Chapter 2
Review of Literature

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The previous chapter gave a broad overview of the e-Learning concept, its evolution and growth, advantages and limitations. The review of relevant literature is a very important part of research. It helps in refining the research problem, articulating the research gap, selecting suitable research methodology and inferring the distinct contribution of previous research. In this chapter, an effort has been made to review an extensive spectrum of research carried out by various research scholars in the area of e-Learning. The studies have been carefully reviewed and their contribution is presented with respect to their importance to the present study.

2.1 **Dimensions of e-Learning**

The traditional educational delivery method has been a classroom with faculty delivering lectures to students and the students listening and often taking notes. Interaction between faculty and students has been considered an important learning part of this delivery method. Innovations in educational delivery mechanisms have though, challenged the traditional system of education (Janicki and Steinberg, 2003). Growth in information technology has lead to the evolution of new educational delivery methods like distance learning and e-Learning. This, in turn, has paved a way for many universities and colleges to join the novel e-Learning process. Consequently, a need was felt for faculty having good technical knowledge and skills to teach through the technology driven teaching-learning mode. Faculty now has to play a dual role of transferring knowledge as well as facilitating. The multimedia enabled online learning environment has motivated the learners since it provides them with the content in the form of text, sound, images, videos etc. The other positive aspects of e-Learning are flexibility, interactivity, capturing and autonomous learning. Liu and Wang (2009) found that the features of e-learning process are globally sharing resources and flexibility of learning as computer enabled learning environment has overcome the issues of distance and time. The literature also suggests that e-Learning can increase the quality of learning experience (McKnight, 2001; Garrison and Anderson, 2003; Heckman and Annabi, 2005). It has also been reported that e-Learning helps in the development of argument formation capabilities, develops written communication skills and enhances the opportunities for critical and reflective thinking (Winkelmann, 1995; Abrami and Bures, 1996; Hawkes, 2001). Online learning is useful in disseminating knowledge even to the most geographically inaccessible areas and is acknowledged as the most reliable media of education.
Online method provides access to number of courses not available in traditional institutions. It allows absentee students to even study away from institutions. Online learning has become a boon for parents as it provides a system to track the progress of their children. Robyler and Edwards (2000) contended that e-Learning offers simple access to a pool of information to solve difficult problems. Therefore, increasing the motivation of the students. e-Learning has also proved to be an exceptional solution to lifelong learning and employee training (Zhang et al, 2004).

However, e-Learning cannot be considered to be a magic wand. There are certain drawbacks which require efforts to be eliminated. The effectiveness of e-Learning is dependent on many factors, technological, sociological and psychological. Moreover, there are issues of accountability, privacy and trust concerning the users. Oppenheimer (1997) and Kraut et al (1998) have been unconvinced about the advantages of online learning over traditional classroom teaching methodology. Phipps and Merisotis (1999) reported that although in comparison to traditional classroom environment, e-Learning had many advantages but the dropout rates have been very high.

Adel and Brooks (2003) have found that there are number of factors which do not allow full integration of ICTs in education. Some of the factors being: lack of interest shown by institutional management and teachers towards e-Learning, perceptual gap between the teachers and students, and the failure of teachers and students to become adapted to the new methods of instructions. In a nutshell, previous studies have expressed diverse views on both the advantages and disadvantages of e-Learning. However, the researchers reported that e-Learning, if implemented properly, has the potential to reach millions of people. They have opined that the quality of the entire e-Learning exercise should be properly assessed and ensured. The study gains further momentum owing to the drive reported by the previous researchers.

