topic.

3. This refers to ICT as an apparatus for teaching and learning itself, the medium through which teachers can instruct and learners can learn. It shows up in numerous diverse structures, for example, bore and practice works out, in recreations and educational systems (UNESCO, 2010, 2011, 2013) 109. Technology based instructional conveyance strategy is just as successful in learning conclusions for students when contrasted with conventional vis-à-vis course conveyance (Schou). 92


2.2 DEVELOPMENT AND USE OF E-LEARNING

2.2.1 Introduction

The knowledge of presenting various ICTs in the classroom and other educational settings everywhere throughout the world proposes that the acknowledgment of the potential educational profits of these new advances is not programmed. It is noticeably raising numerous open deliberations over the substance, trajectory, reason, and result of ICTs in education. Case in point, ICTs can turn into an end in themselves instead of an intends to help and upgrade education. In the setting of globalization, worldwide integration, moment correspondence through Internet and versatile advances, the colleges of all nations are gone up against with tremendous difficulties, both outer and inner (Loing).

The effective integration of ICTs into the educational system is a complex, multifaceted process that involves not just technology but also curriculum and pedagogy, institutional readiness, teacher competencies, and long-term financing, among others. The growth of innovative practices in e-Learning has contributed to the development of new skills and competencies and novel ways of using them within project teams (Gray et al.). However, the design and development principles need to be aligned with teacher and instructors understanding of student requirements.

2.2.2 Approaches and Attitudes

Aviram and Tami (2004) have extracted seven approaches: administrative, curricular, didactic, organizational, systemic, cultural and ideological and five attitudes: agnostic, conservative, moderate, radical, and extreme radical attitude towards the application of ICTs in HEIs. Approaches refer to the perceptions about the nature and aims of e-Learning (what ICTs can do?) while attitudes are the behaviors one adopts about the nature and extent of changes required for the introduction of ICTs in education.
<table>
<thead>
<tr>
<th>Approach</th>
<th>Perceptions about the Nature and Roles of e-Learning or Educational Technologies?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Administrative</td>
<td>The availability of technology is the progress and an important aim, so focus is on the quantity and quality of equipment.</td>
</tr>
<tr>
<td>2 Curricular</td>
<td>The use of ICTs with a specific curricular aim. Technology is conceived as a neutral tool in the service of prevailing subject matters.</td>
</tr>
<tr>
<td>3 Didactic</td>
<td>Didactic approach dictates the inevitable or desirable change that can be brought through ICT in pedagogy.</td>
</tr>
<tr>
<td>4 Organizational</td>
<td>ICTs can help creating viable, flexible and robust organizational structures to teach, learn and administer effectively.</td>
</tr>
<tr>
<td>5 Systemic</td>
<td>ICTs have to be used systematically. All the changes must be preplanned and predefined.</td>
</tr>
<tr>
<td>6 Cultural</td>
<td>Cultural approach recognizes that the ICT revolution has powerful defining impact our culture and thus lives.</td>
</tr>
<tr>
<td>7 Ideological</td>
<td>Philosophical or critical social thinkers believe that whatever the change, it should be in tune with the Social-values of the society.</td>
</tr>
</tbody>
</table>

Administrative, Curricular, Didactic and Organizational approaches are more instrumental than Systemic, Cultural and Ideological approaches, which emphasize more broader substantive view or role of ICTs in higher education. The instrumental view is mostly supported by the administrators, bureaucrats and politicians. While substantive approaches are possessed mostly by the academics and intellectuals who maintain that e-Learning technologies must systematically change the educational culture according to the ideological requirements of a particular context.
<table>
<thead>
<tr>
<th>Attitudes</th>
<th>How to behave with e-Learning or Educational Technologies?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Agnostics</td>
<td>Don’t have a clear opinion as to the impact of ICT on education</td>
</tr>
<tr>
<td>2 Conservatives</td>
<td>Education will survive, ICT with minimal change, as it has survived other technologies</td>
</tr>
<tr>
<td>3 Moderate</td>
<td>Usually more active problem based, authentic or research-oriented learning and teaching methods and the connected organizational changes are mentioned in this context</td>
</tr>
<tr>
<td>4 Radical</td>
<td>To survive the ICT revolution, education has to radically change in all their parameters.</td>
</tr>
<tr>
<td>5 Extreme radical</td>
<td>Quick and broader changes beyond radicalism.</td>
</tr>
</tbody>
</table>

### 2.2.3 E-Project-Management

The efforts to integrate ICTs into teaching and learning have a history as long as the technologies themselves (Aaron et al.). Research suggests that eProjects are either initiated at the subject/ departmental or institutional levels.  

Departmental e-Learning initiatives are mostly driven by an individual staff while in most of the new universities, where institutional strategy is popular, stresses the role of ICT in relation to broader aims like widening participation in education (Lewis and Goodison).

#### a. Educational Technology Planning

It is essential that management policies are designed for the benefit of both academic and administrative staff (UQA, 2001). Educational Technology Planning (ETP) should be aligned with the institutional policies, culture, values, and history. Specific timetable should be sorted out to handle multiple expectations of different users (Stockley). Development of e-Learning is not simply a matter of selecting a team with technical skills, it also requires developers with expertise in pedagogy and online
communication skills (McPherson and Nunes). Strategic plan for educational technology includes plans both for the technological infrastructure and the manner in which these tools will be integrated into teaching and learning.

**b. Needs analysis**

Most educators accept the premise that, in an ideal world, learning will be delivered in a manner and context that best suits the needs and learning styles of individual learners (LaCour). The developers need the abilities to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems and an ability to effectively integrate IT-based solutions into the user environment.

For example, the success of an e-Learning software is measured on how far the product fulfills stakeholders needs and requirements on time and within a budget (Ward et al., 2006). Understanding human requirements takes time and effort but these assessments are essential in planning the introduction of ICTs to communities.

