Chapter 1
INTRODUCTION

1.1 CONCEPTUAL FRAMEWORK

1.1.1 e-Learning

1.1.2 Higher Education in India

1.1.3 Teaching Learning Process

1.2 RATIONALE OF THE STUDY

1.3 OBJECTIVES
Once we free ourselves from the mental limits of viewing the technology as a weak sister to face-to-face synchronous education, the potential to revolutionize education and learning becomes readily apparent.(Turrof, 1995).

1.1 CONCEPTUAL FRAMEWORK

Globalization has made the world more dynamic and extremely competitive where an array of education strategies, expertise and knowledge are constantly generated and changed. Innovative digital technologies have been found as powerful supporting tools for change and transformation. Use of information technology and internet support educational development, encouraging collaborative learning in geographically apart clusters. This has been referred to as e-Learning. Developing countries which are facing an increasing shortage of faculty have started realizing the benefits of e-Learning (UNESCO, 2006).

e-Learning is often defined in terms of technology. Abbad et al (2009) define e-Learning as any learning that is enabled electronically. Welsh et al (2003) define e-Learning as the use of computer and internet technology to provide content and instructions to individuals. Rosenberg (2001) shares a similar definition referring to e-Learning as using ICT to deliver various solutions to students. Holmes and Gardner (2006) contended that e-Learning provides access to resources that promote learning on anyplace and anytime basis. Although the definitions of e-Learning may differ, they all emphasize on three basic concepts which include learning, technology and access.

Traditional instructor-led teaching based on book learning is a system to gain vast knowledge. However, changeover to e-Learning system allows for change in education paradigms and activities, thus creating a new philosophy regarding learning. e-Learning is the mechanism wherein delivery of learning is achieved through electronic means. This new method of teaching and learning involves the use of a computer or an electronic device (e.g. a mobile phone) and the internet. e-Learning is substantially different from the traditional, teacher-led classroom environment. It can provide a stimulating and very effective learning experience that can go beyond the realm of education and training that might be experienced in a normal classroom. The online content can include text, audio, video, simulations, animation and even Virtual Reality (VR) applications.
e-Learning is student-centered rather than faculty-centered. It is also a self-paced and hands-on learning experience. The contents also include online interaction between the learner and learner or between learner and teacher. Internet has become an essential medium in human life. Extensive usage of Internet globally has transformed commercial, education and business activities. This change in the education sector has led to the enrichment of teaching and learning process. A new paradigm for contemporary education has been created by e-Learning. People generally think that e-Learning is about teaching and learning over the Internet, but e-Learning can be more than that. It includes: Training provided through the Internet; Training provided through a local or corporate intranet; Training provided through e-Learning can even be saved onto an optical disc like CD or DVD and watched by learners off-line through a web browser.

1.1.1 e-Learning

The e-Learning method is implemented in the education institutions to get rid of the complications and weaknesses of the traditional mode of education. This autonomous learning environment offers an excellent learning tool for the learners facing time and socio-economic constraints (Vaughan, 2007; Appana, 2008) and permits them to access learning material at any time and from anywhere. The e-Learning method improves the quality of education process by using exceptionally effective methods (Dawes, 2001). Moreover, Mahdizadeh et al (2008) point out that e-Learning offers a different platform to the teachers to provide varied representation of knowledge. The growth in the usage of technology in the education sector has paved way for universities to invest in ICT (Cheung and Huang, 2005). The administrators encourage their faculty to adopt and implement e-Learning in order to promote growth in their institutions (Bennett and Bennett, 2003).

It was Douglas Englebart in 1968, who first came up with an idea of an interactive computing environment. Englebart has invented some important features of the computer, like mouse and the GUI (graphic user interface). But it was in the year 1978 with the invention of the Speak and Spell electronic gadget that led to the introduction of e-Learning. Speak and Spell made by Texas Instruments comprises of a keyboard, a speech synthesizer along with a receptor slot to accept a Read Only Memory (ROM)
game. However, it was during the years 1970-1980 that online learning method developed due to the innovative work of Roxanne Hiltz and Murray Turoff at the New Jersey Institute of Technology (NJIT). This online learning method was called computer-mediated communication (CMC). CMC was developed before the internet era and was primarily used as a blended learning model by means of NJIT’s own computer network (Hiltz and Turoff, 1978).