Sandholtz et al (1992) reported that reliability is an important issue in e-Learning since it is completely dependent upon the technology. Oliver and Towers (2000) contended that without suitable equipment and easy access, it is difficult to implement e-Learning. In contrast to this, Broadbent (2001) states that e-Learning does not necessitate a huge infrastructure. He stated that providing a high speed internet connection and sufficient number of computers for end users would be adequate for an effective e-Learning.
Many researchers from information technology field have identified significant variables dealing with e-Learning. Among them, the technology acceptance model (Ajzen et al, 1977; Oliver, 1980; Davis et al, 1989), has identified six dimensions of e-Learning. They are student dimension, faculty dimension, course dimension, technology dimension, design dimension and environment dimension. Under the six dimensions identified, thirteen factors were recognized. In the learner dimension, the factors involved were learner attitude toward computers, learner computer anxiety and learner Internet self-efficacy. The factors such as faculty response, timeliness and faculty attitude toward e-Learning were identified in the faculty dimension, and e-Learning course flexibility, e-Learning course quality in the course dimension. The factors under technology dimension were technology quality and Internet quality. Finally, under design dimension the factors identified were perceived as usefulness and perceived ease of use and factors like diversity in assessment and learner perceived interaction with others were identified under the environmental dimension. Thurmond et al (2002) reported that environmental variables which considerably have an influence on e-Learning satisfaction are diversity in assessment and perceived interaction with others. Khan (2001) while developing a framework for e-Learning examined the critical dimensions necessary for online quality learning and found eight main dimensions: institutional, management, technological, pedagogical, ethical, interface design, resource support, and evaluation.

2.2 e-Learning in education

e-Learning or online learning which takes care of the needs of present-day learners has created a niche for itself in the education world. Effective technology usage in classroom learning has improved learner's interaction within the classroom. It can be seen as an alternate to the face-to-face teaching-learning method or as a complement to it. e-Learning is an invaluable gift to the education sector. It has removed the barriers of distance and time in learning, thereby making learning a pleasurable experience. Werbach (2000) stated that with the insufficient capacity of classrooms and limited budget for building new infrastructure; e-Learning was a just the right alternative to traditional teaching-learning methods.
Auwal (2009) reported that there were some unique features offered by e-Learning, such as reducing isolation, facilitating discussion and promoting interactive networks. He further stated that ICT users can also deliver the information instead of just being inactive recipients. For centuries higher educational institutions have been perceived as knowledge creators. With the initiation of e-Learning, it has become easier to create knowledge and disseminate it. According to Clark (1983), knowledge is the key substance around which all activities of higher education institutions are planned. The knowledge areas are the fundamental building blocks of a higher education institution and without the institutionalisation of these knowledge areas, higher education institutions cannot exist (Van, 1989).

Zhang et al (2004) reported that the economy has become absolutely knowledge-based and this has therefore resulted in an increasing demand for new ways of delivering education. Since the traditional educational systems were unsuccessful to satisfy the crucial and changing learning needs of the learners, there was a shift to new forms. Therefore, the methodology experienced a transition from teacher-centered to learner-centered approach. Apparently, it was time for e-Learning system.

Globalization has made considerable impact on different sectors like education, industry, ecology and sociology. To meet the pressing demands of globalization, it is important to adopt educational reforms which will improve the qualification of the people involved in the various sectors. Daniel (2000) reported that e-Learning technologies can respond efficiently to increasing global competition. It can increase the quality of learning experience (Garrison, 2003), remove situational barriers and prove to be more economical than face-to-face learning (Bates, 2005). Knight (2002) and Twigg (2003) stated that the globalization in higher education paved the way for the emergence of virtual education.

Alsunbul (2002) and Altbach (2002) contended that with the tremendous growth in Internet technology, it has been simple to incorporate Information Technology (IT) tools into higher education. In this context, e-Learning has evolved as an important mode of learning in higher education in India as well as globally. Anderson et al (2006) conducted an analysis of national e-Learning strategies and reported that there are two main drivers leading to the adoption of e-Learning. They are: the need to skill the population to meet the challenge of the information and knowledge society; and
the need for flexible access to education in order to fulfill the changing nature of society and the lifelong learning program.

The usage of technology in different ways can improve the educational experience. Collis (1999) contended that although educational institutions might protest that online learning is not a better option than traditional learning. But the students who cannot afford the cost, time, or travelling associated with traditional learning embrace the new technology. Due to rapid technological growth, the world of education is continuously changing. Simo et al (2015) contended that the use of Internet along with new information and communication technologies has turned into an important teaching-learning mode. The accessibility of technologies in the form of tablet PCs, smart phones, 3G and 4G makes the learning and communication method easier (Alghamdi et al, 2015).