**b. Design and Development**

The development of ICT-based work environment for other than educational organizations is different from developing an e-Learning environment in a HEI due to the difference of organizational objectives and user characteristics. Non-educational organizations classify their users according to top, middle and bottom management groups of users with different requirements. However, in e-Learning, the main users are teachers and students where teachers have to be supported in teaching but both teachers and students have to be facilities in learning. So design and development of an e-Learning environment is all about the instructional design and content development along with the provision and adaptation of educational technologies.
There is wide recognition, that e-Learning projects are complex and an effective e-Learning development team requires the presence of multidisciplinary skills, across all and within individual members of the team. The roles in these projects often included: Project Manager, System Instructional Designer, Product Instructional Designer, Learning Administrator, Tutors and Writers (Gray et al.) \(^{41}\). An information system development lifecycle is followed in every eProject such as, ADDIE model, which suggests a lifecycle with five steps: analyze, design, develop, implement and evaluate (Wikipedia) \(^{114}\).

### 2.2.4 User-Training (eTraining)

Both instrumental and substantive views of e-Learning emphasize the role of user. Instrumentalists contend that technology is neutral and so its impacts and advantages entirely depend upon however area unit they controlled and used for individual, structure, national, and international functions. whereas substantive intellect transcend this and intensify that instrumental read of ICTs is a real understatement of the potential of those technologies. They shall be used additional intellectually and intuitively to forged deeper impacts on the society by providing most doable services to the human kind. Thus, they enlarge the construct of use to represent not the tools' rather technologies' in terms of modeling and applications of ICTs in e-Learning structures and operations. However, use of either instrumental or substantive applications of ICTs within the learning environments squarely depends on the standard of eTraining given to the academics, students, and administrators (Blázquez and Díaz) \(^{15}\).

#### a. Teachers-Training

Teacher-training determines the success and failure of e-Learning in HEIs (Oh and French) \(^{78}\). The information is changing into a central economic drive, with the shift from the conception of information society to it of knowledge societies difficult the evaluation of the prevailing ancient academic processes and also the role of lecturers and also the nature of their coaching within the light-weight of rising ICTs. Students cannot win pc achievement while not a pc literate school (Johnson et al.). \(^{50}\)
b. Students’ Training

As so much because the students’ coaching is bothered, there square measure 2 varieties of student-users: Computer and Non-Computer (CNC). For the scholars of ICTs, it's the computing info that matters within the quality students coaching within the use of new technologies. betting on the instrumental or substantive/liberal models of e-Learning, the computing curricula square measure developed. As mentioned within the literature review, the computing curricula within the advanced countries is a lot of substantive and liberal than the employed in less developed countries, that is a lot of instrumental and emphases on the supplemental uses of technology (Ojo, S. O.). 79

c. Training of the Administrators

Both the decision-making and implementation staff have to understand ICTs. Decision makers’ knowledge of computers and related technologies definitely helps in making reality based decisions. Otherwise, the gap between the user perceptions begins widening. In most of the universities, administrators and administrative staff is given training in the use of computers in their administrative functions. Most of this training is about the office automation tools like the use of word-processors, number-manipulation software, and database management and particularly, the mangers are trained in the development and use of presentation software like PowerPoint. 79

2.2.5 Change Management

ICT-related change management is the most influential change process in our educational systems in the last and coming decades - a change process that is not only going to determine the form of the educational system but also the nature of education and thus the nature of the coming generations. For example, one of the most striking organizational changes is the transformation of blue-collar employees into white-collar workers (Ezziane) 33. The universities have to change in three dimensions: 1. university structures and the interrelations between universities and the private sector; 2. Academic
productivity and the relations between 'change managers or developers' and academic workforce; and 3. Teaching and learning, and the social relations between academic Staff and students in the teacher/learner/artifact interface (UQA).\textsuperscript{105}

Education cultures pass through different phases of maturity regarding change: ready to move forward, backward, or maybe not at all. Similarly, technology-related changes are not perceived as a collective experience or social change rather, personal challenge. Thus, e-Pedagogy transforms the teacher from "sage on the stage" to "guide on the side", and student changes from being passive content-receivers to active and participative learners.

The pedagogical and academic tradition is important to the teachers in the adaptation process because they seek a change towards a new practice based in tradition. This could be interpreted as a contradiction holding back change and limiting innovation. The teachers express it in another way and see the implementation of ICT as a way of re-interpreting values inherent in tradition (Times of India).\textsuperscript{101}

\textbf{a. Problems of ICT-related Change}

One of the biggest threats to ICT-enabled projects is resistance to change. Teachers are reluctant to integrate ICTs into their daily scholarly activities and this situation has not changed over the past few years (Sasseville)\textsuperscript{90}. Research shows that technical issues are given priority over the educational change, which is not linked with the institution wide strategies. While most educators acknowledge the significance of e-Learning, problems continue to recur in the adoption process showing a critical gap between perceptions, theories and practices of teachers. Thus, there are many problems and concerns related to e-Learning such as, low rates of participation, learner resistance, high non-completion rates, poor learner performance (Kanuka).\textsuperscript{52}
Similarly, the academics sometimes refuse to change curricula and pedagogic approaches; teaching staff and instructors lack incentive and rewards; there is a lack of feedback towards higher levels of decision and general policy, and little impact on strategy definition and implementation. Thus, there are many barriers in the implementation of e-Learning solutions in HEIs. Some problems are classical: inertia of behavior of people, their resistance to changes, etc. People who lack better access to information have a fear of isolation. But if e-Learning environments are created properly, they can develop collaboration in all folds of the university life.

b. Approaches and Attitudes to Change

There are completely different views regarding the character and aims of ICTs in education so variable behaviors and attitudes are found within the development, use and alter management of e-Learning comes. One of the foremost obvious characteristics of individuals is their readiness to attribute aiming to what they observe and skill (Checkland and Scholes, 1991:1). no matter is that the conception of technology, constant is expressed within the physical attitudes of the folks.22 Likewise, the research shows that developers (promoters) view ICTs as a way of transforming education whereas users (teachers, students and administrators) see it only as a means to an end. At the broader level, however, there are two extreme views of ICTs for education. Some educators are strong advocates of technological innovation while others are reluctant to accept ICTs as indispensable to the learning process. These divergent reactions and concerns have thus created a continuum that represents various attitudes towards technology. On one extreme is the instrumental view, which takes e-Learning gadgets as an addition to the technology cache. The impact of this view and resultant use is only at the technical levels. On the contrary, there is substantive view, which posits that ICTs are more than tools with positive and negative impacts for both technical and broader social changes. The approach-attitude matrix by Aviram and Tami (2004) helps in extracting the guidelines about what to change? and how to change? see Table and Table.
Table 2.2 Approaches to ICT-Related Change in HEIs

