

DISSERTATION

GLOBAL E-LEARNING: A PHENOMENOLOGICAL STUDY

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ABSTRACT

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There is a strong sense that the educational processes must change, if for no other reason than to keep up with a rapidly emerging information-based society. As the need for learning and knowledge has outstripped what is possible using conventional learning methods, e-Learning may allow us to respond more effectively. The new generations of e-Learning technologies that allow interactive knowledge construction and provide richer learning environments have been gaining increased global acceptance. This qualitative study with an interpretative phenomenological approach indicated the evolution, current status and anticipated future advances of e-Learning among academia, corporations and the governments across developed and developing countries. The data was collected through in-depth interviews with subject matter experts.

With e-Learning interventions rapidly becoming organization's response to continuous learning and change in the new economy, this study provided evidence that e-Learning is a growing global phenomenon and if the potential is turned into reality, e-Learning will be transformative. The shortening product development cycle, lack of skilled workforce, increasing global competition and a shift from the industrial to the knowledge economy and the fast-paced advances with the related technology, e-Learning is here to stay and could be the answer to tomorrow's learning needs.

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CHAPTER 1: INTRODUCTION

When we are in the midst of a revolution, it is hard to see and understand all that is going on. We can understand previous revolutions when we are well out of them. The current Information Revolution is not like the previous ones because it is actually taking place at an incredible speed over space and time, pulling in people across cultures, faiths, nationalities and economies all over the world (Leer, 1999). Tony Blair, former Prime Minister of the United Kingdom, aptly indicated in his foreword to the book "Masters of The Wired World" (Leer, 1999, p. viii) that "the world's economy is undergoing a process of change as fundamental as the shift from agrarian to industrial production: the emergence of the knowledge driven economy, the digital economy." In the next century, the source of sustainable competitiveness will be the ability to create, disseminate and rapidly exploit knowledge.

"There is a world market for about five computers" is said to have been proclaimed by Thomas J. Watson, Chairman, IBM, in 1943 (as cited Shapiro, 2006). During 1977, early in the information age, Ken Olsen, President, Chairman and founder of Digital Equipment Corporation, declared that "there is no reason for any individual to have a computer in his home" (as cited in Oakes, 2003, p. 64). Obviously, early computers were the size of refrigerators, very expensive and left much to be desired. Bill Gates (Gates, 1997) expected his popular Microsoft Windows platform to take off within two years. However, it was several years before it reached a large share of the market. Similarly, it is hard to predict the future of e-Learning, particularly with the fast-paced technological advances directly influencing the way we learn, communicate and share knowledge.

The invention of the microcomputer towards the end of the 1970s brought about the rapid spread of computing in businesses, schools and homes (Alessi & Trollip, 2001). As Allen (2008) explained, earlier computers needed for e-Learning cost over \$20,000 each and required a much more expensive remote support computer as well... only expensive computers could display any graphics at all... there was no animation or video and the sound effect were limited to beeps. Yet as magical as the early personal computers seemed, inventors found them slow and klutzy, and today we carry Laptops, Personal Digital Assistants (PDA), Handheld PCs, Tablet PCs and Smart Phones around the house and around remote corners of the world and surf the Web over wireless connections at a speed that was unimaginable just a few years ago.

e-Learning had its early missteps as well. According to Kelli and Keith (2005), the first reports of courses taught from a distance appeared in the field's professional journals in 1994. Since then, developments in the digital media have rapidly accelerated the growth of distance education opening up possibilities unavailable just a few years ago. In most cases, the early e-Learning only meant the use of CD-ROM to deliver uninspired training that some dubbed "page-turners," or print lessons converted to electronic print. They were "limited by small hard drives, slow computer speeds, poor graphics, and a surprising disregard for what makes for good learning" (Rosenberg, 2001, p. 23; Schank, 2002, p. xiii). With the limitations of CD-ROM so apparent, the rapidly growing Internet became a useful platform on which to create another option using computer technology. The flexibility of the Internet was used to introduce Web Based Training (WBT). All ventures have fits and starts, and WBT was no exception. While WBT offered the option to edit and update the courses, there were other issues. "Companies began to convert existing training materials to online, text-based or PowerPoint electronic formats.... A critical component, the context of learning, was left out" (The C Moor Group, 2002, p. 1).

At the turn of the century, advances in computers and computer related technologies have fostered the growth of e-Learning and provided distance learners better opportunities and freedom to determine when, where, what, and how to learn, described Aydin, Mutlu and Mclsaac (as cited in Neto & Brasileiro, 2007). There is great hope for the future as e-Learning settles into maturity. Gates (1997, p. 218) in his book *The Road Ahead* remarked that “Information technology will bring mass customization to learning... Workers will be able to keep up to date on techniques in their field. People anywhere will be able to take the best courses taught by the greatest teachers.” In the future, workers will learn to rely on training by computer just as individuals in all the industrial nations rely on the automobile. On these thoughts, Jack Welch, former chairman of General Electric, declared the Internet to be the single most important event in the U.S. economy since the Industrial Revolution (as cited in Clark & Mayer, 2003). With knowledge becoming so expansive, the demand for learning growing, and an increasing diversity in what individuals must know, even the best master teachers cannot reach all who have to learn with any semblance of timeliness and effectiveness. Our strategy now must be to capture knowledge so that it can be instantaneously retrieved and shared (Rosenberg, 2006).

Having experienced technological advances and the growth of e-Learning, a few things are easy to predict. As Nathaniel Bornstein (as cited in Leer, 1999) indicated the internet of the future will be easier to use and overwhelmingly faster and more powerful than it is today. We need some sense of direction as to where we are heading, to be prepared for the changes and to take advantage of what the digital world has to offer as we move forward. Especially for young adults and for those who embrace learning, we have to plan the transient and allocate competing resources in education and continuous learning.

Allen (2006) believed that e-Learning is about success: e-Learning is really about enabling new and more effective behaviors. It is about providing ever more beneficial ways of helping individuals and organizations to acquire new skills and access knowledge. As indicated by Seidel & Chatelier (1994), the opportunity and the challenge now is for nations to integrate computers and other advanced technologies in an integrated conceptual framework. e-Learning can provide opportunities for eliminating physical boundaries as a requirement for learning, with a great degree of promise and the early success.

There is a strong sense that educational processes must change dramatically, if for no other reason than to keep up with a rapidly emerging information-based society. The new generation of e-Learning technologies provides richer learning environments that allow interactive knowledge construction. The use of e-learning as a teaching and learning tool is now rapidly expanding into education, with thousands of courses offered by educational institutions. As described by Inan and Lowther (as cited in Neto & Brasileiro, 2007), when computer-supported learning is coupled with the limitless connectivity of the Internet, educational opportunities expand beyond the barriers of traditional learning environments. Learning via interactive, virtual web-based communities and environments now extends into today's K-12 classrooms, universities, and the workforce. As expressed by Allen (2006), e-Learning represents an extraordinary opportunity for individuals and the institutions alike. With its low-cost delivery, interactive capabilities, and 24/7 accessibility, e-Learning provides convenient and affordable opportunities for skills and career growth. The best way forward would be to embrace e-Learning.

Background and Context

UNESCO's report (Innovations: Education for All, 2005) clearly indicated the need to move beyond the culture of current schooling system. The report explained that despite concerted efforts of schools around the world, it is becoming obvious that present educational systems are ill-equipped for taking on the challenges that lie ahead. Today, there are still nearly one billion illiterate people in the world, 130 million school-aged children out of school, and very few options for supporting the continuing learning needs of those who have dropped out of schools or who have no possibility of joining the school.

According to World Economic Situation and Prospects (United Nations Human Development Report 2003), more than 1.2 billion people – one in every five on Earth – survive on less than USD1 a day. The same report explained that countries can spend more on education as they grow, but the poorest countries need to spend more on education to escape the poverty trap. Carliner and Shank (2008) strongly believed that the future of learning is inextricably tied to the use of technology for learning, and Cheung et. al., (2004) ascribed that e-Learning is an answer to tomorrow's learning needs.

With technological advances, the distance and regional boundaries are almost invisible; and the world is going through a major change in learning. Internet technologies have fundamentally altered the technological and economic landscapes so radically that it is now possible to make quantum leaps in the use of technology for learning. Successful e-Learning depends on building strategy that optimizes the technology within any organizational culture that is ready and willing to use it. In today's fast paced technology and knowledge driven market economy, organizations need to lower the overall costs of creating a workforce that performs faster and better than the

competition, and they need to do this 24 hours a day, seven days a week and three hundred sixty five days a year.

Rosenberg (2001) explained that the time is now to build an e-Learning strategy that meets the needs of today's workers, some of whom are ready for this change, and others who will need help in the transition. And now is the time to build an even greater capability to deliver on this strategy for an increasingly technology-savvy workforce. As the need for learning and knowledge has outstripped what's possible using conventional learning methods, e-Learning will allow us to respond more effectively. e-Learning has never been so important, and our opportunities have never been greater. "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn" said Alvin Toffler (as cited in Rosenberg, 2001, p. 3).

Decision takers and policy makers at micro and macro levels have so far, seem to be skeptical about the potential of e-Learning as a powerful medium. Allen (2006) believed that to expand and enhance the role of education, educators can best take advantage of technological developments by embracing e-Learning and the self directed learning processes where self-directed learning places the learner rather than the teacher in charge for some or most of the learning process.

Current research has been mostly focused at a micro level such as organizational development and organizational competitiveness, achieved through the adoption of e-Learning techniques and strategies. There seem to be a lack of research at the macro level of the phenomena of e-Learning and its effectiveness in the social, economic and human capital development. This study aims to address that gap while providing an opportunity to showcase several success stories both at the micro and macro levels. At this time there is limited research with respect to e-Learning from a global context encompassing academia, corporations and governments across developed and developing economies. By establishing insights into evolution, current status and the anticipated future developments

of e-Learning, this study may encourage decision makers around the world to look beyond the traditional approaches to education and learning, and embrace e-Learning as an effective medium to sustain and improve their human capital.

Purpose Statement

The purpose of this study was to understand global e-Learning as a phenomenon, identify its evolution, investigate its current status and the advances that can be anticipated in the future, from a global context. With fast paced innovations in the areas such as Telecommunication, World Wide Web, Information Technology, and the Internet Technologies closely influencing e-Learning, for this study, the past or the period of evolution of e-Learning is considered as until 2005, the current as 2006-2007 and the future to be around 2017.

Research Questions

The aim of this research is to understand how the e-Learning has evolved, what are the technological advances and what trends can be anticipated in the future. On these lines, the research questions will address the following:

1. What did e-Learning look like in the early 2000's?
2. What were the issues attendant to e-Learning in 2006-2007?
3. What are the e-Learning trends of today (2011) and the future (2017)?

Researcher's Perspective

In my over 24 years of progressively responsible regional and global Human Resources work and consulting experience, I was fortunate to work with and learn from several business leaders, technology and subject matter experts in the area of e-Learning. Most recently, in an International Human Resources leadership role with a Fortune 500 organization, I was able to develop and execute learning and development strategies in-line with the organization's vision and their commitment to continuous workforce development. Over the years, having very closely experienced the challenges and the

associated benefits of e-Learning, I became fascinated to learn more about e-Learning through an in-depth study, from a global context.

Coming from an underdeveloped country in Asia and lived in the United States of America for about 12 years, I was able to closely observe and experience the gaps in e-Learning and its impact on these economies. I sincerely believe, the findings of this research would provide opportunities to potential learners, academia, governments and for-profit and not-for-profit organizations around the world to examine their skepticism and embrace e-Learning.

CHAPTER 2: REVIEW OF LITERATURE

Introduction

The interviews of subject matter experts for this study were conducted between late 2006 and early 2007 and the review of literature was complete during the same time. Due to circumstances beyond my control, this data was not able to come to print until 2011. Rather than seeing this as a disadvantage to the study, additional literature was included in Chapter 5 from the position of today (2011) which is about half way through the predicted future discussed in the interviews as being around 2017, and the research questions were adjusted to reflect this new perspective.

Background of e-Learning

e-Learning today may be associated with computers and the internet, but has come a long way with its history actually dating back to the 1920s, when radio was the dominant communications technology. For example, over 170 educational institutions in the United States used radio during the 1920s to provide educational programming (Simonson, Smaldino, Albright & Zvacek, 2003). One such radio station was WHA, whose “School of the Air” was broadcast from the University of Wisconsin at Madison (Roberts, 2004).

At the conclusion of World War I and prior to World War II, the United States government granted radio broadcast licenses to 2002 learning institutions at various levels (Moore, 1997). Later, due to the enormous popularity of television among the population, the medium became a familiar and comfortable format for learning (Willis, 1993). In the 1940s during World War II, the U.S. army introduced training films to educate millions of soldiers on a variety of topics ranging from personal hygiene to maintenance of weapons (Rosenberg, 2001). Western Reserve University became the

first college to broadcast a continuing series of for-credit courses using this (television) technology (Simonson et al., 2003). Several major networks, including Public Broadcasting Services and Columbia Broadcasting Services, launched classroom television instruction during the 1950s, as did cable television (Roberts, 2004; Rosenberg, 2001; Simonson et al., 2003).

Educational television continued to be popular into the 1960s, but newer technologies began to emerge such as audio and video cassettes. Until this point learning technology was limited, with little opportunity for exchanges between the facilitator and learner (Eastman & Swift, 2001). The need to provide opportunities for interaction drove efforts to develop computer-based training in the 1970s and 80s (Rosenberg, 2001). By the mid-1980s newer technologies began to emerge that significantly enhanced learner and facilitator interactions, particularly when used in a variety of combinations. Those technologies include CD ROM's, e-mail, chat rooms, bulletin boards, audio, and video conferencing. From the mid-1990s to the present, high band-width technology has expanded the use of synchronous education and enhanced the use of the World Wide Web to gather and disseminate information (Eastman & Swift, 2001). Today, e-Learning continues to grow and has become an integral part of education and the training delivery.

What is e-Learning?

When the World Wide Web was launched in 1991, there was a surge of interest in the possibilities of learning through the web or e-Learning. Bowles (2004, p. 3) indicated that "the use of Web as an educational medium was hailed as a harbinger of profound changes for communities, organizations and markets."

There is still a lack of consensus about what e-Learning represents. "For all the publicity it has received in recent years, e-Learning remains something of an enigma, and its boundaries are far from clear" Bowles (2004, p. 3). According to Gerhard Casper, outgoing president of Stanford University, "how Internet learning will shake out, I really

do not know. But I am utterly convinced that over the next ten years we will see shifts from in-residence learning to online learning” (as cited in Muller, 2002, p. 284).

Clark & Mayer (2003, p. 13) defined e-Learning as instruction delivered on a computer by way of CD-ROM, Internet, or Intranet with the following features: includes content relevant to the learning objective uses instructional methods such as examples and practice to help learners use media elements such as words and pictures to deliver the content and methods; builds new knowledge and skills linked to individual learning goals or to improved organizational performance.

In July 2003, the Department for Education and Skills in the UK stated in its consultative document 'Towards a Unified E-Learning Strategy,' ‘If someone is learning in a way that uses Information and Communication Technologies (ICT), they are using e-Learning’ (as cited in Clark & Mayer, 2003, p. 4). Hum and Ladouceur (2001, p. ii) defined e-Learning very broadly, suggesting it is "using an electronic means to access information and learn about a topic, be it for personal interest, job at hand or career advancement." Shultz and Fogarty (2002, p. 2) defined e-Learning as “learning via the Internet.”

"The term e-Learning applies to a broad range of ways computing and communication technologies can be used for teaching and learning. Some uses are effective – magnificently so, others are not" (Allen 2006, p. xi). Allen further explained that e-Learning is the delivery of carefully constructed instructional events through computing technologies. Horton (2006, p. 1) described e-Learning as the "use of information and computer technologies to create learning experiences." This definition seem very open-ended allowing complete freedom as to how these experiences are formulated, organized and created.

Several definitions of e-Learning appear similar. Some people hold that e-Learning is limited to what takes place entirely within a Web browser without the need

for other software or learning resources. Such a pure definition leaves out many of the truly effective uses of related technologies for learning. "With communication technologies in a state of flux, it is important to adopt an inclusive definition of e-Learning that can accommodate the widest possible range of technologies" (Bowles, 2004, p. 16). As indicated by Shultz and Fogarty (2002, p.1) "On-line learning or e-Learning is an ever-evolving, ever-changing system."

American Society for Training and Development (ASTD) described e-Learning as anything delivered, enabled, or mediated by electronic technology for the explicit purpose of learning. It also refers to the technology and services that help create, deliver, and manage those activities (as cited in Piskurich, 2003). The American Society for Training and Development's definition of e-Learning covers a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio-and videotape, satellite broadcast, interactive TV, and CD-ROM.

e-Learning can be defined as the delivery of technology-supported teaching and learning, based on sound pedagogical teaching practices. "e-Learning is not a passive medium for delivery of content, but is an interactive process between the teacher and student, facilitated by the benefits that technology has to offer" (Chin Paul, 2004, p. 123). Sloman (2002) defines e-Learning as the delivery of learning or training using electronically based approaches, mainly through the Internet, intranet, extranet, or Web.

"e-Learning involves the use of network technologies (such as Internet and business networks) for delivering, supporting, and assessing formal and informal instruction" (Shank & Sitze, 2004, p. 2). Shank and Sitze further explained that it is important to note that online learning does not have to happen exclusively online. The use of technology for learning is often an adjunct to classroom and other face-to-face

learning opportunities. In fact, the perception that online learning should be ALL online causes some short-sighted thinking and is one of the biggest myths about on-line learning.

Referred to as electronic-learning or e-Learning for short (Garrison & Anderson, 2002), Web-based Learning (Aggarwal, 2000), or Internet-Based Learning (French, 1999), it has been described as any kind of learning that is based on the use of electronic media including the Internet and the World Wide Web. For the purpose of this study, this inclusive definition has been utilized.

Piskurich (2003) explains that another problem is that e-Learning is a still-evolving discipline, and what might be considered a good definition today may not even be in the ballpark tomorrow. While there is still debate about what e-Learning is, the growth of the industry is unquestionable and its emergence as a force for transformation has become inexorable. Call it e-Learning, iLearning, online training, web-based training, or just another tool – whatever we call it, it's still here and it's here to stay. The question isn't what to call it but how to make it work and put it to use." For nations, industry sectors and major geographic regions, e-Learning has become a significant vehicle for collaborating, building knowledge and increasing organization's ability to adapt to change" (Bowles, 2004, p. 21).

Evolution and Scenario of e-Learning

Fifty years ago, workers could expect to use the same skills throughout their careers. Employers, in turn, could expect to realize a good return on any initial training provided to those workers. No more. In the computer age, the challenge for employers and employees alike is to keep abreast of the constantly changing technology. The training, and retraining, never stops. Corporations are taking training Virtual (Salopek & Source, 1999). Since their advent, computer technologies have been adapted not only to reinforce existing learning theories, but also to promote new approaches to learning (Pena-Shaff, Martin, & Gay, 2001). In a world where technology degrees have a shelf-

life of less than five years, and demand is growing for education and training at the desk, home, hotel and place of work, it will be the institutions that move quickest that win, indicated Peter Cochrane, Head of Research at BT Laboratories (as cited in Leer, 1999). Mason & Rennie (2006, p. xiii) indicated that the "growth in e-Learning has been fuelled by the growth in importance of lifelong learning." They further explained that the relevant features of this movement are: the need to update knowledge and skills; the need to retrain, as jobs-for-life have all but vanished; and the need to maintain currency in the face of exploding information on the internet. These trends and expectations emphasize the fact that there is an immense need for not only basic education but also continuous learning. It is necessary to embrace the power of technology to enhance the process of learning, globally.

"For tens of thousands of years, human beings have come together to learn and share knowledge. Until now, we have had to come together at the same time and place. But today, the technologies of the internet have eliminated that requirement. Soon anybody will be able to learn anything, anywhere at any time, thanks to a new development called e-Learning" (Horton, 2006, p. 1).

According to Elliott Masie (as cited in Piskurich, 2003), we are seeing e-Learning used for worker development, career development, new hire orientation, continuing education, compliance, customer learning prior to the sale, customer learning post sale, supply chain learning, recreation and affiliation learning, K-12 and higher education.