In education, these latest technologies can bring a colossal change to the system of delivering and acquiring knowledge. Today, e-Learning has become a viable alternate to traditional methods of learning, and has been adopted by many educational institutions. Rice (2000) and Rosenbaum (2001) contended that the efficacy of online learning has been found equal or even more than that of classroom learning, but Hongmei (2002) reported that the quality of online programs is still debatable. Some researchers found that online courses were more interactive than the traditional ones (Mangan, 2001; Rosenbaum, 2001). Smith (2001) contended that online education made learning easier for slow learners since they might require more time to respond. Carl (1991) has given a comprehensive list of the positive aspects of the e-learning. He is of the view that online courses can be monitored more easily than the traditional classroom courses. He further states that online learners can make use of the electronic mail to communicate with faculty members resulting in cost saving. In the same manner, Dwyers et al (1995) have reported that student-centered approach provides continuous accessibility to course material and suitable methods to evaluate students’ progress. Although e-Learning offers flexibility of the course delivery and learning, they are not for everyone (Devi, 2001 and Kearsley, 2002).

It was also reported by Jana (1999) that learners who were used to or who enjoyed traditional face-to-face classroom environment may find online learning complex and vice versa. Ramos (2001) reported that online courses may not provide enough
opportunity for learning team building skills. Teachers and their students are two important stakeholders in education. In any endeavor to incorporate technology into higher education; their perceptions must be understood before any initiative is taken. This study, therefore, examines teachers’ and students’ perception on the integration of technology in higher education focusing on traditional and professional institutions.

2.3 e-Learning and students

Khor (2014) reported that students’ perception has a considerable effect on the approval and acceptance of e-Learning. The students of 21st century who have grown in the IT era are not just consumers of the educational programs, but they are active participants as well. They are skillful and competent to work successfully with digital technologies, which is a pre-requisite for effective e-Learning. Benta (2014) reported that students perceive e-learning to be helpful in many ways like for accessing the course material, collaborating with their peers in doing homework as well as for motivating them. Cruthers (2008) contended that e-learning is generally accepted by students as a means of enhancing accessibility and quality of teaching-learning process. It is looked upon as a tool to reach all students even one’s with special needs, provided there is accessibility of computer system with Internet connection. A few reports are available which suggest that e-Learning develops various skills in the learners like critical thinking, problem-solving, communication, interaction, autonomous learning and time management (Cavanaugh, 2001; Swan, 2001; Johnston et al, 2005).

Studies have shown that the key requisites for learning are student engagement, motivation and attendance. Effective e-Learning can improve performance in various subjects and foster the development of the learner. The study by Boumedyen et al (2011) contended that teaching with software and computers has significant effect on the marks of the students. Also, the marks obtained by the students are comparatively better, if multimedia is used in the classroom and the students appear in online examination. The students who were taught only with the help of e-Learning software and were not taught with the help of books or physical models gave the best results. Students believed that technology arouses their self confidence, improves their concentration and enhances their motivation. Buckley (2008) reported that web-based learning provides easy access to learning resources for learners everywhere, even in remote areas, thereby providing educational justice.
Kolb (1984) and Teresa & Ana (2008) found that the usage of multimedia tools which encompasses audio, video, animation and interactivity to create attractive learning activities makes the learning process friendlier and beneficial to the students. As a result, these e-Learning activities enhance the interest of the students.

Many research studies have reported that learning is enhanced when there is active involvement in the learning process, a practice often referred to as active learning (Benek and Matthews, 2004; Sarason and Banbury, 2004). Simply stated, active learning includes instructional activities involving students in doing things and taking responsibility of what they are doing (Bonwell and Eisen, 1991). Interactive learning or learning by doing results in positive learning outcomes (Picciano, 2002 and Watkins, 2005). In online learning environment, the students actively connect with the material, learn by doing and refine their understanding as they discover new knowledge (Pratt, 1999; Omomen, 2005). Driscoll (2002) reported that in e-Learning the focus of learning shifts from covering the curriculum to working with ideas since students become active participants in the knowledge construction process.