<table>
<thead>
<tr>
<th>Approach</th>
<th>What to change?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Administrative</td>
<td>Achieve a certain ratio of computers – technical change</td>
</tr>
<tr>
<td>2 Curricular</td>
<td>changes only</td>
</tr>
<tr>
<td>3 Didactic</td>
<td>Inevitable or desirable change in the teaching/learning of the subject matters</td>
</tr>
<tr>
<td>4 Organizational</td>
<td>Involve organizational changes in school, consisting of more flexible attitudes</td>
</tr>
<tr>
<td>5 Systemic</td>
<td>Didactic and organizational changes in school will not be possible without systemic changes</td>
</tr>
<tr>
<td>6 Cultural</td>
<td>ICT revolution is a deep cultural revolution changing all modes and patterns of our lives</td>
</tr>
<tr>
<td>7 Ideological</td>
<td>Demanding most basic social and educational changes</td>
</tr>
</tbody>
</table>

Adapted from: Aviram and Tami (2004). 88

Table 2.3 Attitudes to ICT-Related Change in HEIs

<table>
<thead>
<tr>
<th>Attitude</th>
<th>How to change?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Agnostic</td>
<td>Don’t have a clear opinion as to the impact of ICT on education</td>
</tr>
<tr>
<td>2 Conservative</td>
<td>Believe that education will survive, ICT with minimal change, as it has survived other technologies</td>
</tr>
<tr>
<td>3 Moderate</td>
<td>Extensive change in their didactics.</td>
</tr>
<tr>
<td>4 Radical</td>
<td>Have to go through such changes if they are to survive the ICT revolution</td>
</tr>
<tr>
<td>5 Extreme radical</td>
<td>De-schooling, mega changes</td>
</tr>
</tbody>
</table>

Adapted from: Aviram and Tami (2004). 88
2.2.6 Context of E-Learning in HEIs

The development, use and alter management of e-Learning happens inside a specific context. The discourse factors influence the e-Learning practices, that should be understood and handled by each the developers and users of e-Learning environments. The context is multifarious and includes community, culture and technology and becomes important once understanding implementation of ICT in education (Nyvang). The context of a corporation like university is formed of internal and external context. \(^75\)

a. Internal Context

In the e-Learning comes, thought should be to the training objectives and outcomes, the characteristics of the learners, and also the learning context so as to leverage optimum out of the e-Learning facilities (Aaron et al.). \(^1\)

Likewise, the employment of project management, educational style, course development and every one alternative tutorial and body techniques are crucial for a booming integration of technology during a broader institutional context. Klonoski, E-report that during a conference, 83 lecturers from twenty nine Australia’s universities recorded their perceptions of the factors influencing their teaching work. By eliciting their perceptions it came out that the lecturers classified internal context into individual domain and structure domains which these 2 domains were viewed as interacting inside university environments furthermore as interacting with one another thereby forming an internet of reticulated factors that seem to influence the people and organization. \(^54\)

c. External Context

There is a perceived conflict between the requirements of industry/market for graduates and whatever, is taught by the universities. ICT graduates are required to develop a myriad of knowledge and skills. Stephen J. Andriole, comments that the gap between
theory and practice is widening and the new global ICT curricula fails to address the changes in the practice of the field. Another research reports that because of the more theoretical emphasis of computer science programs, graduates often did not acquire a sufficient understanding of organizational processes to be able to support ICT applications from a user or organizational perspective.  
Universities, on the other hand, face important challenges in educating the IT workers of tomorrow in these highly technical fields. Even with increasing enrollments, the number of graduates in computer science and information systems has been inadequate to meet worldwide industry demand (Hagan).  

### d. Government Policies

Though teachers and students matter in e-Learning projects but government agencies control goal-setting, working conditions, performance evaluation, and the resource allocation for eProjects specially in public sector universities. The governments are establishing committees, forming task forces, and dedicating substantial funds for the enhancement of technology-based instruction (Abrami et al.). Also writes that the growth of a powerful Indian ICT industry is founded on the concerted efforts by the Government. therefore, note that e-Learning has clear implications for national, regional and local governments in terms of the need to establish policies and practices that enhance the capability of universities to engage with a range of development processes that cross institutional boundaries.

When formulating policy, administrators tend to favor the reformist approach, but in practice they are generally technocratic. Most of the administrators, bureaucrats and politicians apply an administrative approach to e-Learning that is, having a certain ratio of computers and other related equipment in the institution thus, sheer existence of technology in terms of quantity and quality of equipments. Hans-Peter Baumeister adds by saying that the political meaning of e-Learning is the modernization of the whole education system however, in government policy, ICTs
are seen just as one of the tools for learning however, while, e-Learning is much more than computers in the classroom.\textsuperscript{12}

In Australian universities, as the number of students have increased, governments have not responded with increases in funding and support. As a result, many universities have been compelled to seek to expand their revenue base into private sources, both domestically and overseas. There is a great controversy on educational commercialization. The traditional stakeholders including HEIs, teachers unions, students, and scholars loudly oppose commoditization of higher education (UNESCO)\textsuperscript{108}. However, current declines in many world economies have forced the higher education to increase online courses and create funds showing educational commercialization at the HEI levels. However, free and open source systems (FOSS) are counter-fighting for decolonizing EFA and LLL.