While indicating the power of technology in improving the efficiency, effectiveness and the speed of doing business, Microsoft CEO Bill Gates (Gates, 1999) wanted a "Paperless office" and challenged his department leadership to reduce the number of paper forms that were more than 1,000 in-house in 1996. By 1999, this was reduced to a company-wide total of 60 forms (50 of which were required in paper by law). There is an increase in digitization of business processes and learning contents by corporations to be more lean, agile and dynamic to stay competitive while there is also an

increased demand by educational institutions to place more and more learning contents on-line for providing on-demand learning at reduced cost, globally.

With this fast-paced scenario, at best, one can take a series of snapshots over time to find some trends or several snapshots of the major things happening at the same time period and then interweave through the main knots to grasp the essentials from the perspectives of Information Technology. In this process, one may learn how several corporations, educational institutions and governments around the world have adopted and are in the process of effectively utilizing the available technology to leapfrog their economies and the human capital. It will also be interesting to learn how several countries around the globe can be transformed by simply following the footsteps of others who have already begun to prove the effects of e-Learning in their success.

Globalization has enabled companies to operate from any geographical location in the world, transcending the boundaries of countries and continents in the process. The problem of distance has become dead. To keep pace with such dynamic changes on the ground, the speed of learning too has to match that of all-round changes. An organization's ability to learn and translate that learning into action is the ultimate competitive advantage, rightly stated Jack Welch, former Chief Executive Officer of General Electric (Welch, 2001). In an age when learning has attained such a pivotal role in the lives of professionals and for the growth of an organization, the best-suited strategy is to embrace e-Learning. "Only the companies that leverage e-Learning would survive as e-Learning alone can answer the global educational needs of organizations and individuals" (Chada & Kumail, 2002, p. 15).

Harvey Singh (as cited in Piskurich, 2003) explained that some of the very first Internet technologies to be used for learning or distance education were the World Wide Web and e-mail. The World Wide Web allowed multimedia or hypermedia (Hyper Text Markup Language - HTML) based instructional content to be loaded on a Web server and

browsed using HTML based browsers and the Internet-based e-mail systems allowed learners and facilitators to correspond asynchronously – anytime, anyplace.

IBM Corporation, for example, has moved virtually all the content of the first three phases of management training for its first-line managers online. IBM has also discovered that managers who have been exposed to online chat forums and computer simulations of work situations say they never want to go back to classroom-only learning. Not only that, IBM found that using such technology enabled the company to trim the training cost by \$400 million a year, reported Workforce Magazine in its article "Second Act for e-Learning, 2004" (Workforce 2004, Vol.5). Betty Collis (as cited in Seidel & Chatelier 1994, p. 7) described that "Conferencing is a type of simulation of face-to-face group activity when the group members are not in the same place at the same time, through the mediation of telecommunications technology." Betty Collis further explained that with the rapid emergence of telecommunications technology, a number of possibilities are now available by which learners in distributed settings can work as a group with each other.

“No one has found an ideal mix of technology and classroom instruction, but IBM seem to have come close. It conducts 48 percent of its training electronically, says Ted Hoff, IBM’s chief learning officer. With 320,000 employees scattered across 76 countries, the company has a special need to quickly and efficiently train its people” (Workforce Management, 2004, Vol.5, pp. 51-55). Rosenberg (2006, p. 211) indicated that "beyond access to information, IBM provides technological support to encourage and enhance collaboration and access to experts." Rosenberg further explained that by profiling each solution seller in the system - whether they are working on a particular account, preparing a proposal, or learning about a new client or industry - the system is available to identify subject matter experts and peers knowledgeable in these same areas and let the user know if the identified experts were currently online. According to

Workforce Management (2004) using e-Learning technologies, IBM reports that an average of four hours of work is saved per person each week.

Cisco Systems reportedly saves at least \$240 million annually, allocated at \$12,000 per year for each of their employees while other companies are also seeing 40 to 60 percent cost saving when moving from classroom-to-technology-based training . According to Walliker (2005), Caterpillar reported a 40% return on its investment on e-Learning. Gordon Bull, Director of Vodafone Campus (as cited in Salopek & Source, 1999) explained that Vodafone has shifted now to relying more on e-Learning - which gives them the flexibility to ratchet spending up or down. With a global e-Learning system, training resources created in London can be retrieved anywhere in the world. Vodafone has over 100,000 staff around the world, and believes in not re-inventing the training wheel. John Hall, senior vice-president of Oracle University, is convinced that the training can be just as effective even if it is conducted entirely online (online education at Oracle).

At the commencement of this study, e-Learning was still in its early evolution and a relatively new topic; hence, the resources were mainly found in few research papers, on-line articles and books. In the last few years, the availability of literature has increased exponentially with many doctoral dissertations and industry journals focusing on the topic of e-Learning. As one could observe from the literature review, early on, the term e-Learning was heavily used and while a few interchangeably used the term web-based learning and online learning. However, use of the term e-Learning has been predominant.

Information Revolution

We have been through the Agrarian, Industrial and now the Information or conservatively, Post-industrial Revolution (Toffler, 1980). In the 18th century, the Industrial Revolution transformed the agricultural society of muscle power to an industrial society of energy power where steam engines revolutionized socio-economic

activities of individuals, businesses and governments resulting in unprecedented wealth, prosperity and easy life style. Progress was uneven; problems and adversity accompanied the process of realizing further prosperity; everyone carried out drastic reform of the social structure; the educational system underwent drastic reforms to provide mass literacy in the three R's of Reading, wRiting and aRithmetic. The impact rippled around the world creating the industrialized countries and the developing countries along the spectrum of development according to the degree of adoption and success of the technology. Now, the Information Revolution calls for a new order. Unquestionably, the changes are not linear but multidimensional.

While chairing the Web-based Education Commission, during the year 2000, Senator Robert Kerry and Representative Johnny Isakson of the United States noted that the Internet is a powerful new means of communication. It is global, it is fast, and it is growing rapidly. Reaching to the far corners of the earth, the Internet is making the world at once small and more connected, transmitting information at nearly real-time speed. For education, the Internet is making it possible for more individuals than ever to access knowledge and to learn in new and different ways. At the dawn of the 21st century, the education landscape is changing (U.S. Web-Based Education Commission, 2000).

The Internet has become a melting pot where most traditional media, such as television, telephone and newspaper have merged and collided, resulting in fruitful combinations and new functionality (Braa, Sorensen & Dahlbom, 2000). Similarly, one could arguably predict that the solution for today's imbalanced world of poverty, unemployment, underemployment, employability, and illiteracy could lie in the effective utilization of Information Technology. Concerning this notion, Sir Arthur C. Clarke (as cited in Leer, 1999) stated that we don't have to live in the power centers of this world to be on the leading edge of technology and wisdom...Global satellite systems are being

developed that will soon allow anytime, anywhere communication and access to information from any spot on the planet.

New wireless technologies may allow developing countries to leapfrog developed country investments in a wired telecommunications infrastructure. In his article "Putting People First in the Information Age" (as cited in Leer, 1999), former Vice President of the United States, Al Gore, has advanced this thought by indicating our ability to transmit, store and process information continues to expand at a dramatic rate, while the cost of doing so plummets. He further described that in 1998, \$200 video games had more computing power than the \$20 million supercomputer available in 1976.

Telecommunications companies are deploying networks capable of transmitting the equivalent of the entire Library of Congress coast-to-coast in 20 seconds, and trans-Atlantic links capable of carrying 7 million simultaneous phone calls. One can consider the death of distance predicted by Cairncross (1997) where the argument is with the availability of electronic communications to connect globally distributed institutions and people, geographic distance has become obliterated.

In the same article Al Gore also explained that the Internet, which connected 1.3 million computers in 1993, by 1998 connected almost 37 million computers and an estimated 148 million people worldwide. According to Secretary-General of the United Nation's International Telecommunications Union (ITU) (Toure, 2011), the estimated number of cell phone subscriptions worldwide reached 5.28 billion at the end of 2010 compared to 4.66 billion at the end of 2009, and at the beginning of 2011 there were over two billion subscribers to the internet. The World Wide Web, first developed at CERN (the European Laboratory for Particle Physics) in 1990, now grows at a rate of 1.5 million pages per day and doubles in size every 8 months. (as cited in Leer, 1999). This clearly explains the speed with which the content on the web has been and is growing, globally.

As the cost of transmitting and processing information continues to plunge, the applications of Information Technology will be limited only by our imagination, creativity, and the ability to innovate. Many believe that technology will drive economic, political, social and cultural developments. And through this study, we can understand and analyze the ways in which many countries around the world have already begun the process of their human capital transformation by effective use of e-Learning.

Sir Arthur Clarke, in his article "Technology and Humanity" (as cited in Leer, 1999), deliberated that communications satellites have created a world without distance and have already had a profound effect on international business, newsgathering and tourism – one of the most important industries of many developing countries. Clarke further explained that yet their real impact has scarcely begun. By the end of this century they will have transformed the planet, sweeping away much that is evil, and, unfortunately, not a few things that are good.

The high-speed Internet connectivity can be attained now that millions of kilometers of increasingly scarce copper or fiber optic cable can be replaced by a handful of satellites in stationary orbit. And on the ground, users need only a simple, rugged handset with a solar-powered transceiver and antenna, which could be mass-produced for tens rather than hundreds of dollars (Silicon India, 2004).

The world of communications has been turned upside down in the late 1990s. In less than a decade, the spread of digital technology, the mass market phenomena of wireless telephony and the Internet; and the liberalization and privatization of telecommunication markets have led to revolutionary economic shifts in the market. Denis Gilhooly, Senior Advisor of the World Bank (as cited in Leer, 1999), explained that we live in an age where the cellular telephone is an icon of contemporary culture, where sales of personal computers outstrip those of televisions, where more electronic than postal mail is delivered and where cross-border traffic over the Internet exceeds that on

the telephone network. Gilhooly described that next-generation networks centered on low-cost telecommunications and information technologies are modeling the nervous system of the New World economy.

For governments, corporations, educational institutions, and individuals around the world, the technological revolution is extending far beyond the boundaries of the communications sector; with the wide spread availability of powerful but affordable communications having a profound effect on the pattern of worldwide knowledge sharing, commercial, economic and social development.

Technology and Learning

Education and Learning have always been vital ingredients of any civilization, and remain more so today. "Classroom training is a 19th-century artifact - if not an artifact of the medieval times," said former U.S. Dept. of Labor Secretary Robert Reich, cited Michael Verespei in his article "Click and Learn" (Industry Week, 2001). Similarly, while explaining limitations of the current medium of education, Peter Cochrane, head of Research, BT Laboratories, in his article The Global Grid of Chaos (as cited in Leer, 2009, pp. 74-75), explained that "given an assignment, their (student) search routine is Compact Disk (CD), the Web, and book. The reason, it is fast, efficient and low cost. Books are expensive, unavailable and slow. They can also be a dead medium, lacking any animation or interaction."

Collins and Meeuwssen (as cited in French et al., 1999) indicated that when students use the World Wide Web for a learning environment, they suddenly have the world at their fingertips. People and resources from all over the world can be at a student's computer at the click of a search engine. The learning opportunities are enormous. e-Learning is changing the learning landscape. Its blend of technologies, interactivity and just-in-time delivery means big savings. e-Learning is now part of how we do things and it provides learning options on an as-needed-basis. Many universities,

governments and non-profit organizations have started to follow the pathway led by corporations in reaping the benefits of e-Learning with its ability to successfully connect learners and the subject matter experts from around the world. The need for less expensive and effective ways to deliver knowledge has led to explore the option of e-Learning. The convenience that e-Learning offers to the users such as being able to take courses at their own pace, at their own place and the engaging nature of the multimedia delivery has been drawing better participation. The centralized nature of web-delivered materials makes the content and delivery of the course standardized for all users, irrespective of their location or time zones.

The web has become a medium where learning communities and new practices can form and evolve (Svensson, 2002). Long (as cited in Piskurich, 2004) articulated that e-Learning has been hailed as the greatest development in learning since the printing press. Through e-Learning, a community of learners can be established via digital communication networks. As in a real school, discussion will take place on a specific task, about the course in general or larger issues, though not sitting in the same physical classroom. Some communication in e-Learning can be asynchronous, using e-mail, discussion forums, threaded discussions, web postings, voice messaging and so on while other could be synchronous, using Web telephone, two-way audio video conferencing, real-time electronic white boards, instant web chats and so on. For the latter, an on-line diary allows learners to make appointments with one another and, of course, with tutors.

Peter Cochrane (as cited in Leer, 1999) explained that when a good Master Class on optimization, self-organization, economics, statistics or whatever is available on-line or on CD, there will be little room for a second. We might thus expect to see very few really great teachers and an awful lot more coaches. Lord Putnam, Chief Executive of Enigma Productions (as cited in Leer, 1999) puts it that our teachers are inevitably moving from being the deliverers of knowledge to the managers of learning. With this

said, one could see that the process is turning the learning more toward student and learner centric. The technology can allow and create similar forums for interactions, discussions and the ‘feel’ of being part of a single class though participating from different parts of the world. Putnam further described that web chats, e-mails, threaded discussions are eliminating the time and space. This gives teachers right across the educational system – in schools, universities, further education colleges, wherever – new and even more significant responsibilities as guides for the future.

Lewin (2001) describes that with today’s advancement in the e-Learning technology, students can take around-the-world virtual field trips without ever leaving the classroom. While explaining the benefits of the virtual tour Lewin (2001) indicated that all students can look at their own copy of the material while a library might have only one book in printed form. And the hyperlink environment provides an enormous number of individual reader options for branching out to related material, compared to the two-dimensional, linear text in a book. From the student perspective, Levy (2006) argued that there are many different values of e-Learning services: they may increase student satisfaction, or enhance the learning process (Hiltz & Turoff, 2002), and therefore, increase student retention.

Simple-to-use multimedia tools would allow learners to describe and develop their understanding of conceptual knowledge with a much greater richness than in a written essay. “The development of software that permits easy-to-use 3-D animation will add meaningful reality to scientific simulation. We can begin to see now where the technology can make the difference, where it can have a material effect on the what and how,” ascribed Simon Murison-Bowie (as cited in Leer 1999, p.147).

According to Groeling (1999), facilitating asynchronous discussion has the potential to improve teaching and learning experiences in traditional classroom formats, as well as in distance learning. “Asynchronous online discussions can be seen as a means

to enhance student control over learning and make the educational experience "more democratic" (Harasim, 1989). Groeling (1999) believed that such discussions can also enhance the participation of student who might be less willing to participate in traditional face-to-face classroom settings due to shyness, language problems or gender. This is because communicating through a computer can take away many of the normal social cues associated with face-to-face interaction.

Referring to the cutting edge technology of e-Learning, Ellet and Naiman (as cited in Piskurich, 2003) explained that the U.S. military conducts operations regularly but trains every day. In fact, it is one of the largest training organizations in the world. And to say that the modern military embraces technology is an understatement. Over four years, civilian employees, contractors, and uniformed personnel painstakingly developed, tested, and refined an online version of the Reserve Officer training course. The e-Learning course was finally rolled out in 2001. This was previously conducted as a correspondence course spread over 240 hours and now available, anywhere, anytime and significantly improved the effectiveness of the training. Ellet and Naiman further explained that similar e-Learning technologies are in use in several learning and development modules including orientation programs and on-the-job learning initiatives. More and more on-the job-learning in the high-risk environments such as war zones, mines, under water explorations, fire fighting, flight maneuvering have already started using e-Learning technologies involving simulation and artificial intelligence.

Harvy Singh (as cited in Piskurich, 2003) expressed that one of the most significant contributions of Internet based technologies toward learning in the last few years has been the introduction of synchronous collaboration technologies (often described as live e-Learning or virtual classrooms). Synchronous collaboration technologies truly creates a new medium that brings facilitators and participants together in a dynamic and live environment through which highly interactive communication can

occur – closing down the barriers for communication and learning. Harvey Singh further believed that today, Internet-based synchronous collaborative technologies create a multidimensional and multi-sensory environment for communication through voice, multimedia and interactivity – the right medium for learning and knowledge transfer. Horton (2006, p. 365) described that "unlike classroom setting, the size of an e-Learning class is not constrained by the physical architecture but by decisions of the course designer and the capabilities of collaboration technology."

Allen (2006: xiv) explained that "synchronous learning events occur simultaneously for all learners as happens in classrooms when an instructor delivers a lecture. Examples of synchronous learning include instructional uses of web conferencing, live chat rooms, instant messaging and virtual classrooms." Allen (2006, p. xiv) described that "Asynchronous learning as learning events that happens at different times for each learner, ideally when and as needed by each. Asynchronous learning includes self-paced courses, historically the most common form of e-Learning, as well as message boards, discussions forums, and mentoring through email."

Bowman (White & Baker, 2003) explained that Synchronous courses are those in which students and professor are all online at the same time, usually in a chat room, and the professor teaches in real time on the computer. Most synchronous learning is still conducted via text (typing on the computer) but, the trend is rapidly moving toward voice and even video chat on the computer. This makes learning in real time on the computer very similar to going to class. Students can hear, and sometimes see, the professor talk; view charts and graphics; and ask questions and participate in discussions with classmates during the class time. Bowman (White & Baker, 2003) explained that Asynchronous learning is by far the most popular and most widely used form of online learning. In asynchronous classes, students have weekly start and end dates, during which time they must complete specific assignments and discussions. Harvey Singh (as cited in Piskurich,

2003), described that thousands of organizations – business, academic, and governments are exploiting synchronous collaboration and live e-Learning technologies successfully to revolutionize enterprise learning and demonstrating tremendous and immediate return on investment.

Elliott Masie (as cited in Piskurich, 2003) explained that the idea of learning delivered via technology seems to logically take us to a more intensive and engaging experience. Simulations are being successfully developed for areas where they are particularly appropriate such as flight training, manufacturing skills, and even some IT labs. But they cost significant amounts of money to develop and often have way too short of a shelf life or audience size to justify the expense; however, we are seeing more and more investment in the simulation model.

Traditionally, the best learning environments provided an integrated mix of synchronous and asynchronous learning activities in combination with dynamic opportunities for collaboration with experts and peers. Well-designed e-Learning provides this type of environment, as it incorporates well-established teaching methodologies and proven educational philosophies, and enhances them with a rich mix of interactive media developed in response to rapid growth and changes in business, corporate training and the educational institutions.

e-Learning: 24 x 7 Phenomena

The potential of anytime, anywhere access to education-oriented content, programming and services is capturing the attention of entrepreneurs, Educational Institutions and Governments who are putting ubiquitous computing, distributed networks and broadband access to good use. These pioneers envision a future where individuals around the world will have access to continuous learning in their homes, in their workplaces and on the go. They are creating e-Learning web sites, teaching communities, services, courses and web portals where people can access educational material and

mentors, professors, scientists, and fellow students can enhance their educational experiences. This kind of access to learning is critical to compete and survive in the technology driven dynamic global market economies.

For organizations, e-Learning has already proved to be a boon in keeping their employees' learning curve ahead of their competitors, churn out new products and designs in record time. In his article Utilizing Learning Guides to Maximize e-Learning at Motorola, Richard Durr (as cited in Piskurich, 2003, p. 41) opined that the "entire concept around e-Learning is to provide the learning when it is needed and where it is needed. When learners engage in e-Learning activities, they are empowered to get out of that what they need and how they need it."

Morrison (2003) enumerated that no other channel delivers content anywhere in the world faster than e-Learning. Once e-Learning delivery has been made, learning can happen as fast as possible. Morrison further explained that because e-Learning enables a learner to learn about three times faster or three times as much in the same time, downtime and opportunity costs are minimized. Time spent on searching for specific subject, topic and material in the conventional method through books and journals can be drastically reduced by search capabilities of the e-Learning technology. Through asynchronous learning, e-Learning overcomes the barriers associated with time zones as the content will be available "wherever" and "whenever" needed. e-Learning delivers the shortest lead times for updating and publishing. Through e-Learning, participants can store, revise, refer and learn at their own pace and when needed.

Simulations and Virtual Classrooms

Computer simulation was developed hand-in-hand with the rapid growth of the computer, following its first large-scale deployment during the Manhattan Project in World War II to model the process of nuclear detonation explained Balachandra, Rabuya, Shide and Takalkar (2000). They further explained that with the remarkable success of

the techniques on neutron problem, computer simulation soon became popular and found many applications in the business and industry.

Over the years, Computer Simulations and problem based learning have developed to help students simulate a range of practical activities which would otherwise be costly in terms of time, space or even on safety grounds. "Simulations can help the students address and answer many of the same problems posed in the real-life situation" Chin Paul (2004, p. 119). Rik Min (as cited in Juwah 2006, p. 117) believed that "Simulation as a real container concept: consisting of various methods of learning. These include role plays, group discussions, games, war training simulators, model driven simulation, virtual reality, etc." Simulation for learning on the World Wide Web is part of the age long tradition in discovery learning.