Several studies have analyzed the impact of incorporating technology into education, because of the need to find effective teaching methods for students. The general view was that incorporating technology into instructions will have positive impacts (Jamil and Shah, 2011). It was found that students have better learning experience when technology was integrated into the course, because of improved engagement, ease, interest in technology itself and presence of new learning opportunities (Gray and Krause, 2008; Bowden and Alessandro, 2011). Odom et al (2013) conducted a survey in a department at Texas A&M University and reported that using social media tools helped in improving the quality and effectiveness of communication between learners and the faculty.

However, there are also some limitations of online learning. Laine (2003) reported that asynchronous e-Learning was not an effective method to deliver technical training for IT professionals if used in isolation. Hara and Kling (2000) and Ives (2001) reported that potential problems of e-learning include learner frustration, anxiety and confusion which lead to higher student drop out rates (Frankola, 2001; Ryan, 2001; Laine, 2003;). Golladay et al (2000) and Serwatka (2003) contended that an effective e-Learning experience requires better discipline, good writing skills, self-motivation and commitment to learning. Some studies have found that IT enabled
learning does not have a positive impact on students. Hwa et al (2011) found that technology was not found to be absolutely related to the student experience. Studies by Kennedy et al, 2008 point out that all students are not comfortable or do not have knowledge regarding the use of technology. Sharpe and Benfield (2005) and Sharpe (2008) have reviewed the student experience of e-Learning in higher education in UK. They have reported mixed experiences of the students. While some students have found their experience very beneficial, others find it frustrating. In general, the researchers report that when e-Learning is adopted with well-known pedagogy, the students have a positive response but where an unusual pedagogy is used, the students do not feel comfortable, have a deeply emotional experience and also encounter difficulty with time management.

O'Malley and McGraw (1999) reported that students do not initially feel that they learn as much in online courses as they do in traditional, face to face courses. However, research by Bernard et al (2004) and LaPointe and Reisetter (2008) supported the view that students can learn equally well in both formats. Neuhauser (2002) looked at two sections of the same course, one taught online and the other taught face to face, and reported that online students found the course to be as effective or even more than typical face to face courses. These results were comparable to the findings of Wyatt (2005) and Braun (2008), who reported that most students believed that the quality of e-Learning was equal to that of traditional learning. This is further supported by Kirtman (2009), who conducted a study on the elementary or middle school teachers in a master's research methods course and found that the learning outcomes were same whether the course was taught face-to-face or online. Legutko (2007) reported that online learning can be successful if the courses are developed with instructions and conducted similarly; the results are similar to direct instructions. According to Lao and Gonzales (2005), learning in an online environment can be a satisfying and rich experience for learners and teachers. Therefore, to improve learning in much less time many educational institutions in recent decades have tried entering and using this new technology (Adelman, 2005).

Galbraith and Haines (1998) conducted a research on students learning science through e-Learning. They reported that all students were not confident in the use of technology and all were not sure of the benefits of online learning. In their study,
though students acknowledged the benefits of using technology but none of them reported that they preferred to learn science entirely through the use of computers. In other words, students perceived e-Learning as enrichment to the traditional learning process rather than a substitute to it. This point, scholars argued, should help diminish any fears that teachers might have about being completely replaced by technology in the classroom (Pedretti et al, 1998).

Students’ view about specific softwares in mathematics and science learning was another topic of exploration. For example, D’Souza and Wood (2004) examined the student concerns and resistance towards spreadsheets in mathematics instructions. They found that students generally did not trust the softwares and felt more comfortable with the traditional methods. However, Baki and Cakirogly (2010) examined the learning objects in high school mathematics classrooms. They reported that the students perceived technological innovations in courses had a positive influence on them and increased their motivation, interactivity and visual potentials. The negative views reported were about problems in technological conditions and time-consuming. Overall, the investigation uncovered a wide variation in the learning needs and styles that students brought to the computer-based learning of maths.

Few studies had examined technology in mathematics and science classrooms by considering students and their teachers at the same time. For example, a study conducted in Israel examined the computer inclination of students and their teachers (Zoller and Ben-Chaim, 1996). It was concluded that teachers, more than students, consistently rated themselves as having more positive attitudes and comfort levels about working with computers, as well as a greater belief in the importance of computers and the educational benefits. Students provided similar positive ratings, but not to the same degree as teachers.