In the period before 1983 computers were not accessible and so the major method of training was faculty-based. The faculty-based learning helped the students to easily interact with their colleagues and instructors. However, this mode of teaching-learning involved high costs which forced the educators to search for a better way to train. In 1980s a university in the United Kingdom developed Cyclops, a system based on audio-graphics using public telephone system (McConnell, 1983). This allowed the faculty at the university to provide education to long distance students.

The time period from 1984-1993 is generally referred to as the Multimedia Era. In this era a lot of technological development took place in the form of Windows 3.1, Macintosh, CD-ROMs, and PowerPoint. In order to make learning more capturing, some courses were provided via CD-ROM. Due to the 24X7 availability of CD-ROM there was saving in terms of time and cost which was not possible in the faculty-led training. Inspite of the advantages of CD-ROM course, if failed to capture the interest of the learner in the long run since it lacked faculty interaction, made the learning experience unsatisfying and less engaging for students. The rapid growth of the Internet in the 1990s eliminated all the limitations and provided the channel for the growth of e-Learning industry. Further, increase in internet bandwidth, computer processing speed and mobile computing has led to remarkable growth in education through e-Learning.

There are basically two types of e-Learning: Synchronous and Asynchronous. Synchronous means real time interaction between learners and trainers through internet. Learners interact with trainers and with each other through chat, instant messaging, audio-video conferencing etc. Also, all the e-Learning sessions can even be recorded and played back whenever necessary. Synchronous training is most popular in education programs, like distance learning programs. Its
benefits are: tracking of learning activities; continuous monitoring; global connectivity with learners and personalisation of training.

Asynchronous means not at the same time. In this type of learning, the learners have the freedom to complete the online training at their own speed and without interaction with the faculty. It is specifically accessing information whenever required by the learner. In contrast to synchronous learning, learners do not need to schedule their time in advance for the learning sessions. Its benefits are: Interaction amongst learners through bulletin boards and discussion forums; Easy accessibility and Capability to reach any number of learners simultaneously. An innovative form of learning has evolved which is known as blended learning. Blended learning is a proper blend of both synchronous and asynchronous learning methods. It facilitates online learning through virtual classrooms and also provides study material through CD ROMs for self-study. This method of learning has become popular and is being preferred over any other type.

1.1.1.1 Benefits of e-Learning

The incredible growth in information technology has revolutionized teaching and learning. Obringer (2009) contended that e-Learning provides significant opportunities and benefits to the learner. The main advantages of e-Learning are: flexible, accessible and convenient: Learners can progress through e-Learning program at their own convenience. Learning can take place at anytime and at any place, as long as a computer with internet access is accessible (Huang, 2010). The usage of onlinetechnology in higher education will eventually lead to the end of inflexible and inaccessible learning methods (O’Donoghue et al, 2001). Collis (1998) and Caley et al (2002) contended that e-Learning eliminates the constraints of time and place.

- **Student-centered approach:** Resources and activities in e-Learning are planned according to the interest and requirements of the learner since he/she is the most important part of any e-Learning system. The online learning system has a student-centered approach and hence a learner can take control of his/her learning to achieve goals.

- **Improves retention rate:** The extensive use of multimedia elements in e-Learning increases the involvement of learner and thereby strengthens the learning experience. This results in a deeper understanding of the subject which
increases the retention rate of the information. Fletcher (1991) found that compared to traditional methods, online learning increases the retention rate by 25 percent.

- **Platform independent:** e-Learning courses are easily accessible on any platform: Windows, Linux, Mac, UNIX etc. The program can be accessed through any web browser machine using the internet or intranet.

- **Continuous learning support:** McClelland (2001) found that online learning provides continuous education support, since students browse websites and view course material incessantly. Ahmad (2013) contended that the learning of students using e-Learning became better, as it increased their interest towards the lesson since course material is provided in different forms.

- **Improves performance of students:** Holley (2002) contended that students in online learning obtained better grades than students who studied in traditional learning environment.