Parush, Hamm and Shtub (2002, p. 319) explained that simulations are recognized as an efficient and effective way of teaching and learning complex and dynamic systems. "Today the definition of virtual simulation seems to fall into one of four categories: branching stories, interactive spreadsheets, virtual products/ virtual labs, and game-based models" (Boehl, 2005). Branching stories create very specific scenarios in which the learners are fully engaged. Boehl further explained that "the participants are prompted at specific intervals to make multiple-choice decisions that branch a story down different paths, allowing learners to see the results of their decisions. Interactive spreadsheets are used by learners to make open-ended, allocation-based decision" (pp. 54-55). Using these types of scenarios, learners may be given a fictitious budget and told to invest in the stock market, track the value of the stock purchases, calculate the return on investment or rescue someone trapped in a building engulfed in fire.

Some simulations have been around for a long time. "On the digital side, most people are quite familiar with simulations that let people practice dangerous procedures such as flying an airplane or shutting down a nuclear reactor - in a safe, computer-based

environment" (Aldrich, 2001, p. 52). Shepherd (2003, pp. 1, 7) indicated that "the United States Department of Defense has invested more than \$1 billion in JSIM (JavaSim or Java based Simulation), it is an high-end simulation technology and uses digital game-based learning to train soldiers, sailors, tank-drivers and strategists." Shepherd further explained that perhaps surprisingly, the biggest users of Simulations and games for training and learning are the U.S. military. Simulations play an important part in IT training. Vendors like NetG (now part of IBM) use simulations to allow the learner the freedom to explore in a 'safe environment', with no risk to real data.

Some classrooms and courses have implemented the use of technology and computer simulations that could be replicated in an online environment, which could mimic the necessary hands on experience sought by some hiring professionals. While the employment of a computer simulation could be severely limited in certain situations, such as drawing blood, delivering a baby, or chimney sweeping but it can also be an effective method of learning for tactical military thinking (Marsella, 2004), dental procedures (Aquino, 2006) etc. In addition, the use of computer simulations and virtual environments could potentially present learners with wider range of situations and scenarios to learn from.

The cost of building simulations in e-Learning was initially prohibitive which is one of the reasons that simulations were seen in industries that had very large training budgets. However, with the cost plummeting, the simulations are a reality for many corporate employees, research and development and university labs. Referring to current trends in the use of Simulations in e-Learning: Aldrich (2001, p. 52) stated that "there's something new on the horizon, though computer-based soft-skills simulations have let learners practice skills such as negotiation and team building and most people don't yet realize what a radical departure from traditional training these tools are."

Technological advancements in the gaming world and virtual reality may further enhance the effectiveness of learning. Learning would be more realistic and "experiential" in this sense. Jones (1995) held that the power of a simulation arises from the reality of communication skills, the analysis and the decision making. Simulations could enhance the learners' capabilities to retain the presented information.

It is important to consider not only the past and present use of simulations but also future trends. Aldrich (2003, p. 14) stated that "if you want to understand simulations, the only way to do it is to become familiar with today's computer games." Aldrich saw the future of simulations in e-Learning as working similarly to the virtual experience games of today, with graphics, sound, and a high-quality experience that makes you feel as if you were part of the world that is being simulated. Shepherd (2003, p. 4) believed that "when simulations and games are well designed, they provide the opportunity for repetitive practice." With improved virtual classroom technologies and the enhancements with the computer simulated animation technologies, the use of simulations has been gaining applications in a variety of areas across training and knowledge enrichment.

e-Learning Wave

"A decade ago, there were substantial numbers of teachers who had negative or anxious feelings about computers in classrooms, or who were ideologically opposed to the idea that computers had much to offer, most teachers are now at least open-minded to the idea that ICT might have something to offer their teaching repertoire (Ahrenfelt & Watking, 2008, p. 7). The future can be complex to predict, especially regarding how technology we haven't used will affect our lives. The advances of technology and the speed of change have revolutionized the way learning occurs. Since we work in an age where the lifespan of skills and knowledge are constantly shortened by technology and the speed of change, there is an immense necessity to continuously learn new skills and keep current skills up-to-date. To succeed in this new economy institutions must provide

individuals with knowledge, information and training they need to make quick decisions, react to market conditions and anticipate future opportunities. Fast paced learning and development for individuals, corporations and the governments have never been more important than in today's knowledge driven world.

The prediction of John Chamber, CEO of Cisco systems (as cited in Rosenberg, 2001, p. xv), "the biggest growth in the Internet, and the area that will prove to be one of the biggest agents of change, will be in e-Learning," has been motivating e-Learning enthusiasts around the globe. At the Comdex, IT Conference during November 1999 (as cited in Rosenberg, 2001), John Chambers also called education the next hot growth area for Internet applications. Just as e-commerce exploded over the past few years, the stage is now set for e-Learning to be the next big wave in Internet-based applications, predicted Chambers. He believed that such a move will also help close the digital divide. Chambers also predicted that the e-Learning industry will be so big; it will make e-mail look like a rounding error. Education and the Internet must go hand in hand, Chambers said in this keynote address at Comdex, internet will serve as one of the great equalizers, he added. Internet will change the way we work, live, play, and learn, Chambers predicted. He then identified e-Learning as one of the hottest new applications in the coming years. Since these predictions, the world has been witnessing what can be phrased as the Gold rush of the digital age.

The impact of Internet technology has been immense in the last few years on our daily lives; hence the task of going into details of the entire Internet technology may make this study look redundant. Bowles (2004, p. 6) described that "the major sectors that use e-Learning - academic institutions, government, the corporate sector and the community and general consumer sector – approach it with different types of end use in mind." The approach to e-Learning in corporate contexts vary from that in formal educational institutions. e-Learning in educational settings has been organized around

self-contained subjects or course units. In contrast, many proponents of e-Learning in corporate settings envisage systems based on much smaller units of content, known as learning objects. Bowles (2004) further explained that the purpose of adopting this paradigm is to encourage the reuse of common elements, thereby decreasing costs, streamlining content creation and improving the quality.

Bowles (2004, p. 15) believed that "as yet, 'no killer' application has emerged to define how mobile devices could be used for e-Learning." The prospect of having mobile access to learning materials – in the right here, right now context – is appealing, but it will require a substantial investment in applications to make use of the new technologies.

According to Allen (2006), though e-Learning still being in its early stages, there is no doubt that it offers distinct benefits: It links geographically-dispersed people. It allows more people to learn in a shorter time and also helps individuals learn faster or at their own pace and convenience. Reference materials and additional readings helps the participants to retain the content longer compared to class room learning. It's very adaptable and allows for changeable data to be used, cutting out the time it takes for a text book to be reprinted or a CD-ROM to be burnt and mailed to the participants. e-Learning is a convenient and effective medium for reaching large groups in a synchronized environment and its electronic white board, audio, video, and other built-in capabilities makes it much lively and effective.

e-Learning can offer the convenience of 24-hours a day availability, 7 days a week and global accessibility, Just-in-time learning and evaluation opportunities with synchronous as well as asynchronous facilities in-built in the system. e-Learning offers tremendous cost savings – travel, printing volumes of material, burning CD-ROMS and being away from home or work is not necessary. Reduced time away from the job – travel to a local or global location for learning or training program is not required. Centralized as well as decentralized knowledge management is possible with e-Learning

– for example, with knowledge Management features including pre and post-test questionnaires that can be built-in, it is easy to manage participant registration, progress and the competency level they have reached. This helps individuals as well organizations to know the skill gaps and steps needed to address those. Other advantages of e-Learning are;

Accessibility: Information, knowledge and Training are available anytime, anywhere - workplace, home or on the go. This also facilitates participants to take courses at their own pace and as much as they need at a time, which is often termed as Just-in-time and Just-enough. There are no barriers of time and distance.

Reliability: It is highly reliable to enhance business responsiveness quickly. Companies can update information and training materials quickly and easily. Be it within the corporate head quarters or a remote site in some of other part of the world while maintaining consistency of the course. Ease of update - If changes need to be made in the program after the original implementation, they can be made on the server which stores the program and everyone worldwide can instantly access the update.

Scalability: With its ease of distribution feature, reaching ten participants or hundreds around the world is instant and accurate. Just by improving technical capabilities of the system, scalability can be increased. The only issue to be concerned is the bandwidth or connecting speed on the other end for specific features such as video streaming, graphics, two-way audio and video capability.

Immediacy: Delivery is just-in-time, when learning is needed, and not just when it is scheduled. However, if one cannot attend a synchronous event/program, he/she can always go back to the asynchronous information placed on the web to view in its entirety.

Affordability: Elimination of travel expenses and classroom infrastructures and not having to be physically present at “the” venue helps participants to engage themselves on their important tasks. They can take the courses right from their desktops – be it at

work, home or on the go. There is no separate distribution mechanism needed and e-Learning can be Retrieved from any computer anywhere in the world, keeping delivery costs low. There is no travel costs involved for bringing remote employees to a centralized workshop because the Web is available from their desktop. Currently, the greater portion of costs associated with e-Learning are start-up costs. Programs can be delivered and re-used with fewer costs than with traditional methods.

Global e-Learning Scenario

Overview

e-Learning is a global phenomenon fueled by the growing student demand and a variety of social, economic and technological forces. There is an increased awareness among nations and a belief that knowledge holds the key to their future prosperity and social well-being. Governments and corporations around the world are increasing their capacity to learn and are placing a premium on the development of a knowledge economy. In this section efforts are made to provide a perspective of e-Learning in different parts of the world across developed, developing and underdeveloped economies. Though the list of countries covered may not be exhaustive it will serve as a balanced sample across the regions.

Catterick (as cited in Edmundson 2007, p. 117) explained that "it is higher education institutions in Britain, Australasia and North America (BANA) which have been at the forefront of online degree program development and delivery." Catterick further explained that BANA Countries offer world-class higher education and state-of-the-art delivery through e-Learning and this is proving to be a great attraction to international students.

The United States, Canada and the UK lead the e-Learning revolution while extending their expertise to many underdeveloped and developing countries. On these lines, Chada and Kumail (2002, p. xiii) opined that "the popularity of e-Learning is not

limited to the corporate world; the governments across the world have realized the potential it offers."

According to the World Bank (as cited in Bramble & Panda, 2008), distance learning represents the most dynamic sector of adult education, particularly in the United States, where World Wide Web-based electronic delivery is fast becoming the dominant mode of instruction. This trend will almost certainly soon apply around the world. The same World Bank report further explained that Turkey's Anadolu University enrolls more than 500,000 students, mostly through correspondence study. The same is true for the United Kingdom Open University (UKOU) and Indira Gandhi National Open University (IGNOU), both of which are heavily dependent on correspondence study. According to the World Bank (as cited in Bramble & Panda, 2008, p. 38), "at the moment, there can be no question that computer-mediated asynchronous distance learning is the medium of choice in the development of new academic courses and programs."

According to D'Antoni (2006), the African Virtual University is a technology-based distance learning network that started in 1997 as a project of the World Bank. Also the ITESM Virtual University in Monterrey Mexico is connecting 300 Community Learning Centers in impoverished communities. Sharif Virtual University of Iran has established itself as a test-bed for technological and pedagogical studies and provides online courses for Kish Island in the Persian Gulf. Waseda University of Japan has distance learning projects in Vietnam and Malaysia. Virtual University of Pakistan was granted a federal charter in last August. Technion, Israel Institute of Technology has successfully used virtual forums to enhance higher order thinking and critical review of scientific articles.

Governments around the world seem to have discovered that e-Learning programs can dramatically improve the quality of life for citizens while reducing the financial burden on taxpayers. Local schools in underserved rural areas can rely on e-Learning to

offset the lack of skilled teachers in their districts. The article "*e-Learning trends, worldwide learn*" explained that State university systems can keep talented students from crossing borders by importing highly specialized programs from other schools while the governments in developing countries have invested heavily in e-Learning programs to build talented work forces.

Olaniran (Edmundson 2007, pp. 20-21) explained that "there is a correlation between Internet usage and global learning penetration and adoption in any given society." He further deliberated that in Asia, Internet usage was expected to increase from 64 million users in 2001 to 173 million by 2004, but the most recent data on internet usage in Asia show an actual figure that reflects a jump to 323.76 million - a 405 percent increase from the 2001 figure, and a 87 percent increase above projected figure. A 65.8 percent increase is reported for Japanese Internet use while a 357.8 percent jump was recorded for Chinese between 2000 to 2005, which represents a jump from 22.5 million to 103 million users.

Online learning has grown incredibly over the last decade with over 50,000 U.S. students complete online degree programs or at least one online class a year (Symonds, 2003). In the United States alone, 81 percent of all institutions of higher education offered at least one fully online or blended course (Sloan, 2006). In countries such as Zimbabwe and Tanzania, radio is still a primary medium in non-formal instruction and distance education (Arias & Clark, 2004). Kinuthia (as cited in Edmundson 2007, p. 71) described that "as it is, Africa is faced with many challenges, and education is expected to be an effective tool in coping with these predicament and e-Learning may be an answer."

According to International Data Corporation - IDC (as cited in Dam, 2004), although Internet use is relatively low in other areas - notably, Africa and parts of Latin America - improvements in telecom infrastructure, Internet and the personal computers are enabling the spread of e-Learning. Afele (2003) a scholar from Ghana argued that

Africans need ICT (Information & Communication Technology) as well as food, because they urgently need knowledge to solve their own problems. That would be empowerment.

As per the United Nations (UNESCO Report 2003), high unemployment and large underemployment remain rooted in the structure of many developing countries and economies in transition. Rising unemployment rates have also become a problem in many Latin American economies where unemployment rate is as high as 20% and poverty has soared. Sizeable surplus labor in rural areas, combined with the large number of laid-off workers in the cities continues to be a major concern for policy makers. Similarly, in other transition economies such as Poland, unemployment, especially among young people, is very high. These situations coupled with political instability in several underdeveloped and developing countries and the lack of resources to provide basic education has become a daunting challenge to policy makers around the world. These countries do not have resources to build huge brick and mortar schools, colleges and universities. However, by simply moving from 'brick to click,' using low cost technology and the e-Learning strategies, they can provide basic education.

According to the U.S. Commerce Department (as cited in Dreazen, 2002), as of September 2001, 143 million Americans (54%) had access to the Internet. United Nation's International Telecommunications Union (ITU) (Toure, 2011) report indicated that, over 79% of Americans were using Internet by the beginning of 2011. With this the U.S. ranked in the 19th position while Sweden remaining at the top of the list with over 90% of its citizens with Fixed Internet Subscriptions. According to ITU, at the beginning of 2011 there were over two billion subscribers to the internet, worldwide.

United States of America (USA)

With several corporations, universities and government agencies taking a lead in the United States, e-Learning is decidedly an American phenomenon. Many industry innovators and businesses have U.S. addresses, but the global e-Learning community is

proving to be vital partners in refining and promoting the technology and techniques that propel learning past artificial or manmade borders.

e-Learning has experienced dramatic growth in higher education around the world; but especially in the United States. Six years ago, Harasim (2000) proclaimed that online education was no longer peripheral or supplementary, and that it has become an integral part of mainstream higher education. In the United States, the University of Phoenix, which is now the nation's largest private university in terms of enrollments, is aggressively expanding its online program (Klor de Alva, 2000). According to Allen and Seaman (2003) of Sloan Consortium, by 2006, 3.5 million students were participating courses through e-Learning at institutions of higher education in the United States.

According to Allen and Seaman (2003) there has been an increase of around 12–14 percent per year, on average, in enrollments for fully online learning in the U.S. post-secondary system, compared with an average of approximately 2 per cent increase per year in enrollments overall. Allen and Seaman (2008) claim that almost a quarter of all students in post-secondary education were taking fully online courses in 2008, and a report by Ambient Insight Research (2009) suggested that in 2009, 44% of post-secondary students in the USA were taking some or all of their courses online, and projected that this figure would rise to 81 percent by 2014. Thus it can be seen that e-Learning is moving rapidly from the margins to being a predominant form of post-secondary education, at least in the USA. e-Learning is also utilized by public K-12 (Kindergarten to Grade 12) schools in the United States.

Currently, in the United States, there is an increase in the use of e-Learning 2.0, the word coined during the emergence of Web 2.0 (Downes, 2005). Conventional e-learning systems were based on instructional packets, which were delivered to students using assignments. Those assignments were evaluated by the teacher. In comparison, the

e-Learning 2.0 places increased emphasis on social and peer learning, and the use of social software such as blogs, wiki, podcasts, online communities etc.

The greatest demand for e-Learning in the U.S. comes from the corporate sector, which according to Hall (2000), realizes a 30 to 60 percent savings over traditional classroom instruction. Thus, businesses and corporations in the U.S. have invested - and continue to invest - in infrastructure that will require a steady supply of content (Hall, 2000). He further explained that the higher education and K-12 are substantial user markets, as well - a combined industry representing over 100 billion dollars. Colleges and universities are also turning to e-Learning as a way to increase their reach - to offer branded educational opportunities to students outside of their traditional geographical boundaries. The United States is also moving towards a systematic national approach to e-Learning and has established a Web-based Education Commission to maximize the educational promise of the internet across all levels of education.

United Kingdom (UK) and Europe

Tony Blair, former Prime Minister of the United Kingdom (as cited in Leer, 1999, p. xi) described that "the UK will continue to play a leading role nationally and internationally. Our goal is to ensure that every country, every business, every individual, can benefit from the new digital economy – ensuring that we can all be Masters of the Wired World." When Scotland lost many of its manufacturing jobs in the 1980s due to entry of low cost countries such as China and India, the government realized that it was time to create new differentiators. They introduced a life-long learning account with an initial government-paid deposit of £150 for every Scott. The account holder could use the money for any type of learning from college course to subscription fee for web-based courses or material (Chada & Kumail, 2002).

As per a case study by the United Nations Educational, Scientific and Cultural Organization (London Docklands Learning Acceleration Project) it is estimated that in

Britain 16% cent of young people still leave school with poor literacy skills and many are unable to carry out essential everyday tasks. The study further explained that the project aimed to break the vicious cycle of underachievement by working with families, communities and schools to raise the status of literacy and learning activities through a new, exciting medium of technology: a pocket-size, easily-understandable computer entrusted to each child to carry out individual and collective learning activities. Many parents have gone beyond assisting in the child's interest in using the Pocket Book and take part in after-school sessions using all kinds of technology to improve their basic skills. Parents were able to work towards consolidating their own experience, drawing them further into their child's learning process. e-Learning has been a major initiative in this direction in the United Kingdom.

Corporate e-Learning in Scandinavia has the potential to become a sizable portion of the training and education market, according to International Data Corporation (IDC). IDC Nordic Services analyst Esa Peltonen indicated that "Sweden has already seen rapid growth in this delivery method in the past few years. Norway and Denmark are catching up quickly. Interest has been a bit slower to catch on in Finland" (Global E-Warming: Scandinavia). Esa Peltonen further explained that Scandinavian countries claim a trio of factors that peg it a natural hotbed of e-Learning activity. One, Internet and broadband penetration levels are high, so Scandinavian countries are built-in markets for e-Learning. Two, a high proportion of the population is used to conducting business in English, making the countries attractive to international e-Learning companies. Three, Nordic governments traditionally have been big supporters of interactive learning.

Scandinavian and the U.K. countries, in particular, are standout leaders while many governments in Asia, Europe and South America are trying to embrace e-Learning. According to Commonwealth of Learning (www.col.org), the European Commission recently announced a US\$13 billion three-year e-Learning action plan to deliver

technology-based education under the National e-Learning Strategy in the Open Learning Environment initiative.

e-Learning is part of a larger set of educational efforts that have been made at the EU level over the years to create a European educational space. A number of authors have explored the subject of European Union policy on education in recent years (Ryba, 1995; Lenzen, 1996; Field, 2003). They further explained that most European countries reveal good examples of genuine e-Learning if you look for them: Philips in Holland, Siemens in Germany, a couple of the large banks in France. It appears that throughout Europe e-Learning is arriving on the corporate agenda. But according to Dunn (2001), Europe can learn from the USA. And in some ways Europe is following a different path: greater government involvement, more emphasis on creative and immersive approaches to learning, more blending of e-Learning with other forms, a greater use of learning communities (mainly by southern European users), and (particularly in Scandinavia) a strong emphasis on simulation and mobile communications (Training Journal, 2001).