One of the many challenges facing developing countries today is preparing their societies and governments for globalization and the information and communication revolution (Tinio). In India, government has tried to eradicate illiteracy, but government projects for mass literacy have become administrative and bureaucratic nightmares. This is one of the reasons why India hasn't been able to improve its literacy level.\textsuperscript{102}

\textbf{e. Broader Social Context}

The integration of ICTs in HEIs demands a re-definition and re-evaluation of their role in education and development of society according to the conditions of social context. The new social context has changed and now there are communication networks, where access to information and knowledge is radically changed, and where knowledge is becoming a central economic driving force (Loing). Thus, learning cannot be separated from its social context. The teachers of modern age are who serve the knowledge society, are pushed to use technology by various agencies including media, educational government, professional associations,
and parents. 61

As knowledge is becoming a tool for power as well as an object of trade, universities are driven to situations of competition, among one another and with the private sector, especially with the development of e-Learning and trans-national systems. New departments in traditional universities, or new institutions (.edu organizations) of various kinds, are appearing. (Loing). The advantages of e-Learning depend on the nature and type of the context. He conducted a study on e-Learning practices in China and found that most of the currently applied e-Learning-models in China are based on the American settings, however, unlike China American universities abound in resources so Chinese should better tune their projects with domestic context and get real advantages from ICTs. 61

2.3 USERS OF E-LEARNING ENVIRONMENTS

Technology means nothing if it is not used however use depends on the users motivation towards e-Learning and users’ command over e-Learning technologies. People need word processing not to survive rather to command over the efficient ways of sharing information about livelihoods and employment. ICTs for human development are not about technology, but about people using the technology. The university teachers expect better support for lectures, a better access to databases, better support of research, better connectivity with the rest of the world. The students have similar expectations. But these high expectations are often in a sharp contrast with reality.

Students criticize the present state of affairs associated don't report an overall positive perspective towards ICT connected instructional innovation. At a broader level, the conceptions of scholars concerning ICT and education are terribly positive however they're extraordinarily crucial concerning the tutorial use of ICT by the teaching workers. what is more, in majority of e-Learning programs offered nowadays, the burden for learning is
placed whole on the shoulders of the learner (Dinevski and Kokol). Having aforementioned that, some educators could also be sturdy advocates of technological innovation whereas others might additional reluctant in exceptive technology as associate integral a part of the training method, These divergent reactions and issues have therefore created a time that represents varied attitudes towards technology.

The new technologies in HEIs is changing the roles of all the teachers, students and education administrators and research shows that the users are still trying to understand their roles but their roles are still blurred. There is a great deal of uncertainty among the decision-makers, managers, developers, trainers and learners about their relationship with e-Learning tools and techniques. For example, instructors have to adopt new roles as tutors and facilitators in the learning processes. Thus, users are expressing doubts, suspicions, trust, and beliefs about the nature of their relationship with ICTs and difficulties in working with new technologies. Technology integration into education is thus re-engineering the roles of teachers and students from old models to new paradigms embedded in the digital environments of modern technologies. Similarly, the diversity of students in e-Learning poses a challenge to the instructor.

2.3.1 User-Characteristics

a. Perceptions

One way to assess an individual's approach to computer use for instruction is by testing an individual's attitudes to this. Numerous studies have explored individual differences in attitudes towards computers. Understanding teachers' perceptions of technology integration training and its impact on their instructional practice will help both the technology training programs and social studies (Zhao and Bryant). Students use the computer and the Internet depends on the perceived usefulness of this resource in terms of effective communication and access to information to complete projects and assignments efficiently.
Very little research has been published about students perceptions of their computer literacy, especially in third world countries. Technology paradigm shifts changed not only the way of computing but also how the technology itself is perceived by society. ICT is generally perceived as a welcome addition to the arsenal of pedagogical tools and approaches in the classroom (Sasseville) 90. However, by compelling instructors to collaborate with people outside the classroom (government agencies, university administrators, technical support staff etc), technology can be perceived as a threat to the private practice of pedagogy (Aaron et al.)1. The relevant concern, then, is how well teachers perceive and address the challenges for education. Based on the perceptual differences of e-Learning users Mehra and Mital have categorized, particularly teachers, into:

1. Cynics: They have negative perceptions about e-Learning but strong pedagogical beliefs therefore unwilling to change;

2. Moderates: They like ICTs and ready to change and adapt to new pedagogical practices with some guidance and training;

3. Adaptors: These are the intellectual leaders who use e-Learning for inner progress and external enhancements by continuously innovating their pedagogy with latest technologies. 71

\[c. \text{ User-Theories}\]

The multiplicity of perceptions about the nature and role of ICTs in HEIs can be grouped into two broad user-theories or beliefs, which are guiding most of the e-Learning development and use practices around the globe:

1. Instrumental theory: it's the foremost normally command belief, that views technology as a tool with none inherent worth (neutral) and its worth lies in however is it used therefore a one-size-fits-all policy of universal employment of ICTs (Radosevich and designer) 84. Instrumental education is predicated on the premise that education serves society. a stress is placed on the connection
and utility of education, wherever students are unit expected to use their data vocationally, contributory to the economy. The danger of such a system is that students are unit inspired to easily meet some known would like, instead of suppose critically with the aim of achieving some type of personal or communal advancement.

2. Substantive theory: this can be a necessitation or autonomous approach, that argues that technology isn't neutral and has positive or negative impacts. Technological philosophical doctrine encourages the concept that: the mere presence of technology ends up in acquainted and commonplace applications of that technology, that successively induce social amendment (Radosevich andamp; designer)⁸⁴.

Designing and delivering e-learning is not simply a matter of selecting a tutoring team with subject matter expertise and/or technical skills, but is also choosing educationalists with pedagogical, information and communication skills that are required to manage and facilitate online learning. Technologies (ICTs) should not be guided by a technologically deterministic approach but situated in the context of an appropriate development and critical theory of technology approach, which takes into account a broad range of social, cultural, political and economic enabling factors (Macleod). In India, for example, most ICT education is ineffective because it is too technical and not at all concerned with local contexts and real world problems. There is also increasing acknowledgement that it is not just technical skills that project team members need in order to ensure project success. Soft skills in team members are vital ⁶².