- **Creates lifetime learners:** Hartley (2000) reported that e-Learning enables learners to become life-long learners regardless of their age, profession or location. Azeiteiro et al (2015) contended that e-Learning in higher education can be important for full-time employees who want to receive life-long learning.

- **Increases literacy rate:** e-Learning is perceived as a tool for increasing the total number of students who have access to higher education, specifically sidelined groups in rural areas, by being an inexpensive and more flexible alternative.

- **Increases skills of students:** The use of e-Learning programs improves the cognitive and psychomotor abilities of learners (Kiboss, 2000; Wekesa, 2003). Zarabian et al (2010) found that e-Learning accelerates the learners’ understanding and problem-solving abilities.

- **It is eco-friendly:** e-Learning is an environment-friendly method of learning since it is significantly free from excessive paper usage that is present in traditional classroom-based learning. Also, it reduces environmental pollution as the learners do not need to travel for learning and they can learn at their own place. It can definitely prove to be a boon for developing countries like India and China which are facing tremendous environmental pollution.
Akasalan (2010) contended that e-Learning can save the earth since it lowers the amount of carbon dioxide produced by providing off campus learning.

1.1.1.2 Limitations of e-Learning
O'Connor et al (2003), Romiszowski (2004), Jordan (2013) and Levy (2007) found that even though the enrollment rate in e-Learning is high but the limitations of e-Learning result in even higher drop-out rates, which are much higher than in traditional classroom learning. The limitations of e-Learning are:

- **Deficiency of basic facilities:** First and foremost disadvantage of e-Learning is deficiency of basic facilities for e-Learning. Many developing countries lack the basic infrastructure for e-Learning like computers, electricity and high speed internet connection. Kumar et al (2012) found that the main reason for stress among majority of students using e-Learning was poor access to e-Learning technology at institution and home. In many developing countries, there is shortage of essential e-Learning components, such as computers and electricity (Heeks, 2002; Rajesh, 2003).

- **Unreliable technology:** Teare (2000) and Bates (2011) reported that students found the delivery of the e-Learning course annoying due to technological failures. This implies that the problem with online learning is not in its delivery methods but it is in the reliability of the technology underlying it.

- **Limited bandwidth:** The problem of using online learning with an internet connection having limited bandwidth is a main concern. It results in slower performance of the system causing long waits for download specifically for audio and video content which affects the learning process.

- **Lack of IT skills:** Students will perceive e-Learning to be a challenging learning environment if they lack in IT skills, and further, if the need for training is not addressed (Eastmond, 2000; Sehrt, 2003; Evans, 2005). Wilson (2001) reported that lack of IT skills is one of the major reasons for students refraining from e-Learning course. O'Connell (2002) found that
students face problems in assimilating the course contents in e-Learning environment if they have a non-technical background.

- **Lack of motivation**: Singh (2005) reported that due to lack of motivation e-Learning sometimes appears to be dull. In online learning environment, the students may feel isolated since the instructor and the learner are not physically present at the same place. In online learning, the learners need to be disciplined enough to work alone without the assistance of instructor (Kristy et al, 2006).

- **Lack of teachers’ conviction**: e-Learning needs teachers who are themselves convinced about the usefulness of online learning and are willing to use it for the growth of their students. The teachers should be willing to undergo formal training, attend conferences and workshops in order to acquire the skills to be an effective e-Learning teacher (Shank, 2002). Lack of vision, support and training cannot make the faculty dedicated to e-Learning (Mahdizadehet al, 2008).
### 1.1.1.3 Difference between traditional learning and e-Learning