Argentina

In contrast, according to a report by the World Bank (as cited in Cline, 2003), Argentina, another third world country, is trying to educate its masses through e-Learning using the satellite technology. Instead of huge investment in laying copper or fiber optic wires all over the country, the government of Argentina started to set up microwave towers every 30 mile radius. These towers beam educational programs to local schools, colleges, libraries and the community centers. With its sustainable policies, Argentina's education level has been the highest in Latin American Region (Cline, 2003).

Middle East

In the Middle East, King Abdulaziz University was the first to deploy e-Learning to benefit its distance education students as well as those attending traditional classes (Ashadawi, 2004). Saudi Arabia was among the first to place a wide range of initiatives to

enable the country to emerge as one of the leading e-Learning markets in the region. In the United Arab Emirates, the Emirates Academy of Hospitality Management was the first hospitality school in the region to offer its students e-Learning activities to supplement their classroom instruction. All students at the academy are provided with laptop computers and Internet access to course materials and library resources (Godinho, 2004).

China

e-Learning sprung up in the mid-1990s in China, has already entered a fast growth stage in the recent years. Compared with traditional education, e-Learning is a kind of new educational pattern in China, it can break through the restrictions of space and time, and help students to study whenever and wherever possible, explained Xiaoxing and Weitong (as cited in Cheung et al., 2004).

During the past two decades, communication and information technologies (CIT) have become increasingly prevalent in our (Chinese) schools. The student /computer ratio in K-12 schools in China has dropped from 121/1 in 1999 to less than 35/1 in 2002. More and more schools have provided access to network resources and the Internet than ever before, explained Lin Yang (as cited in Cheung, Lau & Li, 2004). Describing rapid growth of e-Learning in China, Yuanchun Shi (as cited in Cheung et al., 2004) mentioned that Cyber-education represents a brand new model of education in which instructional and management activities are carried out mainly based on e-Learning technologies. Cyber-education has been growing rapidly in China since the late 1990s, especially in the fields of higher education and basic education. Yuanchun Shi further explained that e-Learning is helping to ease the pressure on the increasing number of individuals pursuing education in China. By 2004, 67 universities in China had received cyber-education licenses and over 1.6 million students had enrolled in cyber-education programs involving 140 specialties from 10 academic disciplines. Besides, over 2 million students enrolled in

the Central TV University are moving over to cyber-education. According to Wei and Tong (as cited in Kember, 2007), the Radio and TV University in China graduated over 1.5 million students between 1982 and 1992.

Yuanchun Shi (as cited in Cheung et al., 2004) indicated that by the end of 2002, more than 26,000 schools had established campus networks, which is a small number out of a total of 670,000 schools in China. It is estimated that over 45,000 schools have been wired presently. According to Huang, Jiang and Zhang (as cited in Chen, 2006), there are about 111 million Internet users in China. And in 2004, there were "204 million children attending primary and secondary schools and over 20 million students enrolled in China's colleges and universities" (Spencer-Oatey, 2007, p. 3). Describing the large number of student population, Vice Premier of the Chinese State Council from 1993 to 2003 pointed out that "China has the largest educational system in the world... only by achieving the highest efficiency in the world can we really come to grips with all the problems associated with education in this vast country of ours" (Li 2004, p. 45). As ascribed by Landowe (2008, p. 1), "China is in a phase of industrial, scientific and commercial expansion which will make it the world's largest economy by the early years of the next century. In order to function efficiently in this role, it needs to bring large number of its people to high levels of proficiency in the use of English for a wide variety of function."

Summing up, it is appropriate to note what the current Chinese Minister of Education Zhou Ji has said "if (Chinese) Education is to serve social progress and economic development, the information technology (IT) for it must advance ahead of social progress" (as cited in Zhou 2006, p. 229). These words may provide an insight into huge educational challenge that China is facing at present and suggest the significant role that e-Learning can play.

India

Silicon India (Sep 2003) reported that Embalam, a village in Chennai, southern India with population of 7000, with 600 of every 1,000 families living below the poverty line. They speak no English and most have not studied beyond high school. But they man one of the 12 spokes, called Knowledge Centers of Information and Communication Technology (ICT) enabling rural development program. Each centre is inter-linked through wired and wireless communication devices. According to Silicon India (2003), the project has won two major international awards, the Motorola Gold Award 1999 and the Stockholm Challenge Award 2001 under the "Global Village" category. The project has been causing a major social shift. Recently, the Indian Government has proposed to launch an educational satellite to meet the learning needs of the masses. To support this effort, Indian Institute of Science, a major education and research institute, has launched a low cost computer called 'Simputer' with an indigenous operating system, affordable by the poor and the lower middle class. Several institutions, corporations and the World Bank have come forward to finance the program.

Similarly, with over a billion population, India has begun to use e-Learning to impart knowledge to her masses. An Information Technology project in southern India is empowering low-caste village women, helping them to net information on everything, from grain prices and cataract operations to the Iraq war, reports OneWorld.net (Silicon India, Sept 2003).

Referring to the proposed Indian education satellite "EDUSAT," the experts predicted that if EDUSAT succeeds, higher education could be within the reach of the common man, whether or not there is a school or college, whether or not a teacher is available, and whether or not there are books, explained Gajaraj Dhanarajan, the president of the Commonwealth of Learning. He also contends that EDUSAT could by 2015 help achieve India's target of total primary education (Silicon India, January 2004).

Chile

The Enlaces network links schools and other educational institutions by means of Chile's national computer network. Those schools which are part of the network are able to communicate with each other using E-mail and Bulletin boards with standard addresses on the Internet. According to World Bank (as cited in Potashnik, 1996), the Schools also saw a wide variety of improvements in student communication skills, creativity and self-learning. Interviews with students also found that students were learning to use computers faster than their teachers, and that relationships and communication between students were changing to become more collaborative.

Potashnik further described that according to a case study by the World Bank & UNESCO, in 1991 Chile launched a wide and ambitious educational reform program to address problems within both primary and secondary education. One of the main components and innovative forces of this reform movement was the establishment of a telecommunications network for underprivileged schools called Enlaces (Links). Begun in 1993, as an experimental pilot program, it has, today, managed to build a network among some 180 primary and 62 secondary schools. Potashnik further believes there is growing evidence that the computing and communications technology provided by Enlaces is contributing to change conventional attitudes about teaching and learning approaches in Chile's schools. Enlaces in Chile has been a great success proving the importance and vision and sustained commitment to education reforms by the Government. Countries planning to introduce computers into educational can learn a great deal from the Enlaces experience.

Australia and New Zealand

According to Bowles (2004, p. 28), "governments and public education authorities have commissioned many reports on the use of e-Learning in the vocational education and training (VET) sector in Australia" The apprenticeship and traineeship

sector have experienced huge growth since 1995 with 136,000 training contracts growing to 334,370 by March 2002. "In New South Wales, for example, the TAFE Commission has established a program called TAFE Connect, which in the late 2001 was rolling out 450 e-Learning modules for use in more than 400 VET (Vocational Education Training) courses in 54 fields of study" (Bowles, 2004, p. 29).

The Asia-Pacific region has led the global growth in Internet connections since 2000. Within this region, "Australia occupies a key position, with 59 percent of the adult population having access to the Internet in mid-2002" (Bowles, 2004, p. 11). Bowles further explained that distance education is a key target segment for e-Learning, and one in which Australian educational institutions have been extremely active. In 2002-03, the value of Australian education exports for students studying in Australia was A\$4.17 billion, while offshore and distance education were estimated to have earned A\$1 billion. Higher education in Australia is of an international standard and has more overseas students per capita than in Britain, the USA or Canada. Most of Australia's overseas students come from the Asian region.

A report about Information and Communication Technology (ICT) use in New Zealand Schools by the Information Technology Advisory Group (ITAG) indicated that 96 percent of primary and 99 percent of secondary schools are connected to the Internet, explained Anne Elliot (as cited in Kwock-Wing Lai, 2001).

Conclusion

e-Learning has done far more than make knowledge easy to access by a large number of people. Its effects on the training profession are nothing short of revolutionary and challenging, most of its basic tenets from the classic instructional model, to who "owns" learning in an organization, to its strategic role. Millions around the world can be empowered and the digital divide be closed, if policy makers embrace e-Learning even in its current form.

e-Learning in Corporations

As the Information Age advances, organizations are placing greater emphasis on attributes such as agility, adaptability and responsiveness. People are valued not only for their skills but also for their ability to embrace change and continuous learning. From an organization's point of view, developing agility is much more than managing existing knowledge. It is about creating learning processes that enable workforce to generate new knowledge and adapt old knowledge to new ends. "Speed is a key element in this process" (Bowles, 2004, p. 119). "e-Learning has progressed from simply delivering learning outcomes to encompassing first knowledge management and now human capital management" (Bowles, 2004, p. 51). e-Learning already has thousands of success stories, e-Learning – the combination of tools, processes, and content - is already helping companies in achieving its learning goals, emphasized Clark Aldrich (as cited in Piskurich, 2003).

In 1999 the corporate e-Learning market was just over \$1 billion, and was projected to grow to \$11.4 billion by 2003 (Ruttenbur, Spickler, & Lurie, 2000). During this same period American Society for Training and Development's (ASTD) 'Benchmarking Forum Organization,' which represent Fortune 500 companies and large public sector organizations, reported an increase in the use of e-Learning technologies from 13.8 % in 1999 to 34.66 % in 2003 (as cited in Sugrue & Kim, 2004). This rapid growth in the use of e-Learning technology in business can be attributed to several factors: (a) evolution of learning technology (b) an increased emphasis on knowledge management (c) emergence of a global economy and e-commerce and (d) shareholder pressures to increase revenue and reduce expenses, ascribed ASTD and the National Governors Association (as cited in Wagner, 2001).

Castells (1998) explained that Fortune 500 corporations employed more than twenty-four million people globally in 2004. Large multinational corporations combined

with their network of suppliers comprise heart of the world economy. These organizations increasingly look to e-Learning to deliver outcomes that go beyond training. "In the New Economy, employees' skills, knowledge and motivation have economic value because they enhance an organization's performance and the ability to adapt to change" (Bowles 2004, p. 51). Macpherson, Elliot, Harris and Homan (2004, p. 297) noted that "80% of Fortune 500 companies are using, or intending to use, e-Learning, and expect a significant ROI." Larger for-profit organizations, especially those with a multi-national workforce that have moved their orientation and new hire training online seem to have a very positive feedback. Some have established in-house e-Learning universities to deliver a large portion of their training. Well known companies such as "The Home Depot, GE, BMW of North America, The Hartford, and Black and Decker Corporation have very successfully implemented e-Learning and regard it as a change initiative that has the potential to impact business results" (Dam, 2004, p. ix).

For many organizations, the use of virtual classrooms has considerable cost advantages. "The logistics of organizing face-to-face classroom training can account for as much as 40 percent of corporate training budgets" (Koolen 2001, p. 5). Bowles (2004, p. 23) indicated that "Corporate e-Learning is the fastest-growing component of the global e-Learning market." Employees across the globe can access e-Learning from their desktops, saving companies the expense of staff travel, and classroom/facility costs. In addition, course materials can be easily updated and transmitted online, saving printing and distribution costs (Berge, Collins & Fitzsimmons, 2001). Another advantage frequently cited for the use of e-Learning in business is the short-time it takes to train employees, compared with traditional classroom instruction (Hoover, 2005).

According to European Commission report 2000 (as cited in Nagy, 2005), the worldwide e-Learning industry is estimated to be worth over \$48 billion, on conservative estimates. Developments in internet and multimedia technologies are the basic enabler of

e-Learning, with consulting, content, technologies, services and support being identified as five key sectors of the e-Learning industry (Nagy 2005). Increasingly, companies are shifting their training expenditure from classroom-based training to online approaches. The report of the American Society for Training and Development, *2004 State of the Industry* (as cited in Sugrue & Kim, 2004), noted increased use of learning technologies for all their benchmarked sectors in 2003, with Fortune 500 companies and large public organizations using e-Learning to deliver 35 percent of their training.

While explaining the implications for e-Learning, Bowles (2004, p. 62) indicated that "increasingly, organizations see individuals as a capital resource. The New Economy has increased the emphasis on organizational agility and knowledge, driven by the need to develop individual capabilities and harness them, individually or collectively, to achieve competitive advantage."

Crowley (2002) identified the following key drivers influencing businesses to consider e-Learning technologies;

- **Cost:** e-Learning can reduce costs of travel and lost productivity associated with face-to-face training, and can also reduce costs of content development because content can be reused and repurposed.
- **Scalability:** Networking or Internet capabilities permit content to be scaled up to large numbers of learners, with multiple presentations of learning material to cater for differences between learners and variations in access to computers and networks.
- **Modularity:** The creation of e-Learning content in short 'chunks' increases potential for flexible access.
- **Timeliness:** e-Learning technologies can be used to enable learners to gain access on an as-needed, where-needed basis and deliver immediate knowledge required for performance-improvement needs.

- **Relevance:** Access methods and content can be customized and adapted to the learner's needs and context.
- **Accountability:** Evaluation can be enhanced by electronic mechanisms for providing feedback on the performance of learners, managers and e-Learning developers.

Rosenberg (2001), argued that e-Learning can take anywhere from 25 to 60 percent less time to convey the same amount of instruction or information as in a classroom. Learners learn more using computer-based instruction than they do with conventional ways of teaching, as measured by higher post-treatment test scores. Studies from Tobias & Fletcher (2000), Kulik (1994), Willett, Yamashita & Anderson (1983) all confirm that learners learn more using computer-based instruction than they do through traditional classroom methods.

In addition to lower delivery cost, e-Learning is more cost effective because there is a reduction in training time known as learning compression. This refers to cost of staff attending the training course rather than the direct delivery costs in terms of trainers, course materials, travel and accommodation. e-Learning can deliver benefits by reducing the time it takes to train people. According to Brandon Hall (2000) these factors can add up to an average compression (savings of learning time) of 35 to 45 percent when a course is taken out of the classroom and delivered as e-Learning.

Few Successful and Early Adopters

e-Learning can be more cost effective to deliver than classroom based training, especially for larger organizations (Shepherd, 2003). As a step up, many global organizations and universities have begun to use Learning Management Systems (LMS) to automate and manage their e-Learning programs. LMS allows teachers and administrators to track participant attendance, time on each task by participant and the progress. As described by Bowles (2004, p. 49), "in the corporate arena, e-Learning

implementation is now progressing to a level marked by rapid deployment and a more mature, reflective understanding of what it requires and what it has to offer." This transition marks a second wave of e-Learning implementation that is just beginning.

In the decade 1988 to 1998, the number of corporate universities quadrupled. Harley-Davidson, General Electric, IBM, Anheuser-Busch, Dell Computer, Southwest Airlines, First Union National Bank, K-Mart and Unisys are just a few of the approximately 1600 corporate universities in the United States (Gordon, 1999). Today, companies with corporate universities are now adding Virtual Universities.

As indicated earlier in this chapter, e-Learning has been an American phenomenon and several U.S. based global corporations and on-line only universities were the early adopters of e-Learning. Though the list of such U.S. corporations may be exhaustive, efforts are made here to share a few success stories from diverse industries and also include organizations from outside the U.S.

CISCO Systems

To create high achievers – not only for the company, but also for the resellers – "Cisco created in the year 2000 an e-Learning portal for 400 worldwide reseller partners and another for 4000 systems engineers. The users included groups that ensured not only the sale of Cisco products but also the deployment of those products" (Kelly & Nanjiani (2005, pp. 8-9). The more learners used the e-Learning portal, they reported higher satisfaction with the tools. The use resulted in Sales & Marketing Management magazine rating the Cisco sales team as the "best-trained sales force" in the United States across all industries in 2002. "In the fourth quarter of fiscal year 2002 alone, Cisco achieved a 40 percent cost savings through increased use of e-Learning over in-class training" (Kelly & Nanjiani (2005, p. 9).

According to Gareiss (2001), Cisco Systems is an example of a company that has done a good job of implementing global e-Learning. Chapman of CISCO Systems (as

cited in Kelly & Nanjiani, 2005, p. 9) explained that "about five years ago, the company was doing 80% of its training in instructor-led classes and 20% in a technology-based format. Now that's flipped, 80% of the company's training is via the Internet and 20% is in the classroom." The return on investment (ROI) analysis conducted on the e-Learning portal for resellers, called Partner E-Learning Connection (PEC), has validated the business benefits of the portal. "For each dollar spent on the PEC in fiscal year 2003, the e-Learning portal yielded \$16 of value for Cisco" (Kelly & Nanjiani (2005, p. 9).

For example, the Cisco Networking Academies are globally deployed in public schools, colleges, and universities. Within the academy are more than 300,000 students in more than 11,000 schools in more than 150 countries using the same online content, in 9 languages, for learning and testing. More than 40,000 tests are taken every day. Scores and trends are analyzed, and then flaws in content, instruction, or testing are identified and fixed. "Continual improvement based on results and hard data on a global scale, and information that is not possible to gather in traditional classroom settings, make this system of learning more accountable, hence more effective" (Kelly & Nanjiani 2005, p. 12).

Kelly and Nanjiani (2005, p. 34) also indicated that "e-Learning has offered Cisco quantifiable productivity benefits worth \$142 million in one study." While explaining the advantages Cisco has achieved through e-Learning Kelly & Nanjiani further described that in 2000, Cisco needed recertification on the International Organization for Standards (ISO 9001). This task meant preparing several thousand individuals in customer service, manufacturing, and engineering departments on ISO 9001 Standards. Transforming the ISO recertification training program to an e-Learning platform took a little more than three weeks. Voice Video and data presentations were prepared along with accompanying tests and the entire training ended up costing Cisco less than \$17,000, because of e-Learning, compared to \$1.4 million budgeted for the traditional method of delivery of this

training. Cisco's vice-president of Worldwide Training has suggested that classrooms solve training problems, while e-Learning solves business problems (Gill, 2000).

PricewaterhouseCoopers (PwC)

PricewaterhouseCoopers (PwC) stated that 70 percent of the world's one thousand top-tier companies cite lack of trained employees as their number one barrier to sustaining growth. "Despite its bumpy ride in recent years, online learning still offers the most attractive, cost-effective solutions to this gap" (Shultz & Fogarty, 2002, p. 11). They further explained that initially, IT training accounted for 85 percent of all corporate e-Learning, but a shift to soft skills training has already begun.

Prior to Price Waterhouse's merger with Coopers, the company created a multimedia program called "Terminal RISK" to train its professional audit staff. Terminal RISK is a prerequisite for further training, and more than seven thousand employees in fifty countries have taken advantage of it. "Terminal RISK reduced the time needed for learners to attain the same level of knowledge by 50 percent. The cost per learner for the technology based training was \$106 as opposed to \$760 per learner, a saving of 87 percent" (Shultz & Fogarty, 2002, p. 67). Similarly, "at Intel Corporation, in one comparison of training time saved, the group determined that embedded e-Learning cut the work time-missed for training by 83% (two hours missed from work, as opposed to twelve)" (Shultz & Fogarty, 2002, p. 67).

PWC now offers convenient, flexible and powerful e-Learning self study courses not only to its employees spread worldwide for free but also makes them available to a variety of interested institutions at a price. These self-study courses range from information on Merger and Acquisition for regulated investment companies to introduction to Venture Capital Funds. The e-Learning self-studies are designed with different learning needs and budgets in mind.

International Business Machines (IBM) Corporation

IBM is a global computer software, hardware, and services company with more than 400,000 employees. Its customers can access more than 14,000 IBM products and solutions online. It has received more patents than any other company in the U.S. IBM has a large and diverse workforce, including professionals and skilled workers across the country and around the world. They invest substantially in human capital, with a sizable portion of their training budget allocated for e-Learning. "IBM spend more than \$1 billion annually training its employees" (Tai, 2008, p. 3). "At IBM e-Learning is applied in a variety of areas including product sales, technical certification, professional competence, business tools, technical skills, new sales people (sales training), new hires, leadership and legal-compliance training" (Tai, 2008, p. 3).

e-Learning is a new way of learning in IBM that is closely tied to the company's e-business strategy. e-Learning is a complement to IBM's traditional classroom training offerings. It is non-classroom based learning using technology and specifically the capabilities of the Internet. This system gives employees the opportunity to deal with other IBM employees all over the globe. The employee can control his or her own training based on an individual's time and needs rather than the availability of classroom training. This is especially helpful as employees are becoming mobile. They are able to access training wherever there is a computer and an internet connection. The result is that IBM employees have twenty-four hours a day access to thousands of e-Learning offerings (Hornocker, 2005). IBM is an early adopter of e-Learning for training its global workforce. IBM, like other corporations, has its own unique e-Learning solutions. Strategic vision, clear business objectives, well defined learning organization, strong leadership, corporate support, prudent use of e-Learning, quality of content, ease of access, interoperability, accountability of learners and instructors, and a well defined

measurement system all matter (Tai 2008). Shultz and Fogarty (2002, p. 62) explained in a case study that;

"IBM faced with an enormous training challenge to provide thousands of managers scattered all over the globe with consistent, compelling learning in a cost-effective manner. Since most IBM managers were already working ten-to-twelve-hour days, the challenge was to provide effective learning for its managers that were practical, cost-effective, and engaging while avoiding taking them off-site for additional training."