### 2.4 e-Learning and teachers

The role of teachers in the e-Learning environment is very important. The questions that arise are: Does the value of teachers decrease with the growth in technology? And what is the role of teachers in e-learning system (Johnson, 1991). The role of the teacher in the innovative learning environment has grown as the teachers have to play the dual role of knowledge providers as well as facilitators. Teachers will always play an effective role in the successful delivery of e-Learning initiatives, as it is the teacher not the technology that facilitates the learning experience of students.
Volery (2000) and Holley (2002) reported that e-Learning is difficult to implement without the full collaboration of teachers as the interaction between teachers and students is still predominant in e-Learning environments. The same view is shared by Shank (2002), who maintains that teachers must be involved in all the stages of e-Learning course development, including determining the potential learners, the function of the learning programme and the format. This view emphasizes on the requirement for teachers who are trained in the usage of e-Learning technology in higher education and are also having knowledge of the concepts behind it. Expert training in e-Learning includes both technical and theoretical issues, and if executed correctly will increase the support for the merits of e-Learning (Shapiro, 2000).

Tamrakar and Mehta (2011) contended that as compared to traditional teaching methods, e-Learning helps teachers in effective teaching. O'Toole & Lee (2015) contended that teachers should incorporate effective online teaching methods to motivate students for learning and to achieve better learning performances. Internet driven technologies provide teachers with many tools that can be used to improve the teaching-learning process. e-Learning applications allow teachers to provide the students with different types of material as well as help in interacting with them in real-time. The teachers may also follow the evolution of the learning process and assess the performance of each student. The reliability of using e-learning technologies is widely accepted by various researchers. Researches generally refer to e-Learning as a novel method for teachers to arrange, control and deliver course material. Teachers can also provide students with a pool of resources that they cannot usually show in the classroom due to lack of time. As a consequence, the e-Learning activities increase the interest of the students in learning.

Lincoln (2008) reported that in a classroom having large number of students, the faculty faces challenges like: attendance, attention and participation of the students. He also reported that it becomes difficult for the faculty to understand the progress of the students in the learning process and manage the course effectively. Interactive technology in the form of e-Learning can come to the aid of faculty to accomplish these goals (Terreri and Simons, 2005; Lincoln, 2008). Innovative technologies provide teachers with many helpful tools that can be used to improve the active teaching-learning process.

Kaminski (2005) reported that the convenience of these tools makes it vital for teachers to have more information about the benefits of using technology in the
classroom as well as about the outcome derived from their use. All researches came to a common point that refers e-learning as an excellent tool for teachers to deliver course material effectively. Fish and Gill (2009) reported that in higher education, the faculty members teaching online courses found the experience affirmative inspite of its limited interaction with the students compared to the face-to-face instructions. This is in contrast to the study conducted by Raspopovic (2016) contended that traditional classroom students gave more significance to establishing good interaction with their classmates, while online students gave equal importance to their interaction with the faculty.

Biggs (1999) reported that traditional lectures are not always the best way to learn. The present day students have grown up in a technological age of television, computers and videogames. So, their learning will be faster and better if it is technologically driven. Willcoxson (1998) contended that both students and teachers do not regard traditional lectures as effective and students now look forward to use of technology in their learning. While most of the studies prove that there is no issue regarding the role and importance of teachers in e-Learning, but at the same time it has been pointed out by many researchers that the teaching techniques used by teachers in traditional courses may have to be customized, as they might not be successful in e-Learning environments (Serwatka, 2002). Volery (2000) reported that only having technical proficiency will not be helpful unless teachers consider effective ways to utilise it.