<table>
<thead>
<tr>
<th></th>
<th>Traditional Learning</th>
<th>e-Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classroom Discussions</strong></td>
<td>The teacher usually delivers information and the student just receives it.</td>
<td>The students and teachers both get the chance of delivering as well as receiving information.</td>
</tr>
<tr>
<td><strong>Learning Process</strong></td>
<td>The learning is conducted within a classroom with almost all the students in it. Group or individual study is almost absent.</td>
<td>The learning process takes place in groups or by the individual student as well.</td>
</tr>
<tr>
<td><strong>Subject Matter</strong></td>
<td>The teaching is conducted according to an existing curriculum. The study is generally based on the information provided in books.</td>
<td>The student usually participates in deciding the subject matter. The study is generally based on the various sources of information including web data banks, videos etc.</td>
</tr>
<tr>
<td><strong>Emphasis in the Learning Process</strong></td>
<td>The teachers and students are concerned about completing the prescribed syllabus. The main thrust of the learning process is to learn “what” and not “how”.</td>
<td>The learning includes research study which encourages the student to seek information from various sources. The main thrust of the learning process is to learn less “what” but more “how”.</td>
</tr>
<tr>
<td><strong>Motivation</strong></td>
<td>The students’ motivation is low as it</td>
<td>The students’ motivation is high as it</td>
</tr>
<tr>
<td>Teacher’s Role</td>
<td>The teachers’ role is authoritative.</td>
<td>The teachers’ role is facilitative.</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Location of Learning</td>
<td>The learning takes place in a classroom and within the boundaries of the school.</td>
<td>The learning takes place anywhere and there is no permanent location.</td>
</tr>
</tbody>
</table>


1.1.1.4 Strategies for e-Learning success

Latest technological developments which have resulted in the introduction of e-Learning have transformed education. Globally, there exist millions of e-Learners who belong to different social, cultural and educational backgrounds. Many of them are employed people seeking higher education to increase their job prospects. However, e-Learning is not meant for everyone as it is unlike traditional classroom learning. The following strategies are required to be an effective e-Learner:

- **Motivation and self-discipline:** e-Learners need to integrate the learning time into their busy schedule. For successful e-Learning experience, the students need to be motivated and self-disciplined to keep up with the course and complete it within the stipulated time.

- **Need to define goals and plan for success:** For a positive e-Learning experience, it is important to define the goals in advance and the e-Learner needs to understand the requirements in order to achieve goals. The e-Learner needs to know the criteria for judging his/her performance.

- **Requires good reading and writing skills:** Since activities in e-Learning involve reading, understanding and also writing answers, the e-Learner should have the expertise to read well, understand the instructions and write properly.

- **Requires more time and commitment:** Although e-Learning is a convenient method to receive education, but it is not easier than the traditional education process. In fact, it often requires more time and commitment.
1.1.2 Higher Education in India

Higher education is defined as the education obtained after completing 12 years of school education. It is generally of the duration of three to four years. The nature of education may be traditional, professional or vocational.

Higher education plays an important role in making the people of a country more skilled and creative which results in the rapid development of a country. Higher education makes the people competent enough so that they could create new ideas and technologies and use them to their advantage. Indian higher education system is third largest in the world, after United States and China. The higher education sector in India will witness tremendous growth in coming years as India will have the world’s largest tertiary-age population and second largest graduate talent by the end of 2020. As per the Union budget of India 2016-17, in FY 2015-16, the education market was worth about US $ 100 billion and is expected to reach US $ 116.4 billion in FY 2016-17. Currently, higher education contributes 59.7 percent of the market size.

The Indian higher education system is one of the largest in the world. The number of Universities has grown from 621 in 2010-11 to 712 in 2013-14. The number of stand-alone Institutions has grown from 11,095 in 2010-11 to 11,565 in 2012-13. The number of colleges has grown from 33023 in 2010-11 to 35525 in 2013-14. The enrolment of students in higher education institutions is more than 3 crore. Gross Enrolment Ratio (GER) in Higher education in India is 21.5, which is calculated for 18-23 years of age group. (Source: MHRD, Annual Report, 2009-10). Takwale (2003) contended that although the size of the Indian education system appears to be quite impressive, but it only covers 6 percent of the relevant age-group. In contrast to this, the developed countries have coverage of about 30-40 percent. In order to drastically increase its coverage percentage, India has a mammoth task of creating huge infrastructure, which will necessitate financial resources not affordable to the nation. It is thus necessary to develop some innovative way of increasing coverage and for offering more access to an ever increasing number of aspiring learners with less cost. The higher education institutions are therefore using Information Communication Technologies (ICT) in education to meet their requirements.
According to a study on online learning, after the United States, India has been reported to have the second highest number of online course admissions with above 1,55,000 students from the country. Out of a total of around 1.2 million students globally, 32 percent are from the U.S. while 15 percent are from India. According to another report, India’s online education market size is set to grow to $40 billion by 2017 from the current $20 billion. The problem faced in India particularly in the rural region is that of non-availability of qualified teachers. E-Learning has the potential to overcome this as it can provide live online tutoring; video sessions and virtual classrooms. Researchers have found that although there is no substitute for interactive and effective classroom teaching, E-Learning is a good alternative. People who have dropped out from school or college, for any reason, can be taught through E-Learning. Physically immobilized students can learn easily and effectively from the boundaries of their home through e-learning. Mostly, in developing countries like India where technical education is expensive, places are geographically dispersed and economic disparities exist, E-Learning is an attractive option.