In 1999, IBM adopted 'Basic Blue' for Managers, an innovative new management training program. IBM estimated that the cost for training each manager via Basic Blue was \$10.9 million for 4,000 managers (\$2,725 each), a significantly lower cost than traditional classroom training. IBM data indicate that e-Learning saved the company \$16 million in 2000 alone on Manager Training. To date, more than 4,000 IBM managers have completed the training and given it rave reviews. "Not only has the program reportedly saved IBM a total of over \$200 million, \$80 million on transportation alone, it actually seems to work" (Shultz & Fogarty, 2002, p. 63).

In the article *IBM brings its Smarter Planet Agenda to Africa*, Syed of IBM (Syed, Smarter Planet), explains that IBM is assisting several governments around the world in e-governance and educating their masses through e-Learning. "IBM is helping us with our strategic approach to investments in ICT in this country," mentioned Dr. Bitange Ndemo, permanent Secretary, Kenya Ministry of Information and Communication (as cited in (Syed, Smarter Planet). IBM has worked and helped governments on important learning and development projects in Kenya, Tanzania, Nigeria, Egypt and South Africa, as part of IBM's "Smarter Planet" capabilities, a corporate social responsibility initiative.

Charles Schwab Corporation

Anytime training, or learn-as you-go training, is a huge time saver for Charles Schwab and Company, according to Curtis Towmbly, senior manager of Technology for Retain Client Services Training. "There used to be a time when you could pull everybody

off the phones and put them in a class for a day, but with increased business demands, classroom training no longer works" (Shultz & Fogarty, 2002, p. 66).

e-Learning proponents insist that it's not just about saving on travel costs: it's about keeping employees, customers, vendors – the entire enterprise – up to speed on the latest products and services. "Classroom training, as Schwab, IBM, and other top organizations have learned, just isn't able to cope with today's accelerating demands" (Shultz & Fogarty, 2002, p. 68).

The purpose of Charles Schwab, world's leading online brokerage is to help everyone be financially fit. Charles Schwab develops and offers all its employees and customers eLearning programs that are responsive, innovative and value-added. Charles Schwab launched a major investor education initiative in late 1999 consisting 600 free seminars, as part of their commitment to help investors plan and manage their portfolios. These e-Learning seminars were considered unique and well received.

Dow Chemicals

For example, Dow Chemical reduced average spending of \$95 per learner / per course on classroom training, to only \$11 per learner / per course with e-Learning, giving rise to an annual saving of \$34 million (Shepherd, 2003). Shepherd further explained that Dow Chemical announced the result of an independent audit of their e-Learning program by one of the big 5 accounting firms. Annual savings of \$34 million were made possible through reductions in the cost of course development using their LCMS - TopClass Publisher, and through reduced delivery costs compared with traditional classroom training. And these savings do not include the travel expenses saved through online deployment.

Dow's need was to provide regulatory compliance training to a workforce of more than 60,000 employees and contractors, based in 32 countries around the world, and in 6 languages. Although some of the content has been obtained off-the-shelf from publishers

like NETg, the majority has had to be created from scratch. The system even makes it possible to personalize the learning objects to meet individual requirements with 5000 course completions a week (Shepherd, 2003).

Similarly, Dow manufactures over 5000 products that are sold approximately in 160 countries. Dow's diversified portfolio of specialty chemicals, advanced materials, agro science and plastics businesses delivers technology-based products and solutions to customers in the electronics, water, energy coatings and agriculture sectors. To provide a globally uniform marketing training, Dow shifted its in-person training to e-Learning. Dow partnered with 'Torrance Learning' in developing and delivering this training worldwide via e-Learning and the feedback from learners has been quite positive so far," commented Gary O'Neil, Head of Dow Commercial Excellence Team (as cited in Shepherd, 2003).

Ernst & Young

Ernst & Young cut training costs by 35 percent while improving consistency and scalability. They condensed about 2,900 hours of classroom training into 700 hours of e-Learning, 200 hours of distance learning and 500 hours of classroom instruction; a cut of 52 percent (Hall, 2000). Ernst & Young cited its use of e-Learning to reach 80,000 workers worldwide (Sbarcea, 2000). Ernst & Young Center for Business Knowledge view e-Learning from a knowledge management context where strategic development is assisted by asynchronous discussion groups and online communities of practice, plus personalization and profiling technologies (Sbarcea, 2000).

McDonald's

McDonald's Hamburger University is a 130,000-square-foot training facility located in western suburb of Chicago. This corporate university was designed to instruct personnel employed by McDonald's in various aspects of restaurant management. More than 80,000 restaurant managers, mid-managers and owner/operators have graduated

from this facility. Today, Hamburger University is situated on an 80 acres campus with 19 full-time international resident instructors to teach students from more than 119 countries.

McDonald started a virtual university "Hamburger U" in 2000 to enhance its "bricks-and-mortar" campus. The virtual university has been gaining increased acceptance and more and more in-class trainings are going virtual . Virtualization of training programs are seen as cost saving while improving the effectiveness and serves as a continuous learning tool to employees, worldwide. "We view it (e-Learning) as critical to maintaining our competitive edge," mentioned Pat Crull, Vice-President of Worldwide Learning and Development at McDonald's (as cited in Gotschall, 2001). In 2001, McDonald's rolled out an e-Learning program for the rank and file employee in North America, South America, Europe, and the Asia Pacific. Conducted in four languages, English, Spanish, French, and Chinese, topics include hospitality, food safety and cleanliness, and orientation to McDonald's (Gotschall, 2001).

BT Group (previously British Telecom)

With approximately 100,000 employees, BT is one of Europe's leading providers of telecommunication services. In the UK, BT serves over 20 million business and residential customers. BT Academy is a small central training group which forms a virtual team with learning professionals from BT's various divisions. Management wanted all programs and processes, where appropriate, to be "e-based" throughout the company. In less than one year BT doubled the usage of its online courses and has made the switch from primarily instructor-led to web-only training. Overall training costs have declined by \$22 million, while maintaining their overall effectiveness and alignment with strategic priorities. Unit cost per course has dropped 70% in one year. (O'Leonard, 2004).

For each of the top 10 courses, replacing the instructor-led course with an e-Learning course saved an average of \$311 per learner. That is not even counting the cost

of savings in travel, expenses, and greater time spent in the office that result from switching from classroom to e-Learning. Adding these expenses, estimated at \$183 per learner, makes total savings per learner approximately \$497 a year. Usage and cost savings are meaningless if the training provided is not effective. BT's evaluation data indicated that the e-Learning content has indeed been effective in transferring knowledge and impacting the job skills (O'Leonard, 2004).

Explaining that e-Learning is faster, Loomis and Taylor (ed. 2002) described that British Telecom delivered 3-business training courses to 23,000 employees in three months, at a cost of £5.9 million, compared to £17.8 million and a five-year time span for classroom training.

University of Phoenix

With a student body in North America second only to the State University of New York, University of Phoenix has a current enrollment of over 420,700 undergraduate students and 78,000 graduate students, or 224,880 full-time equivalent students. According to Biz Journals, management of the university expects that the enrollment to grow between 12 percent and 13 percent over the prior year (Apollo Group expects campus, online enrollment growth, 2004). The university confers degrees in over 100 degree programs at the associate, bachelor's, master's and doctoral levels and has more than 200 campuses and learning centers worldwide including 40 states, the District of Columbia, Puerto Rico, Canada, Mexico, Chile, and the Netherlands. While the school specializes in online programs, the campuses offer additional programs and services.

According to University of Phoenix (universityofphoenix.com), it is a for-profit institution of higher learning and was regionally accredited in 1978 by The Higher Learning Commission as a member of the North Central Association of Colleges and Schools. It also has accreditation for a variety of its specialty degree programs. It is a wholly owned subsidiary of Apollo Group Inc. which is publicly traded on the NASDAQ

stock exchange. The university's faculty consists of approximately 1,500 core faculty and over 20,000 associate (part-time or adjunct) faculty members who all hold master's or doctorate degrees.

Wilson (Chronicle.com) in his online article for Chronicle explains that for-profit colleges maintain much of the same mission today, but the market has seen sweeping changes. Of the roughly 3,000 for-profit institutions, 40 percent are now owned by one of 13 large publicly traded companies. And whereas only 10 percent of the institutions offered associate, bachelor's, or professional degrees in 1990, half do so today. Further, more than 90 percent of students at for-profit institutions are now enrolled in degree programs. Ruth, Sammons and Poulin in their online article "E-Learning at a crossroads - What price quality" explained that courses at a distance already reach close to 20 percent of college students in the United States, and growth rates are significantly higher than those of traditionally taught programs (EDUCAUSE Quarterly). In the article, *Profits of Education: my Finance my Money*, the author argued that over the last 30 years the biggest inflation has been seen in the education sector even outpacing healthcare costs. With this cost of rise in education, the demand for learning that can be directly related to quick employment opportunities is gaining importance.

Future of e-Learning From a 2007 Perspective

John Chamber, CEO, Cisco Systems (as cited in Morrison, 2003, p. 357) expressed that "I think we're at the very early stages of really understanding the power e-Learning. It's no longer a question of whether it will be effective or how much it can increase productivity; it's just a question of degree." With continuous technological advances e-Learning is increasingly grown over the last two decades to be a global phenomenon.

"Simulation is the ultimate goal of e-Learning: to create an environment where learners can practice, fail, succeed and learn in a rich and realistic setting" expressed

Elliott Masie, Head of the Masie Center (as cited in Morrison, 2003, p. 359). The U.S. Army spent over \$7 million and three years developing a video game called "America's Army" ...launched on 4th of July 2002 and within 36 hours several hundred thousand copies have been downloaded from 110 servers. The aim of the game is to teach potential recruits what it really means to be a soldier from training camp through to field missions, indicated Morrison (2003, p. 359).

Morrison (2003, p. 361) also explained that "just-in-time learning means mobile learning or, as it's called, m-Learning. m-Learning changes the nature of e-Learning. Instruction delivered on PDA (Personal Digital Assistant) for service personnel working at customers' sites blurs the line between working and learning. When a customer buys a system, instead of giving them a print based manual, give them a PDA with the manual pre-loaded and instructions on how to update it from the Internet." Morrison further expressed that give students, employees around the world a PDA and every day beam Today's Lesson into it without a physical connection... No single learning channel is right for all styles of content but wireless devices have an important role to play in bringing learning to the learner. "The action is not always at a wired desktop, and it surely is not in a classroom or auditorium. From sales reps in the field through medical personnel on a hospital floor to production workers in a high-tech factory, many people who are essential to organizational success do not work at a desk" (Gayeski, 2002, p. viii). You've got to beam training, communication, advice, and documentation on an as needed basis.

Bowman (as cited in White & Baker, 2003) explained that with the huge growth in technology over the last decade, many online classes now also include assignments that involve working with technology. Examples of these would be blogs, wikis, podcasts, and audio or webcam presentations. Some classes have live chat sessions with classmates and the professor. These chat sessions involve either typing or talking and may be

mandatory or voluntary. Bowman further expressed that all of these technology tools serve to make your learning experience richer. Visual learners will get more out of the content by watching a video or viewing a PowerPoint presentation, auditory learners enjoy recording of lectures.

"Permeation is a vision of e-Learning in the enterprise in which the learning value chain simultaneously delivers many different forms of learning at many different levels of granularity" (Morrison, 2003, p. 363). "e-Learning technologies make learning an integral part of every business process. Doing requires learning and learning requires doing; they are different facets of the same activity. For some people in some enterprises, this is almost a reality. The challenge is to make it universal " (Morrison, 2003, p. 363).

Speaking of universities, "the combined public and higher education e-Learning market will explode and could easily equal or surpass the corporate e-Learning market. And as the ways kids and college students learning needs change with the times, so will their expectations for how they will learn on the job" (Rosenberg 2001, p. 309). e-Learning will become an increasingly important tool for servicing customers in cyberspace and e-Learning, like e-Commerce, will soon become a commonplace.

Leading the way in sharing and disseminating knowledge and faculty resources, MIT OCW (Massachusetts Institute of Technology Open Course Ware) positioned itself uniquely in the global education arena. Currently, MIT OCW offers over 2000 courses covering over 42 departments including Aeronautics, Foreign Languages, Physics and History, for free; for faculty, students, and self-learners around the world. Though most of these courses are available in English, several of them are also translated to Spanish, Portuguese, Persian, Turkish, Thai, Simplified Chinese and Traditional Chinese. Similar move is also seen with other leading institutions (www.ocw.mit.edu).

According to Roche, Timothy, Berryman and Ann (2001), since Towns County in Georgia adopted e-Learning in 1998, its middle-schoolers' scores on the Iowa Test of

Basic Skills have risen nine percentile points. Attendance has improved, and disciplinary referrals to the principal's office are down by more than half. State's assessments of their writing show Towns' eighth-graders scoring 16 points higher than the Georgia average. Towns County is one of Georgia's poorest and most isolated localities, where the average annual wage is \$19,656, and 38% of school children qualify for a subsidized lunch. Yet the county also boasts one of the best-wired middle schools in the U.S. (Roche et al., 2001).

In another article titled *Towns Middle School: Wired for the Future*, Times Magazine described (Roche et al., 2001) that Silvery NetSchools laptop computer that can be dropped from 5 ft. without breaking, infrared sensors in classroom ceilings connecting the laptops to the school's server and the Internet, teachers of everything from science to American history incorporating e-Learning into lesson plans, while away from school, kids plug their laptops into phone lines to question teachers or online experts about homework, or check cafeteria menus. When students are out sick, their teachers e-mail their missed assignments. The program has inspired parents as well. They volunteer more at school than before, and adult-education enrollment has increased with parents borrowing their kids' computers for assignments. Though it appear that we are still scratching the surface of the future potential of e-Learning, success stories such as this confirms that we are in the right direction while the significance of e-Learning looks more promising than ever.

The emergence of mobile, wireless and satellite technologies are already impacting e-Learning. "In a field marked by such rapid evolution, we cannot assume that the Web as we know it today will remain the primary conduit for Internet-based learning" (Bowles, 2004, p. 12). Bowles further indicated that technologies such as telephone, television, the internet and computing devices are increasingly converging. Given the

speed of this convergence and the increase in the number of users, even the most conservative forecasters predict that massive changes will occur over the next decade.

In summary, what is certain is that learning, whatever we call it, is in a very long relationship with technology. We will see steady increases in the use of technology for development, delivery, management, and marketing of learning. We will see new models of what a learning experience is like, when linked with the power of technology. We will see technology and learning integrated with daily business tasks and woven into our lives, predicted Elliott Masie, President of The MASIE Center, an international think tank dedicated to learning and technology (as cited in Piskurich, 2003).

e-Learning is here to stay

"The horse is here to stay, but the automobile is only a novelty- a fad, Marshall Ferdinand Foch, 1911, French military strategist" (as cited in Oakes, 2003, p. 64). As with automobile, personal computer, all other technological advances in the world like voice response systems, Automatic Teller Machines (ATM) and other electronic self-service tools, e-Learning is here to stay. But it is hard to say at this stage, to what extent the new technologies will make sure those e-Learning tools are engaging and effective. e-Learning is still evolving and the classrooms may not yet be, and may never be, a thing of the past - no single approach to learning can meet the needs of all individuals. But there is little doubt that as technology improves, e-Learning will continue to transform the learning landscape of the world.

In summary, it is apt to indicate what Marchese (2000) said, the beautiful thing is that today's technologies, with their incredible abilities to connect, search, engage, and individualize, to prompt performance and assess understanding, are - in the hands of a teacher with the right ambitions - terrific enablers for just that kind of learning. With e-business being a evolutionary process (Ticoll, Lowy & Kalakota, 1998; Earl, 2000), and with e-Learning, a rapid, effective and less expensive form of learning (Schutte, 1996;

Magalhaes & Schiel, 1997; Karon, 2000), being a response to these new-economy evolutionary processes, it is imperative to look at the future of e-Learning. We are already in an e-World. We have e-commerce, e-banking, e-loans, e-mails, e-zines, and so on, ad infinitum. Now, of course, we have e-Learning, described Darin Hartley (as cited in Piskurich, 2003).

Previously, corporate value and value creation were defined primarily through physical and financial assets. Today's new economy puts a premium on intellectual capital. Corporate executives are beginning to understand that enhancing employee skills is the key to creating a sustainable competitive advantage. In their quest to remain competitive, corporations are exploiting advances in e-Learning technology to train employees more rapidly and more effectively, for less.

CHAPTER 3: RESEARCH METHODOLOGY

The literature review has thus far helped us understand global e-Learning as a phenomenon, identified its evolution, described issues attendant in 2006-2007, and the trends and technological advances that can be anticipated in the future (2017). This chapter describes the research approach, applicability of qualitative research methodology, articulates the phenomenological research approach, data gathering procedures, data analysis, and issues associated with participant confidentiality and the research trustworthiness.

Research Approach

The research employed a qualitative phenomenological inquiry into participant's experienced understanding of the evolution of e-Learning and what they believe to be its emerging trends for the foreseeable future. This method of research is the most appropriate for an explanatory study as ascribed by Russell and Stone (2002). These participants are the primary units of analysis (Bless, Higson & Kagee, 2000), with their 'informed consent' (Bailey, 1996, p. 11; Arksey & Knight, 1999; Street, 1998). Wimpenny and Gass (2000) indicated that the principal method of data collection when using a phenomenology method is the interview. "A phenomenological study describes the meaning of the lived experiences of several individuals about a concept or the phenomenon" (Creswell, 1998, p. 51).

Rationale for Qualitative Methodology

There were three rationale for selecting qualitative research methodology. The first rationale was that e-Learning is a recent phenomena which is going through changes and there is a gap in the literature on this topic. e-Learning is still new and insufficiently explored. Exploration and development of a detailed view of the topic (Creswell, 1998)

dictated the selection of qualitative method. The wide-angle lenses or the distant panoramic shot will not suffice to present answers to the problem and the close-up view does not exist. Qualitative research approach facilitates in-depth holistic exploration of the subject under study (Guba & Lincoln, 1989). Qualitative inquiry is for the researcher who is willing to engage in the complex, time-consuming process of data analysis – the ambitious task of sorting through large amounts of data and reducing them to a few themes or categories (Creswell, 1998).

The second rationale was to emphasize the "researcher's role as an active learner who can tell the story from the participants' view rather than as an 'expert' who passes judgment on participants" (Creswell 1998, p. 18). The third reason for conducting qualitative research was the ability to work in a natural setting (Creswell, 1998; Denzin & Lincoln, 1994; Fraenkel & Wallen, 2003; Moustakes, 1994; Natanson, 1973).

Qualitative research is an umbrella concept covering several forms of inquiry that help to explain the meaning of social phenomena with as minimal disruption of the natural setting as possible, and in which the focus of the study is on interpretation and meaning (Denzin & Lincoln, 1994; Merriam, 1998). Creswell (1998), explained that one undertakes qualitative research in a natural setting where the researcher is an instrument of data collection who gathers words or pictures, analyzes them inductively, focuses on the meaning of participants, and describes a process that is expressive and persuasive in language.

Rationale for Phenomenological Approach

Husserl (as cited in Zahavi, 2003) named his philosophical method 'phenomenology', "the science of pure phenomena" (Eagleton, 1983, p.55). The aim of phenomenology is the return to the concrete, captured by the slogan 'Back to the things themselves!' (Eagleton, 1983, p. 56; Kruger, 1988, p. 28; Moustakas, 1994, p. 26).