There is a need for a new approach to university computing curricula that adequately exploits the complementary strengths of the apparently competing fields of computing. This definitely requires an appropriate integration of hard science and soft science paradigms into a single whole, to evolve a more flexible and comprehensive paradigmatic framework that gives equal treatment to technical and socio-organizational aspects of computing. This in turn requires cross-departmental
collaboration. 21st-century learners do not require a high level of technical proficiency and teachers prefer low-threshold technology that promotes a constructivist approach to teaching and learning while also customizing the curriculum to the learner.

c. Learning/Teaching Styles

The students have completely different learning styles: Some learn quick and advance chop-chop whereas others to learn at a slower pace and repeat. additionally, some like operating alone whereas others opt to operating in teams. info technology permits customization of the learner's learning expertise and makes it attainable to accommodate completely different learning designs (Shimabukuro)\textsuperscript{95}. Learning vogue is associate individual’s genetic foundation, specific past life expertise and also the demands of the current setting that emphasize some learning talents over others. Researchers believe that learning vogue could be a smart predictor of associate individual’s most popular learning behavior. whereas instructors cannot perpetually accommodate every student's want, it's vital that many learning opportunities are provided. A match between learning vogue and teaching vogue reveals will increase student’s satisfaction (Manochehr)\textsuperscript{65}. One of the challenges facing instructional designers is in producing e-learning systems, which take account of individual differences such as cognitive learning style (Graff et al.)\textsuperscript{40}. However, the new technologies like personalization, integration, and electronic portfolios help develop systems according the user learning styles. The learners will be able to have more control over how, where, and when they experience educational and professional development in pursuit of their individual goals. Net Geners are independent and autonomous in their learning styles, which makes them more assertive information seekers and shapes how they approach learning in the classroom. They have an independent learning style, which has grown out of the habits of seeking and retrieving information from Internet. Furthermore, multitasking is an integral part of the Net Generation lifestyle.
Research shows that academics don’t notice e-Learning environments matching with their teaching designs however; web-based learning is worldwide accessible, low in maintenance, secure, platform-independent, and perpetually current and might accommodate numerous learning designs. Educators and students are victimization the online in a very kind of ways that to boost their teaching and learning experiences. E-learning is delivered to the learners simply, in associate individualized manner (Mehra and Mital).71

2.3.2 User Types in e-Learning

Teachers, students administrators all use ICT-based tools in an e-Learning setting but, their use varies differing types of e-Learning. the character and extent of use is totally different underneath ancient computer-based learning, alloyed learning and virtual learning facilities. User challenges, problems, and solutions are ever-changing with the advancements in academic technologies. In alloyed and virtual learning, all academics, students and directors are supported with extremely easy and networked facilities wherever each ICTs are used each one by one also as together in a very cooperative manner. what is more, the role and functions of HEIs have modified from ancient to trendy formats and these are perpetually ever-changing. The researchers (Sanyal89; UNESCO 107) have summarized these new functions.

1. Education for All: Higher education system of a country has a responsibility towards the whole education system as it has towards the whole of society.
2. Production of Hi-Tech Workforce: HEIs must generate graduates who provide leadership roles in education as researchers, teachers, consultants and managers, who create and apply new knowledge and innovations, and who generate perspectives on development problems and service to public and private sectors.
3. Research Function: Through research function, HEIs identify the preconditions for a supportive policy context and build national technical capacity.
4. Education Management: Educational management has been the most relevant application of ICTs. Computers are used for time tabling and school management to improve the use of staff time, student time and space to reduce the costs significantly.

These new functions and the new technologies like Internet, web-based technologies, Web 2.0 products like social software – all are reengineering the pedagogic and learning theories and practices. There are shifts from objectivism to constructivism, technocratic to reformist and holist paradigms, and from instrumental uses of ICTs to their substantive role in the education and society. These changes are therefore constantly updating the use and user-dynamics in the e-Learning environments. He calls teachers, students and administrators as the University-Constituents.

a. Teachers

The difficult nature of e-Pedagogy demands larger state by the academics by possessing a wider repertoire of teaching techniques (UQA). Associate in Nursing eTeacher is taken into account as a mentor, coach or assistant and expected to perform various functions particularly:

1. Managerial: The teacher plans the teaching program, which incorporates objectives, timetable, rules and procedures, content development and institution of the sensible work and interactive activities.

2. Intellectual: this is often the standard teaching operate. The teacher ought to recognize the program and also the specific subject which can inform the educational content. 73

3. Social: this is often a elementary operate in e-Learning and eTraining that the teacher creates contributory learning atmosphere, interacts with students and examines their feedback. To perform this operate, the eTeacher ought to inspire,
facilitate and encourage the scholars within the new learning environments (Blázquez and Díaz). 

Five types of teacher-users of e-Learning have been identified by the researchers: builders of e-Learning tools, tool-users, tool-adapters, tool-abiders and those who are indifferent to the use of computers. They further suggest that universities must develop a large body of tool users. Then motivate some creative faculty members to become adapters by providing them incentives and support from the highest level of administration. The most important type of teacher users is the tool adapters, who are skilled users and can adapt/utilize it to fit the student and faculty requirements. Tool adapters should be tenured faculty who enjoy teaching and do not fear technology.