Wilson (2001) enumerated the characteristics of the teacher which will manage the degree of learning: outlook towards technology, teaching method and the control of technology. A few studies also suggest that the role of the lecturer will gradually disappear completely with the rise of improved e-Learning technologies and methodologies. Scott (2000) conducted a study at Carnegie Mellon University in America, where all students learn in a number of disciplines via e-Learning. He found that in Carnegie Mellon University the traditional teacher is considered to be outdated and has been replaced by virtual tutors. He further reported that e-Learning will surpass traditional face to face techniques because in traditional lectures vital information flows past students, whereas in online learning the virtual tutor waits until a student demonstrates a clear understanding of the information.
Goodyear et al (2001) recognized eight roles for online teachers. These roles included: process facilitator, advisor-counselor, assessor, researcher, content facilitator, technologist, designer manager-administrator. While designing and implementing learning activities, the teachers need to be aware of providing proper feedback. In e-Learning, the feedback has more important role because of the lack of face to face interaction. Teachers play an important role in students learning processes in both traditional face-to-face teaching environments as well as in online learning environments. For example, a less enthusiastic faculty or one with a negative view of e-Learning education shall not expect to have students with high satisfaction or motivation. Piccoli et al (2001) and Smeets (2005) reported that the learners’ satisfaction in e-Learning depends to a large extent on teachers attitude towards e-Learning. Holley (2002) contended that students have good learning experience when guided by a teacher who promotes e-Learning, though he might be having positive attitude towards traditional learning methods.

Yuen and Ma (2002) examined pre-service teachers’ technology acceptance and reported that the perceived usefulness of technology had a significantly positive effect on teachers’ intentions to use computers in the classroom. The teachers who perceived computers as ‘easy to use’ had high rate of personal use and were expected to use computers in classrooms. Although teachers emphasized the benefits of technology, the attitudes of mathematics and science teachers were different. Schmidt and Callahan (1992) contended that many mathematics teachers believed that using technology would make the students excessively dependent on technology and would harm their understanding of basic concepts. More recent findings found similar patterns (Drier, 2001). Guerrero et al (2004) summarized teachers’ attitude towards the use of technology in mathematics classrooms as hesitant, whereas their students’ attitude was mainly passionate.

Barbas et al (2002) and Pelgrum (2001) identified obstacles perceived by teachers in the context to integration of online learning in teaching. The most commonly cited obstacles were: technological limitations (including an inadequate number of computers and insufficient technological knowledge among teachers); difficulty in integrating technology into the regular curriculum; and lack of technical staff. Cuban (1995) reported that although availability of computers is there in all schools but very less teachers use them. According to Rosen and Weil (1995), many elementary and
secondary teachers had irrational fear related to technology and were most apprehensive about dealing with computer crashes and errors.

2.5 Barriers and Effectiveness

*Lack of knowledge and skills:* Regardless of their active use of technology into their teaching, most teachers still feel that they do not have sufficient knowledge and skills for optimal integration of online learning into teaching. Some teachers acknowledge that although they use technology to support their teaching but they can only use basic computer programs, such as email and Power Point.

*Lack of technical support:* Teachers generally have issues about the scarcity of technical staff in the institutions. They find this a serious problem that needs to be dealt with quickly. Teachers want that the technical staff should be available before, during and after the class sessions.

*Lack of incentives:* Teachers are of the opinion that the teachers who use technology and make innovations in their teaching should be appreciated and given incentives. There should be difference in the amount of incentives received by teachers who use technology and those teaching without technology.

Evaluating the impact of e-Learning systems on learners is essential for the development of suitable and effective e-learning systems. Drew et al (2012) conducted research on the students from two different universities in Saudi Arabia. The students were surveyed to find out their perceptions regarding their current e-Learning systems. It was reported that use of e-Learning system enhances the understanding and decision making ability of the students, increasing the overall productivity of the process of teaching and learning. These findings are similar to that of Liaw et al (2007) who contended that e-Learning system users have a positive perception toward using e-Learning as a teaching-learning tool.

Berk (2003) propounds the importance of effective e-Learning by focusing on ‘how well you train rather than how much you train’. Shank (2003) refers to the methods by which to evaluate the effectiveness of e-Learning programmes. She reported that learning gains, course completion rates and student satisfaction are the primary measures of effectiveness with regard to student performance. She further contended that learning gains could be inferred from examination and test scores. Course
completion rates, on the other hand, provide an overall indication of course-success while student satisfaction could be found out by surveys both immediately and delayed. Wright (2004) laid an emphasis on the effectiveness of e-Learning and stressed upon the need for key elements, such as good accessibility, straightforward organisation of material, and engaging language.