Phenomenology, according to Merleau-Ponty (2002) is based on the assumption that one

can only describe the world as experienced by the studied individual and is neither subjective nor an objective description. Similarly, Marshall and Rossman (1999) defined phenomenology as the study of lived experiences and the ways we understand those experiences to develop a worldview. When using the phenomenology method, a researcher is required to approach the data without prejudice and it is therefore advisable not to use literature as a source of data (Baker, Wuest & Stern, 1992).

At the root of phenomenology, “the intent is to understand the phenomena in their own terms - to provide a description of human experience as it is experienced by the person herself” (Bentz & Shapiro, 1998, p. 96) and allowing the essence to emerge (Cameron, Schaffer & Hyeoun, 2001). “Phenomenological inquiry uses a naturalistic approach that seeks to understand phenomena in context specific settings” (Hoepfl, 1997, p 4).

The reason for selecting phenomenological approach was to explore the topic from the participants' context and give "voice" to their phenomenon. The nature of this study fits well with the rationale of phenomenological approach. Zinker (1978) explained that the term phenomenological implies a process, which emphasizes the unique own experiences of research participants. The here and now dimensions of those personal experiences gives phenomena existential immediacy. Bentz and Shapiro (1998) cautioned that the researcher must allow the data to emerge: doing phenomenology means capturing rich descriptions of phenomena and their settings.

Data Sources

According to Hycner (1999, p. 156) “the phenomenon dictates the method (not vice-versa) including even the type of participants.” Researcher chose purposive sampling, considered by Welman and Kruger (1999) as the most important kind of non-probability sampling, to identify the primary participants. Researcher selected the sample based on the judgment and the purpose of the research (Babbie, 1995; Greig & Taylor,

1999; Schwandt, 1997), looking for those who “have had experiences relating to the phenomenon to be researched” (Kruger, 1988, p. 150).

According to Creswell (1994, p 148), "the idea of qualitative research is to purposefully select informants that will best answer the research question." Creswell (1998, pp. 65 & 113) recommends “long interviews with up to 10 people” for a phenomenological study. Along these lines, a list of participants were compiled from a number of published resources, corporate and university websites, based on the subject matter expertise, and their open indications to be contacted for further research or information on this topic, were invited to participate in the interview.

Data Collection

According to Creswell (1998) and Polkinghorne (1989), in phenomenological study, the data collection method involves primarily interviewing, although other data collection procedures were used. The data for this study was collected through interviews and the efforts were made to have participation from various parts of the world to gain from their regional and global expertise. Denscombe (1998) advocated interview as a versatile method of collecting data in any qualitative study as emotions, experiences and feelings and sensitive issues are best collected through the interviews. The individuals who were invited to participate in the research study were geographically spread across the United States, Europe, Africa and Asia. Based on the subject matter expertise, and their open indications to be contacted for further research, invitations to participate in the research study were sent to 28 individuals. Eight of those individuals have expressed their consent to participate while two individuals previously not contacted by the researcher were referred by these individuals. Invitations were then sent to those two individuals who have communicated their consent to participate. Though a total of ten participants have indicated their consent to participate only nine individuals have participated in the study.

In view of geographically scattered representation of participants, living in different time zones, the data was collected through detailed interviews. Approval from the Human Research Committee at the Colorado State University was obtained prior to soliciting participation. Consent was solicited from participants after the research commitment was explained and the list of interview questions provided. The structured interviews using open-ended and non-directive and identical questions were sent to all the participants which is in line with what Babbie (1983) has described that the rationale here is to offer each subject approximately the same stimulus so that responses to the questions, ideally, may be comparable. This type of interview is particularly useful when participants cannot be observed directly. Here participants can provide historical information about the phenomena and the interview method allows the researcher control over the line of questioning (Creswell, 2003). Each participant was given a pseudonym that was region, education, culture and gender appropriate which served as a link to their responses to the interview questions.

Considering the nature of the research, the purposive sampling method was selected as most appropriate. This is also in line with the argument of Miles and Huberman (1994, p. 27) who stated that, “qualitative samples tend to be purposive rather than random.” Participants in this study were subject matter experts in the field of e-Learning. As Patton (2002) explained, purposeful sampling is a characteristic of qualitative inquiry. According to Stewart and Shamdasani (1990), expert groups have been widely adopted as a researcher tool.

Interview Process

As indicated in the previous section, to investigate the e-Learning phenomenon, the researcher invited a convenient sample of participants from around the globe. Interview questions were emailed to those individuals who have communicated their consented to participate in this research study. Intended participants were adults and

considered Subject Matter Experts in the field of e-Learning; and their consent to participate were obtained prior to the data collection with necessary disclosures explained by the researchers. A copy of the Letter (email) of "Invitation to Participate in the Research Study" is attached as an Appendix. The email invitation has provided participants with detailed background of the study, purpose of the research along with contact information of the researchers.

Follow up emails were sent to some of the participants reminding them of their consent to participate and requesting them to respond to the Interview Questions, if they continued to choose to participate. Considering the distance, different time zones, busy work schedules, travels within and outside of their countries, and the advantage of asynchronous nature of responding at their convenience, they chose to participate in this research study via email. Those who participated in the research responded to interview questions via email. The email method of response allowed the participants to respond at their own convenience and comfort, elaborating on the open-ended points of interest (Denscombe, 1998), and focus on the depth of their knowledge of the subject matter.

The interview process was guided by structured and open ended interview questions:

1. From your perspective, what is the current utilization of e-Learning in your organization?
2. What do you perceive to be the advantages of instituting e-Learning in your organization?
3. From your perspective, what have been the critical technical innovations which support effective e-Learning?
4. What would you perceive are the strengths and weaknesses of e-Learning as a mechanism to support or replace traditional education models?

5. From your perspective, what innovation in the next 10 years could advance the effectiveness and efficiency of e-Learning?
6. From your perspective, what evolutions in e-Learning would influence your organization to invest in e-Learning as a means to improve the competitiveness of your organization?

These interview questions were designed to help the participants answer them based on the depth of their knowledge in the subject matter. The same questions and in the same sequence were asked of all participants. Participants were able to see all the questions at the same time but had the flexibility to answer in the order of their preference and depth. Participants have also consented to provide additional time for follow up interviews and questions via phone, email, chat or video modes. No follow up interviews were thought necessary by the researcher or the participants.

Data Analysis

This qualitative phenomenological study explored the participant's experience of the understanding of the evolution of e-Learning and what they believe to be its emerging trends for the foreseeable future. Similarly, Patton (2002, p. 107) explained that the "phenomenology is focused on descriptions of what people experience and how it is that they experience what they experience."

Data analysis was conducted using Willig's (2001) four-stage phenomenological analysis model using Interpretative Phenomenological Analysis (IPA). IPA argues that the researcher's interpretations are required in order to make sense of the participants experience through a process of interpretive analysis (Smith, 2008).

1. The interview transcripts were analyzed by reading, re-reading, writing unfocused memo notes of any initial thoughts and observations in the margin and highlighting descriptive statements.

2. In the second stage of analysis, each section of the text was labeled by drawing meaning from the interview transcripts and based on the themes that were emerging from the data. As advocated by Glaser (1978), participants' own words were used while naming categories, also known as In Vivo Coding. This was also similar to Strauss and Corbin's (1998) model of conceptualizing, or giving a conceptual name to categories, as the first step in theorizing the data.
3. The third step involved listing all the categories and looked for common themes and relationships among them. With similar meanings and/ or references, natural clusters were formed and the researcher moved back and forth with the data and the categories, to stay with the original data. The themes captured some recurring patterns cutting across the data.
4. The fourth stage was to identify themes / clusters and construct a summary of the structured themes, along with quotations from the transcript that illustrate each theme.

According to Willig (2008, p. 48), the "focus of phenomenological studies is not to solve problems but rather to gain an understanding of how people experience the problem." Willig (2001) goes on to state that the objective of qualitative research is to describe events and experiences, possibly provide explanations, but never to predict. Accordingly, the themes capture thick description of participant's experiences of the phenomena (Willig, 2003). The prerequisite for this process was that concepts which are closely linked in meaning be formed into categories; categories which have similar meanings be brought together into a theme; the emerging themes refers to the development of themes from the data and this overall method of analysis is referred to as thematic analysis. According to Boyatzis (1998), thematic analysis is a process to organize and interpret descriptive information using common or contrasting patterns

particularly for open ended collection methods such as interviewing, observations etc., the method adopted in this study. The key issues, concepts and themes that were expressed by the participants formed the basis of a thematic framework that were used to filter and classify the data, as explained by Ritchie and Spencer (as cited in Bryman & Burgess, 1994).

Master themes and sub-themes that emerged from the data analysis are discussed in detail in Chapter 5. The overall tone of this study has been one of rigor and scientific credibility. Essentially, each line, sentence, paragraph was read in search of the answer to the repeated question "what is this about? what is being referenced here?"

Trustworthiness

To establish trustworthiness of a qualitative study, Lincoln and Guba (1985), Marshall and Rossman (1989) and Erlandson, Harris, Skipper and Allen (1993) advised the use of terms that are appropriate for naturalistic axioms. The terms are credibility, transferability, dependability, and confirmability as explained in detail in this section. These terms are naturalistic equivalents of internal validity, external validity, reliability, and objectivity.

Credibility

According to Willig (2001, p. 16) "the credibility is "the extent to which our research describes, measures or explains what it aims to describe, measure or explain." As a method of building trustworthiness and to ensure that research procedures were sound and meet the requirements of this study without researcher bias, advice from research methodologist on the Doctoral Committee on Graduate Work was sought, from time to time. This confirms the credibility factor in establishing trustworthiness in qualitative research ascribed by Lincoln and Guba (1985) and Miles and Huberman (1994). Credibility can also be achieved through peer examination and triangulation of data sources and methods explained Lincoln and Guba (1985) and Miles and Huberman

(1994). The structured interview data was shared with the participants inviting feedback, comments and suggestions. This served the purpose of gaining agreement and gave participants an opportunity to modify, edit or make changes.

Transferability

Willig (2001) expressed that "representativeness" and "generalizability" are not usually issues of concern in qualitative methodologies. Miles and Huberman, (1994) indicated that transferability is related to the degree that the study could be applicable in a different context. Lincoln and Guba (1985) suggested that for a study to be transferable the data collection and analysis must include thick descriptions while "transferability" implies "generalizability" of the findings and results of the study to other settings, situations, populations, circumstances, etc. Along these lines, this study has included detailed descriptions and interpretations from the interview transcripts. The development of a rich, robust, descriptive narrative of the findings is generally viewed as the primary means of achieving external validity (Creswell, 1994). Sufficient thick description of the phenomenon under investigation is provided to allow readers to have a proper understanding of it, thereby enabling them to compare the instances of the phenomenon with those they have seen emerge in their situations. As recommended by Lincoln and Guba (1985) description of contextual factors impinging on the inquiry, including the following have been provided:

- a) the number of individuals taking part in the study and their background;
- b) the data collection method that was employed;
- c) the time period over which the data was collected; and
- d) the data analysis process.

Dependability

According to Willig (2001), dependability is far less of a concern in qualitative research as qualitative research tends to explore a particular and possibly unique phenomenon or experience in a great detail. However, Lincoln and Guba (1985) emphasized that a dependable study must have an audit trail for future researchers with evidence to conduct similar studies and come up with similar conclusions. The data was collected in a natural setting where the researcher was an instrument of data collection. Participants in this study were subject matter experts in e-Learning including Faculty Members from Universities, Chief Executive Officers, Technology and Business leaders, Training Managers and Human Resources Executives at multinational corporations responsible for enhancing learning and development in their organizations. Ethical standards for conducting the research with human participants were complied. Prior to starting the data collection, all participants were required to review and agree to the terms of the research and convey an informed consent (Holloway, 1997; Kvale, 1996).

As advocated by Lincon and Guba (1985), documents developed during the process of this research were deposited, as an audit trail, with the Advisor of the Doctoral Committee at the School of Education, Colorado State University;

Raw data - include all raw interview data and written field notes.

Data reduction and analysis products - including summaries such as condensed notes, information and summaries.

Data reconstruction and synthesis products - including structures of categories (themes, definitions, codes and relationships), findings and conclusions and a final report including connections to existing literatures, and the integration of concepts, relationships and interpretations).

Process notes - including methodological notes (procedures, designs, rationale), trustworthiness notes (relating to credibility, dependability and confirmability).

Materials relating to intentions and dispositions - including inquiry proposal, reflective notes.

Instrument - including pilot forms, interview questionnaire and the data analysis process.

Confirmability

Lincoln and Guba (1985) explained that *Confirmability* is achieved by establishing an audit trail of both the process and product on how the findings, interpretations, and conclusions were supported by the data. Detailed account of the rationale, methods, procedures and decisions in carrying out the study explained earlier in Chapter 1 and Chapter 3 provides an audit trail as advocated by Lincoln and Guba (1985).

Overall, the issues like informed consent, harm and risk, privacy and confidentiality (Miles & Huberman, 1994) were addressed. Participants were fully aware of the purpose of the research and the importance of their role. They were assured that if they did not wish to be part of the research, they could do so at any point of this research study. This option was never exercised by any of the participants who agreed to participate and provided their responses to interview questions.

CHAPTER 4: FINDINGS

The purpose of this study was to understand global e-Learning as a phenomenon, identify its evolution, investigate its current status and the advances that can be anticipated in the future, from a global context. As discussed in Chapter 1, with fast paced innovations closely influencing e-Learning including Telecommunication, Worldwide Web, Information Technology, and the Internet Technologies, for this study, the past or the period of evolution of e-Learning is considered as until 2005, the current as 2006-2007 and the future to be around 2017.

This chapter briefly describes demographics of the participants. The findings of the study is presented around the research questions:

1. What did e-Learning look like in the early 2000's?
2. What were the issues attendant to e-Learning in 2006-2007?
3. What are the e-Learning trends of today (2011) and the future (2017)?

Demographics of Participants

The selected participants have either published research articles in the subject of e-Learning, been involved in research and teaching undergraduate and graduate level courses through traditional and e-Learning methodologies or held Technology, Human Resources and or Training and Development leadership roles with responsibilities for their organization's regional and global Human Capital including Learning & Development; or are business leaders with overall responsibilities for their organizations' competitiveness. Brief profile of each participant is provided here so as to appreciate the depth of their regional and global knowledge and expertise in the subject matter. These summaries can be referred to as "participant's profile" (Seidman, 1991). Developing each participant's profile is used to locate rich pockets of meaningful data for this qualitative

study (Miles & Huberman, 1994). These profiles also provide readers with the thematic aspects of the participants background. Each participant was given a pseudonym that was region, education, culture and gender appropriate which served as a link to their responses.

Mr. Prasad

Mr. Prasad is the Technical Manager Corporate Technology Group of a leading United States financial services organization. He is based in the United States with regional and international responsibilities. He has over 20 years of Technology and Management expertise, leading teams and projects globally. He has significant managerial and technical experience in developing and implementing learning and development strategies in his current and previous roles.

Dr. Russell

Dr. Russell is an award winning faculty at one of the universities in the United States and has been teaching graduate and undergraduate courses at their Business College. He received his B.A. (Communications), M.S. (Management), and Ph.D. (Human Resource Studies), from U.S. universities. Apart from teaching and research experience of over five years, he has over 20 years of business leadership experience with leading corporations in the United States.

Mr. Ram

Mr. Ram is based in the United States and is in a leadership role with a Fortune 50 Global Technology Services organization (\$200+ Billion Market Capital, over 400,000 employees globally) with responsibilities for regional and global teams. He received his B.E. (Information & Technology and Telecommunications) from a university in Asia and MBA (Finance and Management) from a U.S. university. He has been in management and technology leadership roles for over 20 years, interacting, educating, training and working with teams and clients around the world.

Mr. Patel

Mr. Patel is based in the United States and is in a business leadership role with an European Global 500 organization (\$70+ Billion Market Capital with over 50,000 employees globally) with responsibilities for regional and global teams and multiple lines of businesses. He received his M.S. (Information Technology) and an MBA (Management), both from U.S. universities. He has been in management and technology leadership roles for over 20 years and is a recognized leader in the technology industry.

Mr. Sunil

Mr. Sunil is based in India and is a Human Resources professional with over 20 years of regional and global work experience. Currently he is providing strategic Human Resources support to multiple businesses within a leading high-technology organization (\$6+ Billion market Capital with over 73,000 employees worldwide). He received a B.E. and an MBA (Human Resources), both from universities in India. He has designed, developed and executed learning and development strategies and initiatives in his current and previous roles, for regional and global workforce.

Dr. Miller

Dr. Miller is based in the United States and is employed as Global Education and Training Manager of a multi-billion U.S. Corporation. In this role she has developed, executed and managed several technology and blended education and training programs for employees that are globally located. She received a PhD in Human Resources from a U.S. university. She has been a practicing Human Resources, Education, Training & Development professional for over 15 years.

Mr. Johnson

Mr. Johnson is based in the United States and is currently the Chief Technology officer of a leading U.S. Financial Services organization. He has over 25 years of leadership expertise with responsibilities for the technology-driven learning and

development initiatives for his team, organization and the clients, globally. Mr. Johnson received a B.S. and an MBA (Finance), both from U.S. universities. He has significant experience in e-Learning both from the technology development and an user perspective.

Mr. Vikram

Mr. Vikram is based in India and is the Head of Human Resources of a diversified multi-national company with responsibilities for over 15,000 employees in over 60 countries across Africa, Middle East, South East Asia, Europe and the USA. He has developed and implemented e-Learning and blended learning strategies and initiatives, in multiple languages, in his current and prior roles, for a cross section of regional and global workforce. Mr. Vikram received a B.Com and an MSW, both from universities in India. He has over 20 years of regional and global Human Resources experience in a variety of industries.

Dr. Singh

Dr. Singh is based in Asia and is the Head of Human Resources of a diversified multi-national company with responsibilities for over 100,000 employees in more than 40 countries across Asia, Australia, Africa and Europe. He has developed and implemented e-Learning and blended learning strategies and initiatives in his current and prior roles, for regional and global workforce, in multiple languages. Dr. Singh received a B.Com, MBA (Management) and PhD (Psychology) from universities in India. He has over 25 years of global Human Resources experience in a variety of industries including the Defense, Oil and Gas, Manufacturing and Technology.

Emerging Themes

The analysis of interview transcripts was based on an inductive approach geared towards identifying patterns in the data. “Inductive analysis means that the patterns, themes, and categories of analysis come from the data; they emerge out of the data rather than being imposed on them prior to data collection and analysis” (Patton, 1980, p. 306). The search for emerging themes is common practice in qualitative research (Miles & Huberman, 1994) and involves the interplay between both data and the emerging themes.

The themes emerging from the data analysis focused on the evolution of e-Learning, current technologies, advancements, challenges and the trends that can be anticipated in the future. The following master themes emerged from the thematic analysis capturing sub themes and some recurring patterns, cutting across the data;

1. e-Learning is a way of life
2. Faster, Cheaper and Global
3. Missing human touch & the Lack of Infrastructure
4. Technological Advances and the Future of e-Learning

A discussion of each master theme along with citations from the interview transcripts follows. The citations would provide a 'voice' to the participants.

e-Learning is a Way of Life

Based on answers to the interview questions, constituent or sub themes have emerged. Here all the participants have expressed that there is an increased use of e-Learning within their organizations and they expect it to only grow. Most participants felt that there were no significant differences using e-Learning compared to traditional in-class learning. From the data analysis, it was found that all participants have been utilizing e-Learning in different forms to meet various learning and knowledge management needs of their organizations or academic institutions. "e-Learning is part of the culture and strategic operatives in terms of how we plan, problem solve and construct

new solution architecture; and e-Learning is a way of life at the university," described Dr. Russell while Mr. Ram indicated that "e-Learning is used heavily in our organization, approximately amounting to 75% or more of the overall training."

Early adopters appear to be global corporations, particularly the high-technology industries with geographically dispersed workforce. Several thousand courses and content are now available that can be retrieved remotely, from around the world. With the ever increasing pressure to be globally competitive, more and more corporations seem to be increasingly adopting e-Learning to disseminate and share knowledge by creating tools to learn and work together as global teams. As explained by most participants, the use of e-Learning has become a way of life in their organizations. On these lines, Mr. Ram expressed that "our organization is among the leaders in implementing e-Learning to train employees and over 6000 courses covering everything from people development, technical topics, business strategy to product and solutions are available through e-Learning to all employees across the globe." Mr. Ram further explained that "my organization offers custom content development services in 14 countries and leverages its knowledge base, which span most industries." Based on the positive impact of e-Learning to his organization, Mr. Prasad expressed that "we cannot use e-Learning tools and methods any less than it is now. In the years to come, it can only increase."