The research indicates that decisions made by teachers about the use of computers in their classrooms are influenced by multiple factors including the accessibility of hardware and relevant software, the nature of the curriculum, personal capabilities and teachers' beliefs in their capacity to work effectively with technology are a significant factor in determining patterns of classroom computer use (Tinio). Furthermore, Teacher anxiety over being replaced by technology or losing their authority in the classroom as the learning process becomes more learner-centered—an acknowledged barrier to ICT adoption— can be alleviated only if teachers have a keen understanding and appreciation of their changing role. 

b. Students

Computers are thought to be useful to the scholars not as a result of these machines will produce a stronger sort of learning however principally as a result of the information and skills required to work the new tools are essential in today's job market. The power to figure with this new technology is perceived as associate quality for the long run success of their pupils (Sasseville).
Even consistent with researchers, student manipulation of technology in achieving the goals of education is preferred to teacher manipulation of technology. The challenge of evolving pedagogy to fulfill the requirements of Net-savvy students is discouraging, however educators are assisted by the very fact that though these students learn during a totally different approach than their predecessors did, however they are doing wish to be told (Ågerfalk et al., 2006).³

c. Administrators/Staff

The actual ICT use fosters supply and body processes, distribution of materials and communication concerning educational problems. ICT has had additional impact on body services (e.g. admissions, registration, fee payment, purchasing) than on the education fundamentals of the room (Dalsgaard). Likewise, ICTs also are facilitating in structure learning through improved kinds of communication and sharing. Usually, administration (or management) provides the first momentum to form Associate in Nursing IT committee and can be accountable for charging the cluster with its mission.²⁴

Leadership plays a key role in ICT integration in education. Many teacher- or student-initiated ICT projects have been undermined by lack of support from above. For ICT integration programs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, curricular, administrative, financial, and social dimensions of ICT use in education (Tinio).¹⁰² The support from senior administrative level ensures the successful implementation of the strategic plan for educational technology however, university administrators and information technology (IT) departments struggle to provide the most appropriate resources to support classroom integration in isolation from the educators. Administrators must balance the needs of all stakeholders (Abrami et al.)².
2.4 USER SATISFACTION

The research indicates that users are rarely satisfied with the functionalities of new e-Learning systems and worried about the problems of integrating the system with other organizational systems (Drinkwater et al.29; Russell86). The HEIs are constantly facing problems of user dissatisfaction with newly introduced systems, mismatches between a new technology and the existing work practices, underestimating the technological complexity for employees, and inefficient end-user support. The individual satisfaction is closely related with the commitment of the individual to participate and contribute. Similarly, a match between learning style and teaching style reveals increases in student achievement and satisfaction (Dhainje D et al.).26

Mixed results have been reported about the user-satisfaction from e-Learning systems around the world. He report that —users of new e-Learning systems are less satisfied than those using the traditional methods of teaching and learning While, David Radosevich and Patricia Kahn (2006) found high levels of satisfaction (mean = 6.02 on 7-point scale). However, as discussed in the literature, satisfaction is dependent on a number of factors including the personal characteristics, environmental pressures and the e-Learning facilities available.84

2.5 MAJOR CHALLENGES (PROBLEMS)

More than half all data technology comes become runways overshooting their budgets and timetables whereas failing to deliver on their goals (McManus andamp; Wood-Harper, 2004:3) 69. Similarly, whereas networked learning is creating its look in universities, its overall impact is, as yet, rather restricted. many researchers have known the issues for the event, use and integration of ICTs into teaching, learning and academic management (Bondarouk).16 such as:
1. Inertia of behavior of individuals, like their resistance to changes, etc.
2. Underestimation, lack of awareness and negative attitudes towards ICTs.
3. Lack of general approach to implementation and lack of follow-up.
4. High rates of system non-completion.
5. Lack of user-training.
6. Lack of body and technical end-user support.
7. User discontent with new systems.
8. Mismatches between technologies and also the context, culture and work practices

At the broader level, there square measure development and use issues, which require to be understood and handled at their time of emergence. each development and use issues square measure freelance furthermore as mutually beneficial on one another. as an example, user participation is very important at each the event and use levels of e-Learning environments.

**2.5.1 Development and Implementation Problems**

e-Learning isn't simply another medium for the transmission of information however that it changes the link between the teacher or trainer and learner. It needs new skills, competencies and attitudes amongst those planners, managers, lecturers and trainers WHO are reaching to style and develop materials and support learners on-line. Thus, the event of innovative practices and therefore the generation of latest competencies in e-Learning are quick changing into key problems (Gray et al.).

There are uncomfortable and comfortable zones for the e-Learning developers and users. Gray argues that ICT is no more an issue, which can be handled in isolation from the educational, administrative and logistic issues. e-Learning project management places the professional development and the organizational management in a critical and uncomfortable position. Bernard Loing suggests that in the background of emerging ICTs, the developers and users are facing multiple internal and external challenges for the development and use of e-Learning. According to another
researcher, the implementation of ICT in higher education is not a trivial process rather it poses a number of challenges and problems to the university authorities.\textsuperscript{61}

Implementation of ICT in higher education learning environments is a complex task where teachers, students, administration and technical support staff, all are affected by and affect the implementation of e-Learning systems. The research highlights that a high frequency of eProjects either fail completely or partially fail to meet the objectives like, in-time development and within budgets delivery. Since, many failures occur internally, they remain organizational secrets but some failures are very expensive and generate a lot of negative publicity.

University constituents hold differing perceptions and attitudes about the role of technology in the classroom and at the same time power structures in higher education, and insufficient communication among the various groups present obstacles to real technological and educational development. There is evidence on the fact that during the e-Learning project development very little communication occurs between users and ICT professionals or developers. In the development practices, people feel that they are increasingly controlled by machines and that the human factors of their work are disappearing. They find losing their privacy and unsure about the security of data and information.

2.5.2 Use Problems

The greatest challenge in learning environments is to adapt the computer-based system to otherwise experienced learners. If the setting is simply too complicated the user are lost, confused or annoyed. On the opposite hand, too easy or non-systematic environments cause psychological feature issues (Shimabukuro)\textsuperscript{95}. Technology is naturally unquiet, and so, demands new investments of your time, money, space, and skills and changes within the method folks do things. what is more, face-to-face communication is essential for schoolroom social relationships and social processes whereas, on-line technologies have
reduced support for social interaction. Though emotions are sent through e-mail or chatting, it doesn't replace the fundamentals of our socio-emotional well-being (Russell). Thus barriers will build technology use frustrating for the technologically perceptive, not to mention the numerous academics. World Health Organization could also be somewhat techno-phobic.\textsuperscript{86}

\textbf{2.5.3 User Resistance to Change}

The user-resistance and reluctance to vary is a widely investigated topic in e-Learning. Since, lecturers decide regarding what happens within the schoolroom, thus their acceptance plays a dominant role within the flourishing use of computers within the schoolroom. Though most of the lecturers have adopted ICTs like outlet slides and web into their teaching, they're still unwilling to adopt additional subtle computer-based teaching innovations.