Shank (2002) suggested seven ways by which to assess an e-Learning programme. Using the acronym FREEDOM, where F stands for Failure: The students should learn from their mistakes; R stands for Reasoning: They should be involved in deliberations in order to apply their knowledge to real life situations; E stands for Emotionality: Course material should provoke emotional response from students; E stands for Exploration: This should help to provide a more engaging environment for learners; D stands for Doing: The learner should be given the option to learn in his or her own way or own time; O stands for Observation: This includes the provision of diagrams, charts and other visual aids and M stands for Motivation: Students should have a feeling of being able to personally relate to the material and its value. They should not be motivated only to pass the test or examination alone.

Watkins et al (2004) developed a mechanism to measure learners’ readiness to take on e-Learning. The measures of judging effectiveness were technology access, online skills, motivation, ability to use online material, participation in Internet discussions and importance of learner’s success. Clark and Mayer (2003) contended that in order to make e-Learning an effective tool, the primary focus should be on its design rather than its content. Cukusic et al (2010) contended that it was important to integrate technology solutions in the teaching-learning process and that the entire process should be designed properly. They urged designers to have deep knowledge into the proper structure of e-Learning lesson. They recommended designing programmes effectively so that learner experiences the transformation of words and pictures in the lesson in such a way that they get incorporated into their existing knowledge in long-term memory.

Trespalacios and Rand (2015) contended that online programs necessitate persistent attention to the design of instructional environment to enhance students learning. Keller and Burkman (1993), developed the ARCS motivational model. The model provides an organized approach in the design of the online learning system. According to the model, there are four factors that need to be satisfied in order to create an effective e-learning system. These four factors are: A – Attention, R –
Relevance, C – Confidence and S – Satisfaction. Keller (2004) reported that ARCS model is suitable to be used in various kinds of online learning strategies. Also, there are studies which showed that the ARCS model is useful to improve e-Learning programs (Chyung et al, 1999; Suzuki and Keller, 2006).

Whatever the approach for measuring effectiveness of e-Learning, the bottom line is that there is unlikely to be one absolute method and, with this in mind, training managers and educators should perhaps focus on what’s best suited and feasible rather than what’s most credibly acclaimed. As suggested by Olds (2004), the best approach in deciding what evaluation means is to begin by exploring a range of methods and then deciding at a later point which of these methods best meet the programme goals.

e-Learning has yet to acquire complete acceptance from the educational sector. It is a mode of education that is often doubted by members from both the academic and corporate fields who are often skeptical of its effectiveness. A large degree of this suspicion can be attributed to the often highly substantial costs associated with online programmes, particularly at the development stage. Students, governments, educators and corporations today expect e-Learning to be an affordable and comprehensive learning method. This expectation appears to have been largely unmet. Bonk (2002) reported that the course providers from the education sector have often asked “why is there no learning in E-learning?” Sometimes, the more precise question that was asked is: “What is it that prevents e-Learning from being at par with face-to-face learning”? Since online learning is a computer enabled mode of education, the fear of computer usage would certainly hamper learning satisfaction.

Barbeite and Weiss (2004) reported that computer anxiety is a dread of using computers which leads to negative outcomes, such as damaging the equipment or looking stupid. Related research proposes that computer anxiety has a negative effect on individual’s attitudes and behaviours and the relationship between anxiety and learning effect cannot be neglected (Igbaria, 1990). Thus, learning satisfaction is inversely proportional to computer anxiety i.e., lower the level of computer anxiety higher is the learning satisfaction.

Shank (2002) reported that course designers have an inclination to try and make e-Learning look and feel like face-to-face learning, which is not correct since principles and ideas learned in one domain are almost never transferred to another arena. Bonk (2002) in a study at Indiana university identified overwhelming tasks, confusion, poor justification and excessive data as some of the problems that show lack of e-Learning
effectiveness. Poor pedagogy, inferior online tools, unmotivated students and teachers and the mismatching of vendor and administrator visions are other issues. Effective e-Learning must imply performing a task and if failure is encountered redoing it again until they get it right. Researchers have also found that just using audio-video recordings, slide-shows and animations do not provide standard replacement for traditional learning mode.

Ritzel (2002) explained that many online courses were largely ineffective from the beginning, because course designers themselves were mostly information technology and internet specialists and for them, training programs were just like any other content. They merely took whatever they found (or were given) and enabled it on the net without even considering the use of creative and innovative opportunities for new interactive learning experiences. e-Learning should capitalise on innovative delivery means so that it offers a completely new method of learning unlike that of any classroom. This should be the focus of e-Learning that can lead both business executives and educators to acquire a new perspective on e-Learning.