Mr. Johnson expressed that "for a geographically distributed model like ours (for sales and services, primarily) it is cost prohibitive to perform ILT (Instructor Led Training) as frequently as the staff needs training. He further explained that over 80-90% of field-based employees access e-Learning courses while rest of the company probably averages closer to 40-50%. Dr. Miller indicated that "we have 75% more utilization of our e-Learning courses than we do the instructor-led courses." This is particularly due to the flexibility of anywhere, anytime, refresher advantages offered by e-Learning.

Whether incorporating online journals in classrooms, developing course curricula or interaction between faculty and students, e-Learning seem to have been accepted in academic institutions. "Online journals such as the Wall Street Journal are used extensively - it is incorporated in our curricula and instruction assessments and outcomes" explained Dr. Russell. Dr. Singh mentioned that in his highly diversified group of companies with interest in petrochemicals, textiles, heavy engineering, retail and financial services, training is an important aspect in our organization. "We are already using e-Learning as a training medium very well integrated into our business. We have a whole training academy from where training programs are strategized and executed" explained Dr. Singh.

Referring to the growing number of interested learners and the lack of infrastructure particularly in many developing and under developed countries, Mr. Sunil expressed that policy makers and governments around the world should embrace e-Learning to educate their masses and increase the competitiveness of their human capital. On these lines, Mr. Patel expressed the lack of infrastructure in several countries for individuals to access e-Learning courses offered by his organization. He advocated to "expand the reach of the World Wide Web to all countries and people, when this is achieved, folks anywhere in the world would be able to read and educate themselves via e-Learning."

Mr. Sunil explained that e-Learning is used in his organization for courses that are of repetitive in nature and also in those areas requiring large number of geographically dispersed employees to be trained simultaneously, cost effectively and within a short time frame. He felt that the assessment of the programs can be monitored by way of pre-training and post-training scores with simple tools that are also available on-line. While trying to eliminate the myth that e-Learning is only for larger corporations with thousands of employees spread around the world, Mr. Johnson explained that his organization has a

total of 1400 employees, based in the U.S., and they were delivered 349 technical courses via e-Learning in quarter 1 of 2006 and 573 in quarter 2 of 2006. The number of non-technical trainings delivered via e-Learning for the same period were 128 and 238, respectively, explained Mr. Johnson.

While most organizations are offering a variety of courses to its employees, vendors, suppliers, distributors and service providers, companies such as CISCO Systems, Microsoft, Oracle and GE have been offering Certification Courses on topics such as Networking Technologies, Dot Net Programming, Database Administration, Six Sigma, for many years. Several participants expressed that their organizations have been offering a variety of technical and non-technical courses via e-Learning ranging from IT certification programs to Leadership Seminars. Mr. Patel described that his organization has been offering a variety of e-Learning courses ranging from technical topics such as Java, C++, XML, Web Services etc., to personality development courses such as 7 Habits of Highly Effective People, all at no fee to employees. Mr. Patel further indicated that his organization has made arrangements with leading educational institutions such as Stanford University to allow its employees to enroll and complete graduate level programs including MBA courses, at no cost to employees, all available through e-Learning. He explained that "e-Learning empowers employees to take classes from any institutions around the world and enables them to improve their work skills and hence contribute at higher performance levels to the company."

Similarly, seven participants expressed that their organizations have instituted programs where employees can enroll and complete in-house technical and non-technical courses leading to certification programs apart from bachelor's and master's level courses offered by external partners including leading universities from around the world. Eight participants also expressed that their organizations have been able to train anywhere from 20 to 50,000 geographically dispersed employees, within few weeks, using e-Learning,

covering over 40 different topics including legal and compliance, six sigma, sexual harassment, performance management, sales force learning, product and process modifications etc. Mr. Ram explained that "e-Learning allows us to align our training strategy with the business goals and provide consistent course contents, globally. With e-Learning, you are no longer limited by when and where classroom training is offered and the limitation of a physical classroom infrastructure."

Mr. Sunil expressed that "other than e-Learning, no tool comes to our mind which can give individualized attention at such high speed of execution." He further described that e-Learning has tremendous advantages in terms of savings on the cost of training while effectiveness is maintained by way of control on the content revision and the cost of administering the training compared to traditional delivery methods. Mr. Ram expressed that his organization has reached high level of competency using e-Learning programs. Looking at the demand, they have started sharing the content and expertise with other organizations as a new line of business, further adding to their revenue from their investment and expertise.

In summary, corporations of all sizes and types apart from many governments and universities around the world seem to have increasingly embraced and initiated e-Learning to continuously train, educate and improve the competitiveness of their Human Capital. From technical training programs to leadership development, and certification courses to MBA programs, e-Learning appear to have received wide acceptance. With increasing advancements in the e-Learning technology, it may be just a matter of time before we see further adoption of e-Learning among individuals, corporations, governments and universities around the world, making e-Learning a way of life.

Faster, Cheaper and Global

With anytime, anywhere and 24/7 availability, e-Learning has been increasingly becoming a global phenomenon. Referring to the advantages of instituting e-Learning,

several participants expressed that e-Learning saves a lot of time, travel cost and the challenges of being away from home with the anytime anywhere feature. Dr. Miller expressed that "e-Learning is quicker, cheaper, used as refreshers and can be taken 24/7" while Dr. Singh argued that "without e-Learning it would have been humanly impossible for us to train about 100,000 employees situated all over the world with very limited training budget and short window of time." Dr. Singh explained that his organization uses e-Learning in a variety of areas including;

"training the field based employees on product development, service contracts, improvements in the products, sales training, English speaking courses, leadership development programs, safety, compliance, legal and many others, in a very cost effective manner compared to flying training experts and participants to central locations for training programs and seminars. "

Eight of the nine participants expressed that Speed of delivery, cost effectiveness, global reach, uniformity of programs, updating and administering course contents across the organization at fraction of the cost and time compared to physical classroom learning, as the driving force in implementing e-Learning in their organizations. On these thoughts, Mr. Sunil shared that "e-Learning offers tremendous cost savings in developing and delivering the training program" compared to the challenges of training over 20,000 employees each year on some of the basic and mandatory topics. Mr. Vikram expressed that "e-Learning is cost effective and it is the technology of the future." He further explained that the "effectiveness of e-Learning is very high as e-Learning makes learning more interesting and we can train a large number of our employees very quickly and very cost effectively." And Mr. Johnson believed that e-Learning is the answer to just-in-time training. The "strength of e-Learning is in the scalability to reach mass audiences cost effectively, the convenience for the student to experience on-demand training, eliminating travel cost, and the ability to tune the training content for specific requirement," described Mr. Johnson.

With the advent of the World Wide Web and internet technology, the reach of e-Learning courses has become almost instant and global. Anyone with a computer, internet browser, internet connectivity can enroll, access and complete courses from around the world via e-Learning. Participants explained that using e-Learning is the only way to train globally dispersed employees. Mr. Ram described that "for every 1000 hours of classroom training converted into e-Learning, his organization estimates that over \$250,000 can be saved." And effective e-Learning cuts down the cost of time, travel and lodging for both students and instructors. "Airfare, car rentals, meals, and lodging make up a large part of the expenses associated with classroom training. Tuition and other course delivery expenses (such as classroom space) are other cost elements for classroom training and all of these could be eliminated by using e-Learning," expressed Mr. Ram.

Dr. Miller indicated that her organization has seen over 50 percent in cost savings by moving traditional classroom trainings to e-Learning. She explained that her organization uses e-Learning in areas including on-boarding, product orientation, project management, technical and soft skills training programs. Mr. Patel attributed global competitiveness and the success of his organization's employees to the use of e-Learning. He explained that e-Learning allows employees to learn and achieve their academic and learning goals from the comfort of their homes or offices while e-Learning eliminates the hassles of travel and the challenges of being away from home and family. e-Learning empowers the employees to take classes from any institution from around the world and enables them to improve their work skills and hence contribute to organization's high performance level, explained Mr. Patel. And Mr. Sunil believed that the "expertise available in one corner of the world could be utilized by rest of the world by using e-Learning, without the trainer or the participant having to travel or leave the comfort of their homes or offices. e-Learning could bridge geographical boundaries in sharing expertise."

With e-Learning, participants expressed that they could see an uniformity in the content and delivery of courses irrespective of when and where it is delivered. On these lines Mr. Prasad indicated that his organization has experienced high level of process efficiency by instituting e-Learning which has also resulted in cost benefits. Mr. Vikram expressed that the use of simulation has enhanced the effectiveness of training in his organization. Mr. Sunil indicated that the use of simulations and the virtual learning tools have further enhanced the effectiveness of e-Learning.

The advent of World Wide Web and the features associated with the internet, e-Learning has become a global phenomenon. The cost effectiveness and the ease of delivery of e-Learning programs through the World Wide Web appear to be drawing more and more organizations and the universities to accept e-Learning. On these lines Mr. Patel expressed that before we had internet, e-Learning meant creating and distributing printed course manuals, one way audio or video delivery, mailing of Video or Audio Cassettes and living with the problems of outdated material and the difficulty with instantly communicating between students, teachers and institutions. The internet now allows teachers to effectively communicate with students with up-to-date class material. Software such as instant messaging, remote email access and archiving have contributed to the success of e-Learning, believed Mr. Patel. "We are seeing an increase in the use of e-Learning in our organization and more and more employees have been choosing programs offered through e-Learning over in-class methods. With e-Learning our training time and the cost have come down drastically," described Dr. Miller.

To support the learning and knowledge management needs of geographically dispersed workforce, vendors, business partners and service providers, organizations have been instituting and managing large training centers. With the advent of e-Learning organizations have come to effectively address these more timely and effectively, for less. On these lines, Dr. Singh mentioned that "we are already using e-Learning as a training

medium well integrated into our business. We find it as an very effective medium for continuous development of our employees."

Similarly, Mr. Ram explained that "in our organization there has been an increase in the mobile workers distributed across the globe and through e-Learning they are able to learn a variety of topics, from anywhere and at any time." e-Learning has been helping the employees to learn anytime, anywhere and at their own pace, it is more cost efficient and also aligns with our training focus and provide consistent course contents globally," described Mr. Ram. He further expressed that e-Learning also promotes teaming and collaboration across geographies. e-Learning is more time-efficient than traditional methods, his organization's "Learning Services" department estimates that "an employee will generally spend 33 percent less time to learn new material using e-Learning and 40 percent less time using multimedia than in a classroom." "The faster you learn new material, the sooner you are back on the job, applying your new skills," expressed Mr. Ram.

In summary, with the 24/7, anytime, anywhere cost effective features associated with e-Learning, there seem to be an increased acceptance of e-Learning among governments, corporations and educational institutions around the world. With constantly improving technology and the tools, e-Learning appear to be continuously increasing its global reach and acceptance. In conclusion, all the participants have distinctly mentioned that e-Learning is faster, cheaper and has the global reach. Increasingly, organizations see e-Learning as an effective medium for learning and development, knowledge sharing and knowledge transfer. Particularly with the internet technologies and the World Wide Web, the reach and speed at which the programs could be accessed and delivered barring regional and international boundaries, there is an increased level of adoption of e-Learning by corporations, governments and the academic institutions alike.

Missing Human Touch and the Lack of Infrastructure

Several developed economies were the first to embrace e-Learning while there has been a significant gap in the access of e-Learning in several parts of the world. The gap in the availability and access to e-Learning technology may be attributed to the lack of proper infrastructure; lack of willingness among government leaders to provide and allow access to technology; and among underdeveloped economies, the priority between providing education or feeding their masses. Four participants, Mr. Johnson, Mr. Patel, Mr. Vikram and Mr. Ram expressed that though the technology is available to develop and deliver effective e-Learning courses that would overcome the challenges of "Missing Human Touch." "Due to lack of infrastructure and the poor internet speed in some underdeveloped and developing economies, we are forced to limit e-Learning modules in those areas to "Text only" mode, expressed Mr. Patel. Mr. Vikram explained that "the lack of proper infrastructure in many countries is defeating the very purpose of our e-Learning aspirations and the workforce development strategy though a robust two-way audio and video technology is available."

Mr. Johnson believed that "as virtual classroom technologies more closely emulate the real classroom, some of the interpersonal downsides of e-Learning will be eliminated in the future." This would overcome the challenges of the missing "Human Touch" that some learners expect in an e-Learning program. Similarly, Dr. Singh mentioned that due to lack of infrastructure such as robust telecommunication and high-speed internet, in many countries, the speed of internet is very slow and we had to devise strategies to provide the required training in blended methods or by reducing the amount of video, graphic and animation capabilities. The lack of high-speed internet eliminates effective synchronous two-way audio, video and text interaction among participants and the faculty, thereby often reducing the effectiveness of e-Learning.

On the other hand, participants of this study have embraced e-Learning in their organizations and professional career and felt that there is a need to improve two-way interactive tools for e-Learning to be more effective. Explaining the weakness of e-Learning Mr. Vikram believed that e-Learning is "Human independent and it increases dependence on technology than experience." Dr. Russell explained that "I teach online as well as traditional class-room courses. The benefit of an online class to students is the flexibility. They lose the chance to synthesize and reflect. Technology does it all. e-Learning should promote real learning and not new technologies and techniques that promote it." Dr. Russell further expressed that "we become a culture that values technologies, materials and commodities. Most of which is driven by technology. So e-Learning."

Explaining the missing "Human Touch" as a major weakness of e-Learning, Mr. Patel felt that e-Learning "does not provide an environment where human emotions can be easily felt or exchanged. It cannot compete or replace the satisfaction of a hand-shake and eye-contact between teachers and students." He also expressed that often excessive "communication via email, Instant messaging and conference calls can cause confusion and discomfort among students and teachers." Similarly, Mr. Prasad expressed that "the psychological or human (think motivation, inspiration, relationship etc.) element would be missing. Still in-person, live, one-on-one instruction cannot be completely matched." It may be harder or impossible to customize the program when it is remote or automatic, added Mr. Prasad.

Dr. Miller articulated that "for more technical information, hands on may be required. e-Learning also lacks the high touch some learners need." Some learners do better with other learners around them. Many workforce studies still show that people learn better when taught by someone. With e-Learning, "real time learning from the entire class can be slow or delayed," added Dr. Miller. Referring to the challenges he has

experienced, Mr. Ram expressed that e-Learning still lacks the seamless integration of learning information from different resources like reference materials from web, corporate data sources etc.

In summary, the major challenges with e-Learning as expressed by participants is the lack of "Human Touch" and the absence of required infrastructure in several parts of the world which may otherwise improve two-way audio and video interaction among faculty and the students. With the lack of high-speed internet (referred to as bandwidth), or robust telecommunication infrastructure, it is often difficult for participants to connect to the internet and effectively participate in e-Learning programs. The slow internet speed, may hinder participants to take advantage of simultaneous two-way audio, instant-chat and the video streaming capabilities thereby defeating the advantage of a virtual classroom environment offered by e-Learning.

Technological Advances and the Future of e-Learning

Looking at the growing acceptance of e-Learning among corporations, academia and the government institutions, participants shared their views about emerging trends and the future of e-Learning. With the demand for instant access to training and the educational course material containing rich video, audio and animation contents, participants expressed a need for more bandwidth, better virtual classroom software, better and faster computing resources, in general. Participants expressed that more technological advances in these areas will be seen in the next 10 years and they would further improve the effectiveness and efficiency of e-Learning of the future.

On these lines Dr. Russell articulated that either way, "the marketplace and products will force new innovations just to stay competitive" while others expressed that "e-Learning has progressed sufficiently to make it a major tool in learning for corporations and the public." And Dr. Singh expressed that "the ability to use again and again, once developed, particularly with some of the routine trainings, is a great

advantage with e-Learning. As more and more information and content are digitized and placed online, there is a need for more space for storage. He anticipated that the cost of storage will come down drastically in the next 10 years while the Nano and other technology may improve the storage capacity and its retrieval speed.

Mr. Vikram, believed that the use of satellite-based learning systems and the use of multimedia and other software as critical technological advances enabling the effectiveness of e-Learning in the last few years. And he anticipated this technology to significantly advance in the next 10 years. Dr. Singh expressed that the "user-friendly software and tools could be attributed to the adoption of e-Learning from an user perspective and he anticipated further improvements in this area in the next 10 years. "Introduction of Internet and the interactive course development tools are some of the critical technological innovation that could be attributed to the high growth of e-Learning, which may continue to advance," expressed Dr. Miller.

World Wide Web, advances in telecommunication such as VOIP (voice over internet protocol), advancements in electronic hardware such as audio headsets, projectors and other High Definition audio and video recording devices have also helped improve the quality of e-Learning, explained Mr. Patel. While Mr. Sunil expressed that the "invention of programming applications like Visual Basic, Macromedia Flash and several internet tools have greatly influenced the way human creativity could be brought into action for delivery of training." Mr. Sunil anticipate more technological advancements to continue in this area.

With the advent of World Wide Web and the internet technologies, e-Learning has been gaining significant importance and Dr. Miller expressed that she anticipates improved tools to create effective two-way interaction with other learners and the course author/ facilitator and simultaneously have the content questions answered. Mr. Ram believed that the "virtual class room using simulations, audio and video, group messaging

and other instant chat communication tools" as some of the critical innovations that have helped improve the effectiveness of e-Learning. Similarly, Mr. Johnson expressed that the "bandwidth/ data rates to remote locations, as well as software like Breeze, and the ability to do virtual classrooms and labs are the critical technological innovations that have already increased the effectiveness of e-Learning" and predicts further improvements with these. "I would anticipate more interactive tools for collaborated learning, seamless integration of learning information from different resources like reference material from the web, corporate sources etc., in the near future," expressed Mr. Ram.

Ever since the users experienced the power of the internet and its advantages to communicate, learn and share knowledge with each other, the need for internet speed has been constantly increasing. Whether it is sharing text, photos, documents, audio or video programs, the internet has the appetite to support and the need for improved bandwidth has been growing globally. On these lines, Mr. Prasad anticipated "improved bandwidth, better virtual classroom software, better/ faster computing resources in general" to be seen as significant advancements in the future. While Mr. Vikram expected the use of multi-media, increased processor speed in the computer, wireless connectivity using satellite technology and the increased bandwidth capability facilitating two-way audio video communication, effective use of simulation and the animation capabilities to increase in the next 10 years that would further improve the effectiveness of e-Learning.

Dr. Miller indicated that "going forward more knowledge would be built around e-Learning models." "Use of multi-media and animation, new technologies involving new processors will bring paradigm shift in the way we look at training delivery, expressed Dr. Singh. Dr. Singh further narrated that with the "growing power of internet and the search engines; with evolving models around knowledge management, e-Learning is the thing of the future.

Mr. Ram, Mr. Patel, Mr. Johnson, Dr. Singh and Mr. Vikram expressed that their organizations have already been using PDAs and Blackberries to support "Learning on the Go." With these handheld devices, they are able to reach employees, service providers and business partners across continents instantly and share communication and learning content including Video, Audio clips and other documents. They expect that the mobile technology would advance further and the cost of transmission would be more affordable thereby enabling the use of e-Learning in its true sense of anywhere and anytime.

"To create and maintain an edge over our competitors, we will continue to invest in e-Learning to create a knowledgeable workforce" explained Mr. Patel. Mr. Johnson mentioned that "we have already invested in e-Learning and will continue to invest due to what it provides us today." And Mr. Prasad expressed that "we cannot use e-Learning tools and methods any less than now, in the years to come it can only increase."

In summary, participants expressed that the speed of computers (speed of processor), internet speed, speed of search engines, computer storage capabilities, access to the World Wide Web has significantly increased over the years and they anticipate this to drastically improve in the future. Most organizations have already invested heavily in e-Learning. Participants also believed that new innovations with instant messaging, two-way audio and video interaction, chat, Podcasting, virtual classroom software, remote email access, increased bandwidth and the growing power and the speed of search engines, e-Learning is definitely seen as the technology of the future and it is only going to grow.

E-Learning is increasingly becoming a global phenomena and global corporations have been the early adopters of e-Learning for training and knowledge management of their employees, vendors and business partners. These corporations are convinced of the benefits that e-Learning has to offer and are continuing to invest in its future. e-Learning

has been adopted slowly but significantly by educational institutions from K-12 and higher education, and the governments though the infrastructure remains a challenge in most of the underdeveloped and a few developing countries. With an increased focus on continuous learning and development, e-Learning is often seen as a differentiator among corporations to attract and retain the best talents. It was echoed by participants that e-Learning will not be seen as a luxury in the future but a common need for teaching, training and the dissemination of knowledge cutting across geographical boundaries.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

The previous chapters introduced the study, presented the problem, provided review of the literature, description of the study, and results of the data analysis.