It has been found that new things are intimidating and cause resistance. For example, if teachers refuse to use ICTs in their classrooms, then e-Learning can never progress except limited benefits. Furthermore, due to the innovative nature of ICT-enabled projects, the developers must have a keen understanding of the innovation process, identify the corresponding requirements for successful adoption, and harmonize plans and actions accordingly (Tinio)\textsuperscript{102}. In Canada, teachers are reluctant to integrate technological innovations into their daily scholarly activities, and, at least in Quebec, this situation has not really changed over the past few years.

Within universities, the implementation of ICT is not an easy task for instance, decision makers and academics are sometimes reluctant to change curricula and pedagogic approaches; teaching staff and instructors lack incentive and rewards in a system where professional status and career trajectories are based on research results rather than pedagogic innovation. There are many obstacles for implementation of the ICT in universities. Some of them are classical, as are e.g. inertia of behavior of people, their resistance to changes, etc. If the ICT should serve properly, it should
enforce an order in all folds of the university life. People who loose their advantage of the better access to information have a fear from order. Regrettably, managers sometimes belong to this category.

Technological change is not perceived as a collective experience rather a personal challenge therefore, solutions to the problem of integrating technological innovations into the pedagogy are more focused on the individual teachers (Shimabukuro). Some teachers are strongly advocate the technological innovation but may resist in accepting technology as an integral part of the learning process. These divergent reactions and concerns have thus created a continuum that represents various attitudes towards technology. Similarly, Inexperience may lead to developing learners anxiety.95

Political sustainability refers to the acceptance of new system by the administrators handling the policy and leadership matters in the universities (Tinio)102. Particularly, in a bottom up approach, the grass-roots may be better placed to understand and implement innovation, but there can be a lack of physical and political support (Aaron et al.). In the case of e-Learning projects initiated at ground (bottom-up), research informs that there is a lack of feedback towards higher levels of decision and general policy, and little impact on strategy definition and implementation thereby creating resistance on the part of administrators to help and cooperate.1

2.6 OPPORTUNITIES

Education determines, over anything, a country's prospects for human development and aggressiveness. as luck would have it, the data revolution offers some extraordinary opportunities in education (MoST). Universities and even smaller departments inside organizations are getting capable to afford refined digital systems.73

Common sense tells United States that we should always teach completely different learners otherwise. (UNESCO) folks demonstrate this intuitive knowledge after they
communicate otherwise to their kids in step with their specific ages\textsuperscript{106}. Electronically supported processes within the teaching and body spheres don't appear to be displacing ancient ways in which of doing things. Rather, the outcomes are usually a matter of the new virtual and also the previous traditional notions of the university co-existing during a tense relationship(Mondal A).\textsuperscript{72}

2.6.1 Global Availability of ICTs

The Internet and World Wide Web has opened a wide range of learning opportunities for both the developed and developing countries. This is particularly significant for developing countries that have limited and outdated learning resources. Likewise, these new technologies also offer access to resource persons: mentors, experts, researchers, professionals, business leaders, and peers across the world.

The developing countries are not supposed to produce hardware because firstly, hardware is becoming inexpensive as well as a huge number of Branded Computers\textsuperscript{1} are transported to the developing and poor countries, which are hi-tech but very cheap in comparison to the new computers of same model and specifications. So availability of hardware is not a big deal in the developing world.(Sharma S.,et.al).\textsuperscript{92}

2.6.2 Free and Open Sources Systems (FOSS)

The history of social software is as long as the history of computers itself, for example, it took the Web less than four years to attract 50 million users while radio needed almost 40 years to gain the same number of users (Spallek)\textsuperscript{97}. While some research material has been available electronically from the first days of the Internet, libraries are putting more and more material on the Web and thus becoming virtual libraries. For example, the University of Texas made a move toward a bookless library system by posting 60,000 volumes online and trying to bring all their collections online (Snow).\textsuperscript{116}
Robert Stephenson, (2006) defines FOSS in the language of Richard Stallman, the founder of Free Software Movement, —as a matter of liberty, not price. Free software refers to four kinds of freedom for the users:

a. —The freedom to run the program, for any purpose.

b. The freedom to study how the program works, and adapt it to your needs.

c. The freedom to redistribute copies so you can help your neighbor.

d. The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.  

Garcia note that open source systems are becoming culture in the HEIs, for example, in the February 2006 survey of U.S. higher education chief information officers (CIOs), it was found that two-third of the CIOs have either adopted or seriously planning in the favor of FOSS. This shift is being innovated by the instructional technology (IT) professionals and academic computing faculty in higher education.  

### 2.6.3 Global Paradigm Shifts in e-Learning

As the learning technologies are mushrooming and becoming more and more inexpensive and widely accessible, the modes of teaching, learning and education delivery are going through significant changes. There are paradigm shifts in different dimensions of e-Learning and the environment around it. For example, the teacher’s role has shifted from being a sage on the stage to guide on the side. Modern eTeacher is mentor, coach or facilitator for the successful integration of ICTs into the pedagogy. Likewise, contemporary students are called —Millennials, Electronic Natives, the Net Generation who are grown up digital therefore possess absolutely new learning habits like independence and autonomy in their learning styles and multitasking due to the availability of new gadgets (Garcia and Qin).
2.6.4 Local ICT Industry and ICT-Professionals

ICTs are no more meant for the elite or privileged classes of the world. These are available, accessible and affordable to a wide range of nations and world citizens. The developing countries are said to be the major beneficiaries of these technologies provided they effectively plan their integration into their economies. The biggest opportunity available to them is the growth of local ICT professionals who are basic to the successful use of new technologies. India can capitalize on its local ICT resources to bring digital revolution. During the last decade India is taking visible steps in this regard. A huge amount of money has been invested in computerizing the HEIs to produce local ICT professionals, which are indispensable like infrastructure. (Juniu). 51