Higher education institutions are increasingly moving towards the use of Internet technology for their course delivery (Ally, 2004; Kim and Bonk, 2006). Amongst the various forms of available technologies, the Internet provides a different and interesting alternative (Weller, 2002). At times, the courses are delivered completely online to students in geographically far reaching places and additional material may also be sent by mail. For the students having slow and unreliable Internet access, the E-Learning lessons can be copied onto a CD-ROM. Faculty may even use a CD-ROM as a supplement to face-to-face delivered classes in case the topics to be taught are difficult.

The application of E-Learning has not been revolutionary, but it has mainly been evolutionary. It has been incorporated in existing system through slow and incremental transformation (Collis and Van der Wende, 2002). Douglas (2005) contended that although E-Learning has not replaced the classroom delivery method, but most of the time blended models are chosen. This slow and steady process of change in education, as described by Fullan (1991) and Collis and Moonen (2001), has some distinct steps. The steps are: Pre-initiation and initiation; Implementation and Institutionalization. Although, many E-Learning projects are still in the initiation or the implementation phase, but it has been observed that higher education institutions are now
stepping ahead from the initiation to the implementation phase and even some higher education institutions are in the beginning of the institutionalization phase. According to Collis and Van der Wende (2002), ICT can be completely institutionalized only when a technological infrastructure is created for the whole institution, proper pedagogy is developed for its usage and it is then effectively used by the institution. They further reported that although in many higher education institutions proper technological infrastructure is in place, however, suitable pedagogy for usage of this infrastructure does not exist. Allen and Seaman (2011) contended that online learning has become such an essential part of higher education that 65 percent of institutions of higher education include online learning as an essential part of their long-term plan.

World’s highest regional growth rate for e-Learning is 17.3 percent in Asia. In 2011 revenues generated from the sale of e-Learning reached U.S. $5.2 billion and are estimated to have reached U.S. $11.5 billion by 2016. Online learning in India has been better utilized in the corporate world for training activities, and then for education purposes. The Government of India, however, has always considered online learning as a means for educating the masses. University Grants Commission (UGC) has set up mass communication research centers at various institutions in the country. During the year 2003, Indian Government launched a project of e-Learning whose main aim was to take e-Learning to schools in every district across the country.

In 2004, the government launched a dedicated satellite (EDUSAT), for serving the education sector. EDUSAT provides education to millions of people at their doorstep by enabling information to be broadcast in local languages to encourage long distance learning in India. In addition to this, the government’s resolution to sponsor tablets for students shows the keenness of the government to provide online learning for the masses. The Indian e-Learning market is expected to grow at a compound annual growth rate of 18.4 percent from 2014 to 2018. Due to the strong government initiatives, the e-Learning market will continue to expand at an increasing rate. Kong et al (2014) contended that at governmental level, policies designed should enable the e-Learning usage.

The Indian private sector also has come up with various schemes to promote online learning among students. The National Institute of Information Technology (NIIT) started Net Varsity in 1996. In 1999, the Indira Gandhi National Open University (IGNOU) started a Virtual Classes Initiative (VCI) with two programs – the Bachelor
of Information Technology (BIT) and the Advanced Diploma in Information Technology (ADIT). This was done in association with Edexel in the UK and the Government of India’s Ministry of Information Technology. The key drivers for e-Learning market are: Government initiatives to support e-Learning; the increasing adoption of technology; the scarcity of quality education; and convenience and affordability factors.