Spender (2002) contended that in higher education sector, e-Learning has often been associated with introducing radical change into almost every facet of university life. This claim has, however, been contradicted by Zemsky and Massy (2004) and Salmon (2005) who reported that the impact of the change associated with e-Learning so far has been incremental. There are other issues to consider in the use of learning technologies. The use of technology in education may be inappropriate for conventional pedagogical approaches of information transfer (Lewin et al, 2003). Henning and Westhuizen (2004) found that the social context of education is more important than the technology or the curriculum. So, even if e-Learning is used to reduce time and place barriers, students accessing resources from home, and limiting their presence on campus, will miss out on the benefits associated with face-to-face learning.

Kurse (2004a) found that students are yet to be convinced of the benefits or even the adequacy of online instruction which can often be a setback for business e-Learning programmes, particularly in organisations where students are not inclined to use computers at all. Many students in a corporate setting who are forced to complete training programs are motivated only to pass the test. Designers must strive to create a deeper motivation in learners to learn new skills and transfer those skills back into the work environment. This relates back to the underlying problem of poor motivation
which, as identified by Bonk (2002) makes for one of the major stumbling blocks of online education.

Kurse (2004b) suggested that there is a need for greater emphasis on providing engaging, more student-orientated material for e-Learning to be successful. This is not to suggest of course that all e-Learning developments have been unsuccessful. Several institutions do manage to provide highly effective programmes, the most notable perhaps being the university of Phoenix which, as far as revenue is concerned, makes for one of the greatest success stories of the industry.

On the corporate side meanwhile, a number of organisations particularly in the IT sector have also been successful. Despite these successes however, e-Learning is, no doubt, still in its infancy with many significant developments yet to come. Further analysis and study will help meet this objective and will hopefully assist course designers in developing a programme that may one day parallel or even surpass traditional classroom training. Previous research indicated that timely response by faculty significantly influences learners’ satisfaction (Arbaugh, 2002; Thurmond et al, 2002).

The rationale is that when learners face problems in an online course, timely assistance from the faculty encourages learners to continue their learning. Tsai (2011) and Tsai (2015) reported that in online learning environment, other innovative teaching methods can be integrated and their effect can be examined for improving students’ learning. Soon et al (2000) point out that the faculty failing to respond to students’ problems in time has a negative impact on students learning. Therefore, if faculty is capable of handling e-Learning activities and responding to students’ needs and problems promptly, learning satisfaction will improve (Ryan et al, 1999).

Major problems encountered in e-Learning are: lack of adequate infrastructure, poor bandwidth, insufficient number of nodes at institution and frequent electricity failures. Another major factor causing stress in students is the inability to use facilities at cyber café because of financial constraints resulting in failure to complete the assignments on time. Unable to deliver work by only a segment of students in turn is creating fear and divide among students. It has been found that new method of teaching-learning is enhancing communication gap with parents leading to loss of faith and causing distress. The probable reason behind this may be due to lot of time spent on understanding new methodology, completing assignments and working online most of the times.
Anderson (2009) after having reviewed 60 research papers identified challenges belonging to four main categories; Challenges pertaining to *individuals’ characteristics* (both teachers and students); *technological* challenges; *course* challenges and *contextual* challenges. The individual challenges for students include motivation, conflicting priorities, economy, academic confidence, technological confidence, social support (support from home and employers), gender and age. The individual challenges for teachers include technological confidence, motivation and commitment, qualification and competence and time. The course challenges are course design, curriculum, pedagogical model, subject content, teaching and learning activities, localization and flexibility. The contextual challenges include role of teacher and student, attitudes to e-Learning and IT, training of teachers and staff and rules and regulations.

**CHAPTER 3**

**RESEARCH METHOD**

3.1 THE STUDY

3.2 THE DESIGN

3.3 THE SAMPLE

3.4 THE TOOLS

3.4.1 Data collection

3.4.2 Data analysis

3.4.2.1 Item-Total Correlation

3.4.2.2 Factor Analysis