2.6.5 Local/ National/ and International/ Partnerships

The use of new collaborative technologies requires team work more than we are used to. Networking and social software helps users in working collaboratively while still preserving their personal preferences and styles. The collaboration requires partnerships between the university constituents (teachers, students and administrators) as well as at the national and international partnerships between world organizations and states (Kopyc) 55. For example, the emergence of a strong Indian IT industry happened due to concerted efforts on the part of the Government, and host of other factors like private initiatives, emergence of software technology parks, and public private partnerships (Mathur). 68

Likewise, partnerships of universities with outsiders is in variety including collaboration with other educational institutes, NGOs, government agencies, multinational enterprises (MNEs), UNO and national/international outsourcing companies providing e-Learning solutions. (Chandrasekhar) contends that private sector-public sector partnerships in
ICT-based projects is a new strategy that is gaining currency in several ministries of education particularly, in developing countries. These partnerships reveal in many forms like, private donations, government grants, and provision of equipments and technical assistance in planning and using available resources. During the mid-1990s, SDNP of UN in India appeared as the very first external partnership for the use of ICTs for providing Internet, email and networking services in Islamabad. Through the same collaboration, several individuals and organizations were trained in ICTs and networking.

2.6.6 Growth of Information-Society/Culture

ICTs have created new societies, which are discussed under different concepts including information societies (McPherson and Nunes) 70; knowledge societies and open information society with knowledge economy. The higher education commission (2008) aims to ensure that a comprehensive ICTs strategy is implemented to develop a knowledge-society in India. As discussed across the literature review, the shift from traditional modes of life to modern life styles is characterized by several new dimensions. The traditional societies are turning into information and knowledge societies where societies are switching from isolated stance to global and collaborative trends at the global level with collaboration as a critical norm in the culture. Our world's culture is no longer only literary and artistic, it is also technologic and scientific and at the crossroads of these two aspects, refusing this would reflect the inability to integrate into modern societies.
2.7 TECHNOLOGY ACCEPTANCE MODEL

There are two perspectives help determinedly to learning accomplishments and course fulfillment: students’ accomplishment objectives and the teacher. Students who considered additions in abilities as particularly vital, accomplished higher accomplishments. Besides, the consequences of study underscore the teacher's aptitude and part as an instructor and facilitator in learning. The teacher does not get to be less imperative in e-learning. Actually, understudies encounter the teacher's backing and skill as particularly imperative for the procurement of learning, abilities, and capabilities and for course fulfillment (Manuela, Brigitte and Daniel Macher). 66

The study discovers TAM as a valuable model to help the scientist comprehend the mentality of teachers to utilize innovation as a part of instructing in this connection as the model has a sustenance fit for the gathered data. It might be said that the study is effective to demonstrate the causal connections among the TAM develops (Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Attitude Toward Use (ATT)) and had proves in backing of pertinence of TAM in clarifying demeanor of science educators in Kerala (Indu Nair and V. Mukunda Das). 48

Factors that have an effect on students’ attitude to adopt e-learning. the idea of technology acceptance model was extremely designed to check users’ attitude to just accept new technology. Drawing on a recent review of TAM analysis, the factors that have an effect on students’ attitude to adopt e-learning. The results show that there are six factors which will be employed in predicting students’ angle to adopt e-learning. These factors are perceived Usefulness of e-learning (U), Intention to use (I), Ease of Use (EOU), pressure to use (PTU), E-learning stressors (ES), Technical and pedagogical support (TPS). In addition, perceived Usefulness of e-learning (U), Intention to use (I), easy Use (EOU) are a lot of necessary in determinant attitude than another factors.
2.8 CONCLUSIONS FROM THE LITERATURE REVIEW

The literature review was conducted at two levels of the research project. First preliminary literature review was undertaken with a view to develop the research project. From this primary survey, required elements for the research project were extracted, which included problem statement, list of the working concepts, theoretical framework, research hypothesis, and the research project. Main literature was then conducted to build on the some concepts and models identified in the preliminary literature survey. At the broader level, the literature review aimed at:

1. Defining the ‘Boundaries of the Topic in terms of the Existing Research.
3. Optimizing the Working Concepts into a Precise List of Variables and their Attributes.
4. Constructing a Theoretical Framework by Connecting the Variables to represent the Theory behind the research topic which has then been Tested through Empirical Data.
5. Generating Hypotheses from the Theoretical Framework of the Project.
6. Selecting and Justifying the appropriate Research Methodology for the current project containing the Approach for Data Access, and Methods, Data Collection, and Data Analysis.

At the broader level, the overall objective of both preliminary and main literature review was directed towards finding answers to the following basic questions of this research. A huge body of literature is available to throw light on these questions however, they need to be analyzed into a compact theory or single understanding of the phenomena:

2. How is it developed? (e-Learning System Development).
3. What are the Challenges and Opportunities? (Problems and Opportunities)
Sections 2.8.1, 2.8.2 and 2.1.3 are the modular answers to the above questions.

2.8.1 E-Learning: A Birdseye View

Figure 2.1 A Model for Defining e-Learning in HEIs

2.8.2 E-Learning System Development: A Global Perspective

Figure 2.2 ADDIE Model of e-Learning Development Process
### 2.8.3 Challenges/Problems and Opportunities/Prospects?

Figure 2.3 A List of Challenges and Opportunities for e-Learning

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Lack of Local research</td>
<td>2. Free &amp; Open source system</td>
</tr>
<tr>
<td>4. Lack of user participation.</td>
<td>4. Local ICT industry &amp;</td>
</tr>
<tr>
<td>professionals</td>
<td></td>
</tr>
<tr>
<td>5. Ineffective user training participation</td>
<td>5. Local/National/International</td>
</tr>
<tr>
<td>7. Multiplicity of digital divides</td>
<td></td>
</tr>
<tr>
<td>8. Failure to catch-up with paradigm Shifts in e-Learning.</td>
<td></td>
</tr>
</tbody>
</table>