Indian e-Learning project is the NPTEL project. NPTEL (National Program on Technology Enhanced Learning) was conceived in 1999 and funded by MHRD (Ministry of Human Resource Development). Under this project various IITs (Indian Institutes of Technology) and IIS (Indian Institute of Science) Bangalore worked on Rs 20.5 crore project from 2003 to 2006 to make 112 video courses and 116 web courses. All these courses are based on undergraduate engineering topics and mostly meet the requirements of an engineering undergraduate program in any Indian university. These courses are available to students, working professionals and institutions at very low cost.

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 etc. This was done by these institutions using services provided by the companies like Hughes Net. Sakshat Portal of MHRD (Ministry of Human Resource Development) is another well-known e-Learning initiative. It has been designed and developed by IGNOU for Ministry of HRD as a repository of e-Books, e-Journals and other student relevant information. Another relevant initiative again of IGNOU is e-Gyankosh. It is a digital repository for learning resources and has been developed with the objective of preserving the study material for a long time.

1.1.3 Teaching-Learning Process

Teaching-learning process is the heart of education. It is the process which leads to the accomplishment of the aims and objectives of education. It is the vital mechanism of education which brings about the preferred changes in the students. Teaching and learning are terms related to each other. In teaching - learning process, the faculty, the
student, the curriculum, the delivery method etc are prearranged in an efficient way to fulfill some pre-determined goal. Faculty is a person who has been assigned the responsibility of instructing the students, providing knowledge to them and guiding them in a learning environment. Students include any person who has been enrolled for pursuing a program offered by the institution. Education is a way to gather knowledge and enrich one’s thoughts. It is any act or experience that has a formative effect. Panjwani (2014) defined it as the learning of knowledge, information and skills during the course of life.

There are basically two streams of education in India: traditional and professional streams. Traditional stream of education offers a program designed to prepare the learner for scholarly research and academic activity, such as arts, science, and commerce. Professional stream of education offers a program designed to prepare the holder for a specific career or profession, such as engineering, medicine, law, pharmacy, architecture and management. A professional stream therefore emphasizes on the acquisition of skills. Higher education institutions are facing a challenge in integrating the acquired knowledge and skills and provide training that makes students employable. The role of professional stream of education is thus, to improve the employability of the student by shaping the student’s potential and flexibility to adapt his/her knowledge, skills, and attitude to the job market. Many job seekers, who have years of experience, may not even be considered for a job, or they may be passed over for a candidate who has a professional degree.

Indian education system is broadly categorized into school and higher education. Higher education is further classified into undergraduate, postgraduate and doctoral studies. Undergraduate programs are undertaken after completing 12 years of schooling. It generally has the duration of three to five years depending upon the course pursued. Postgraduate programs are undertaken after graduation and generally has the duration of two to three years depending upon the course pursued. Doctoral studies is research based degree after post graduation.

1.2 RATIONALE OF THE STUDY

e-Learning has been incorporated in the curricula of professional institutions in India and its usage in the traditional institutions is coming up. It has been found that the effectiveness of learning increases as the student’s engagement, motivation and attendance, the key requisites for learning are elevated. Effective e-Learning can also
improve performance on core subjects and foster the development of skills. At the same time, highly substantial costs associated with online programs, particularly at the development stage is a big challenge as e-Learning has to be an affordable and comprehensive learning method. Therefore, many educational institutions especially the traditional institutions find it difficult to incorporate it into regular curriculum. The present research would be undertaken to explore the challenges and opportunities of e-Learning as perceived by the students and faculty of traditional and professional streams to have an understanding of finer nuances of implementation in higher education.

1.3 OBJECTIVES

- To identify the factors and dimensions of e-Learning.
- To identify the perceptual gap between the faculty of traditional and professional streams.
- To identify the perceptual gap between the students of traditional and professional streams.
- To identify the perceptual gap between the students of under graduate and post graduate programs.
- To identify the perceptual gap between the students of traditional under graduate and traditional post graduate programs.
- To identify the perceptual gap between the students of traditional under graduate and professional under graduate programs.
- To identify the perceptual gap between the students of traditional under graduate and professional post graduate programs.
- To identify the perceptual gap between the students of traditional post graduate and professional under graduate programs.
- To identify the perceptual gap between the students of professional under graduate and professional post graduate programs.