The purpose of this study was to understand global e-Learning as a phenomenon, identify its evolution, investigate its current status and the advances that can be anticipated in the future, from a global context. This chapter will provide a summary of the study, discussion of findings, and recommendations for future research. These discussions will be organized around research questions for the study.

As discussed in chapter 2, the interviews of the subject matter experts for this study were conducted between late 2006 and early 2007 and the review of literature was complete by the same time. Based on the time line of data collection, the "current" refers to the year 2006-2007 while the "future" refers to 2017. Due to circumstances beyond my control, this data was not able to come to print until 2011. This presented an unique opportunity to be in the middle of the predicted time frame and view and experience the advances with e-Learning. Rather than seeing this as a disadvantage to the study, additional review of literature has been included in this chapter from the position of today, 2011.

Themes emerging from the interviews were explained in Chapter 3 and discussed in Chapter 4. Four major themes that have significant bearing on the implementation and the future of e-Learning are discussed further around the research questions. With reference to anticipated technological advances between 2006 and 2011, these themes are discussed in this chapter under relevant research questions. They include;

- e-Learning is a way of life
- Faster, Cheaper and Global

- Missing human touch & the Lack of Infrastructure
- Technological Advances and the Future of e-Learning

Additionally, two major technological advances have started to emerge, one of which was in its infancy and the other was not heard of during 2007. These are m-Learning or learning through mobile devices and the Cloud Computing. Due to its relevance as an evolving and dominant future trend directly influencing e-Learning, these are discussed in detail under research question 3.

The aim of this research is to understand how e-Learning has evolved, what are the technological advances and what trends can be anticipated in the future. On these lines, the research questions will address the following:

1. What did e-Learning look like in the early 2000's?
2. What were the issues attendant to e-Learning in 2006-2007?
3. What are the e-Learning trends of today (2011) and the future (2017)?

Discussion of Findings

The results from this study provides assistance to strengthen the understanding of e-Learning, its evolution, current state and the anticipated future technological advances. For better understanding of the results of the present study, the findings will be discussed around relevant research questions.

Research Question 1: e-Learning in the early 2000's

What did e-Learning look like in the early 2000's?

Data indicated that in early 2000s there was hesitancy to embrace e-Learning due to lack of its global reach, slow speed of internet, lack of tools, features and the robust technology to support effective synchronous audio and video interactions. Early adopters had relied on mailing audio tapes, video cassettes, audio compact discs/ CDs, video discs, printed study materials apart from audio conferencing and television based lectures.

Introduction of the World Wide Web and the Internet tools were able to address some of the early challenges while the lack of robust bandwidth remained a major challenge.

It was encouraging to learn from the data that e-Learning has been evolving as a robust learning phenomenon as endorsed by all participants. Data has also indicated an increased use of e-Learning in different forms to meet various educational and training needs across corporations, academia and the governments on a worldwide basis. All the participants have expressed that they would continue to invest in e-Learning even in its current form while anticipating the technology and the bandwidth will improve.

Participants have been very positive about the measurable benefits their organizations have received by instituting e-Learning. Irrespective of the size, nature of the business or the geographic spread of their operations, there seem to be a slow but progressively increasing acceptance of e-Learning in most corporations. Compared to corporate houses, though academic and government institutions around the world have been slow in accepting and adopting e-Learning, the growth has been progressive and significant.

e-Learning is a way of life. As explained by most participants, the use of e-Learning has become a way of life in their organizations by mid 2000s. Dr. Russell described that "e-Learning is a way of life at the university." Mr. Ram expressed that his organization offers "over 6000 courses covering everything from people development, technical topics, business strategy to product and solutions through e-Learning." On these lines, Mr. Prasad expressed that "We cannot use e-Learning tools and methods any less than now. In the years to come, it can only increase."

It was also interesting to learn that these organizations have been utilizing e-Learning in a variety of areas including new employee orientation/ on-boarding, sales training, customer training, compliance training, technical and non-technical certification programs, while they have also partnered with internal subject matter experts and external service and content providers to continuously improve and expand the scope. Based on

the expertise they have developed in-house and significant investments already made, few organizations have gone a step further in creating a new line of business offering e-Learning technology and the content to a variety of organizations around the world.

In summary, in early 2000s, though the evolution of e-Learning has been slow, with the spread of the World Wide Web, the Internet, progress with the Information and Communication Technology, robust telecommunication infrastructure, advances in the personal computer technology such as the speed of the processor, storage capacity, many user friendly software, its worldwide acceptance has been growing.

Faster, Cheaper and Global. Introduction of the World Wide Web and the Internet appear to be drawing more and more organizations and the universities to accept e-Learning. Several participants expressed that e-Learning is faster, cheaper and global and saves a lot of time, travel cost and the challenges of being away from home or workplace to attend the courses. Dr. Miller expressed that "e-Learning is quicker, cheaper, used as refresher and can be taken 24/7" while Dr Singh argued that "without e-Learning it would have been humanly impossible for us to train about 100,000 employees situated all over the world with very limited training budget and short window of time." Participants expressed that with e-Learning, speed of delivery, cost effectiveness, global reach, uniformity of programs, updating and administering courses across the organization can be accomplished at fraction of the cost compared to the physical classroom learning model. Due to e-Learning's anytime, anywhere feature, Dr. Johnson believed that "e-Learning is the answer to just-in-time training." With the ability to quickly edit and update the course material and make them available globally via the World Wide Web and the Internet, participants expressed that they could see an uniformity in the content and delivery of courses irrespective of when and where it is delivered. On these lines, Dr. Miller explained that "we are seeing an increase in the use of e-Learning in our organization and more and more

employees have been choosing programs offered through e-Learning over in-class methods. With e-Learning our training time and the cost have come down drastically."

Research Question 2: e-Learning in 2006

What were the issues attendant to e-Learning in 2006-2007?

As noted from the themes found in the interviews, the data indicated that organizations have experienced significant advantages by instituting e-Learning and they anticipate it to continue as the technology improves. Benefits such as improved process efficiency to fast paced deployment of training modules in a variety of topics, were seen as a way of embracing e-Learning in most corporations while at the academia, e-Learning is a way of life, particularly to meet the demands of the growing number of technology savvy students and the faculty.

During this time frame, though there was significant adoption of e-Learning, participants expressed several challenges as detrimental to its increased use. These challenges range from the lack of infrastructure to the lack of 'human touch,' otherwise seen critical by some learners. These are discussed in this section particularly with relevance to some of the recent advances in e-Learning.

Apart from the 24x7, anywhere, anytime advantages associated with e-Learning, the advances in the Internet technology, Information and Communication Technology (ICT), improved Computer Processor speed, improved bandwidth through satellite and fiber optics cable network, improved storage capabilities, affordability of web-enabled computers and mobile devices have been driving the worldwide adoption of e-Learning. Additionally, the data indicated that the increased acceptance and implementation of e-Learning has been fueled by technological advances such as virtual classrooms, use of simulations, two-way audio and video, group messaging, instant messaging and the remote access of email. From the data, it is evident that there is an anticipation of further improvements with these technologies.

The data has indicated several challenges with the current technology, in implementing and improving the effectiveness of e-Learning, as expressed by a majority of participants. For the purpose of our discussions, efforts are made here to group those challenges under two broad themes;

- Missing Human Touch
- Lack of Bandwidth/ Internet speed and the infrastructure

With the fast paced nature of technological advances, some of the challenges expressed in 2006-2007 appear to have already been addressed to a greater extent while significant progress has been made on the remaining ones. These are evident from the recent literature and the continued acceptance and the growth of e-Learning.

Missing Human Touch. The data revealed that 6 out of 9 participants felt that e-Learning is human independent and lack the 'Human Touch' that some learners would expect in an effective learning environment. Some of them have also expressed that e-Learning fail to provide opportunities for an effective human interaction, discussions, debates and knowledge sharing among participants and the faculty. On these thoughts, Mr. Prasad expressed that "the psychological or human (think motivation, inspiration, relationships etc.) element would be missing. Still in-person, live, one-on-one instruction cannot be complete matched." Similarly Mr. Patel described that "e-Learning does not provide an environment where human emotions can be felt or exchanged. It cannot compete or replace the satisfaction of a handshake and eye-contact between teachers and students."

In recent years e-Learning technology seem to have significantly progressed to address this challenge. This may have been possible due to improvements in the Internet Technology, reach of the World Wide Web, information and communication technology, video conferencing tools, micro media flash and other software, bandwidth and the speed of the computer processor. The e-Learning technology that includes two-way interactive

components is now referred to as "e-Learning 2.0" and has been gaining significant ground from around 2009. Mr. Vikram had anticipated the use of multi-media, increased processor speed in the computer, wireless connectivity using satellite technology and the increased bandwidth capability facilitating two-way audio video communication, effective use of simulation and the animation capabilities to increase in the next 10 years that would further improve the effectiveness of e-Learning. With significant improvements in these technologies Mr. Vikram, Mr. Johnson and Mr. Ram had expressed that "we could overcome the 'Human Touch' that is missing in an e-Learning course with the improvements in the e-Learning technology."

With the current e-Learning 2.0 technology, learners can easily interact with other learners as well as the course faculty, apart from being able to actively participate in live discussions with instant messaging and rich two-way audio and video features. According to Aldrich (2009, p. 4), "Virtual worlds and simulations with 3-D environments offer participants from different location to meet with each other at the same time while these environments can capture and convey enough social cues, such as body languages, interactive props, and the look and feel of 'real' surrounds to convince some parts of the participants' brains that they are physically in the same classroom."

e-Learning 2.0 which includes effective and instant two-way interactive components and the social media will represent a major paradigm shift from e-Learning 1.0. O'Hear (2006, p. 296) believes that "e-Learning 2.0 will be a loose connection of different applications such as blogs, wikis, and social software to create ad hoc learning communities." This can lead to learning opportunities that have higher levels of authenticity as they are situated in real online activities. According to Daly and Pachler (2011), with the onset of social software and applications such as Wikis, blogs, networking, podcasts and virtual world, increasingly the term e-Learning 2.0 is preferred to e-Learning.

An highly impactful global example of the inclusion and the power of social media, as an effective tool for two-way interaction, was witnessed by millions of internet users and TV viewers around the world when they saw the historical uprising that took place in January of 2011 in Cairo, Alexandria and other cities in Egypt following the Tunisian Revolution that saw the overthrow of the long-time Tunisian President. On Feb 11, 2011, following weeks of determined popular protest and pressure, Hosni Mubarak resigned from office (Egyptian Revolution, 2011). The entire flow of events were organized and coordinated by common citizens using social media which included instant messaging, Face Book, Mobile Phones/ Smart Phones, YouTube, Twitter, MySpace, blogs etc. According to Davidson and Goldberg (2010), the inclusion of social networking feature is enabling individuals to create communities of common concern and interest, and the internet enables them to ignore physical distance.

As explained by Ubell (2010), a recent US Department of Education report, based on decade of studies, should settle any lingering debate about the quality, benefits, or equivalence of e-Learning. It found that on average, students in online learning conditions performed better than those receiving face-to-face instruction. Similarly, Anu Sivunen and Maarit Valu (as cited in Ubell 2010, p.137) argued that "without the numerous tools and technologies now available to communicate and collaborate, virtual teams might never have become so widely successful." Following their rapid development, many valuable tools are now available for use in virtual team learning.

It is evident that e-Learning is a major force for change. It is not merely confined to formal learning but also having an impact on informal learning (Alan 2008). With virtual classrooms more closely emulating the real classroom, with technological advances improving the two-way interactions through audio, video and instant messaging, and the availability of user friendly software tools to provide e-mentoring and e-coaching,

earlier challenges of the missing "human touch" seem to have been significantly eliminated.

Lack of Bandwidth and the Infrastructure. Themes found in the interviews also revealed that the lack of proper bandwidth or the Internet speed and the relevant infrastructure such as robust and globally reliable Information and Communication Technology (ICT) were seen as a challenge expressed by a majority of participants in embracing and implementing e-Learning in their organizations. Mr. Ram, Mr. Patel and Mr. Vikram were of the opinion that though the technology to provide effective e-Learning tools were available, they had to resort to eliminating some of the rich audio, video and graphics contents to some parts of the world due to lack bandwidth and the telecommunication infrastructure supporting the internet. They believed that the lack of infrastructure and the bandwidth is defeating their vision for an effective and interactive e-Learning strategy. On these lines, Dr. Singh mentioned that "due to lack of infrastructure such as robust telecommunication and high-speed internet, in many countries, the speed of internet is very slow and we had to devise strategies to provide the training in blended methods. this often reduces the effectiveness of e-Learning"

Before broadband connections to the Internet became common, dial-up connections were used with designated modem speeds of 14 Kbps (kilo bytes per second), 28 Kbps and 56 Kbps using the telephone infrastructure. "Usually the actual connection speed was lower than the rated speed of the modem" (Caladine, 2008, p. 314). With the poor early internet speed supported by unreliable telecommunication infrastructure, even viewing a single graphic-rich web page used to take several minutes, if not hours, and often abruptly disconnecting from the internet, leaving the Internet user with frustrating experience. Dealing with early Internet speed, viewing, downloading and opening simple email attachments also used to be a challenge.

The world has come a long way from 14 kbps internet speed to fiber optic cables and satellite based high speed internet connectivity with capabilities to download an entire feature film within minutes; simultaneously watch an on-line streamed video; browse the web and check emails. As Caladine explained (2008, p. 314) "newer technologies have been discussed in the press that extend the reach of conventional DSL (Digital Subscriber Line) and increase the bandwidth up to 250 Mbps (mega bytes per second)" but of course there are other broadband solutions such as satellite network that are available to users in remote or regional areas. Yet the need for internet speed has been ever growing.

During the last three plus years 3G (3rd Generation) wireless network technology has ensured more reliable data connections on smart phones, tablet PCs and other hand-held devices. With 3G network, users are able to upload rich audio, text, and video contents and at the same speed stream such contents, at ease. Technology experts expects the much anticipated 4G (4th Generation) wireless network technology to be available very soon (Quinn, 2011). These developments enabled by high bandwidth communication satellites will further enhance the availability of rich learning contents even in remote corners of the world.

In a world of increasing bandwidth it is no surprise that the content of the Web is changing. A trend away from text richness towards media richness is evident. The rise and popularity of video sites such as YouTube and media-rich social software are examples of this trend and it is reasonable to expect future that will be rich in online media (Caladine, 2008). Kapp and Driscoll (2010, p.14) mentioned that YouTube, founded in 2005, is a video sharing website that allows users to upload, view and share video clips. Each day about 9000 hours of video content is uploaded to YouTube from around the world. This is a clear example of the growing acceptance of the global digital media (Sanjoy, 2010). "With rich media being integral component of online social and

leisure experiences, it is reasonable that students will expect video and other examples of media richness in their online learning experiences rather than a preponderance of text as it is the current experience in many institutions," argued Caladine (2008, p. 294).

Though several developing and under developed countries around the world have borrowed the 'lessons learned' from the developed countries and are fiercely implementing e-Learning to continuously educate, train and develop their human capital, some are still reluctant to let their citizens access the web while a few continue to monitor and restrict the contents. This would create a digital divide among citizens of the world, believes Caladine (2008).

In conclusion, the major challenges expressed by the participants about the missing 'missing human touch' seem to have been already addressed to a significant extent with the advancement in the e-Learning technology. Technological advances in the last few years including instant messaging, two-way audio and video, video streaming, integration of multi-media in e-Learning courses further enhancing the interpersonal capabilities that some learners seem to have been previously missing in an e-Learning environment.

Research Question 3: Future Trends

What are the e-Learning trends of today (2011) and the future (2017)?

With the increasing demand for instant access to e-Learning programs containing rich text, video, audio, animation and graphic-rich content, participants expressed a need for improved bandwidth, better virtual classroom software and better or faster computing resources, in general. They felt that these could further enhance the effectiveness and efficiency of e-Learning. Overall, participants anticipated major technological advances in several categories that would further facilitate the worldwide acceptance of e-Learning. These are grouped and discussed under the third theme: Technological Advances and the future of e-Learning.

This theme found in the interviews also explained the current technological advances and described the anticipated future of e-Learning. For better understanding, these are discussed under the following sub categories and supported by recent literature:

- a. Infrastructure
- b. Virtual classroom technology
- c. Hardware

Additionally, as mentioned earlier in this chapter, two new technological advances have started to emerge. Early m-Learning or Mobile learning was limited to checking emails via Blackberry or maintaining to-do lists or appointments via PDAs. The introduction of iPhone in 2006 combined with high-speed wireless connectivity, the trend towards multi-functional smart phones and tablet PCs as an effective tool for m-Learning started gaining importance. The other technological development which is currently evolving but predicted to grow significantly is "Cloud Computing." Cloud Computing is very recent and could dramatically change the way we communicate, interact and learn. This concept is still evolving and in anticipation of huge growth several organizations in the e-Commerce and Information Technology space have been investing heavily in creating mega infrastructure. These dominant technological advances are discussed later in this section.

Infrastructure. It is fascinating to witness that most of the advancements with respect to infrastructure particularly with the Information and Communication Technology (ICT), Satellite and Fiber Optic cable supported high speed internet that were predicted in the interviews to be available around 2017 are already here - we are just about half way through the predicted timeline. These improvements have been able to help corporations to deploy e-Learning to its employees, service providers, vendors and business partners, globally and cost effectively. Earlier, due to poor bandwidth capabilities, many organizations had to reduce rich media content and resort to using only

rich text and hypertext based content in some of parts of the world. Data from the interviews showed an increased concern among participants as these tactics were reducing the effectiveness and defeating the very purpose of their e-Learning strategies. On these lines, Dr. Singh mentioned that "due to lack of infrastructure such as robust telecommunication and high-speed internet in many countries, the speed of internet is very slow and we had to devise strategies to provide the required training in blended methods or by reducing the amount of video, graphic and animation capabilities. This often reduces the effectiveness of e-Learning."

As discussed in the previous section of this chapter, during the last few years the world has witnessed significant developments with the availability of high speed Internet supported by robust infrastructure in telecommunication. 3G (3rd Generation) wireless network technology has enabled access to media rich e-Learning content without the constraints of location. Streaming of learning content to Smart Phones, Tablet PCs and other hand-held devices with high definition quality video, rich audio and text has been made possible with the 3G network technology.

According to United Nation's International Telecommunications Union (ITU) (Toure, 2011) there were approximately 500 million broadband subscribers in 2010 compared to less than 80 million in 2006. The satellite broadband subscription has significantly contributed to this growth. As explained by Paul (2010), advances in the broadband technology is enabling content providers to converge rich video content and distribute across TV, mobile devices, and the Internet. These advances are also enabling content providers to convert video rich data from analog to digital along with the convergence of many devices that are enabling learners to access programs on a variety of devices, irrespective of time and space. On these lines, Yang, Waluyo, Ma, Tan and Srinivasan (2010) explained that with this technology, there is also an effective

convergence of Voice, Internet, TV, Phone and Wireless services which has been driving down the cost of Information and Communications Technology.

Virtual classroom technology. As predicted in the interview data, between 2006 and 2011, there have been significant improvements in the virtual classroom technology that is supported by simulations, games, 3-D animation, electronic white boards, two-way audio, video and text messaging, all of which to facilitate effective interactions among participants and the faculty. Mr. Sunil had indicated that the use of simulations and the virtual learning tools have further enhanced the effectiveness of e-Learning and this technology will advance in the future. Mr. Johnson believed that "as virtual classroom technologies more closely emulate the real classroom, some of the interpersonal downsides of e-Learning will be eliminated in the future." Similarly, Mr. Ram believed that the "virtual class room using simulations, audio and video, group messaging and other instant chat communication tools" as some of the critical innovations that have helped improve the effectiveness of e-Learning.

On these lines, Mr. Prasad anticipated "improved bandwidth, better virtual classroom software, better/ faster computing resources in general" to be seen as significant advancements in the future. While Mr. Vikram expected the use of multi-media, increased processor speed in the computer, wireless connectivity using satellite technology and the increased bandwidth capability facilitating two-way audio video communication, effective use of simulation and the animation capabilities to increase in the future that would further improve the effectiveness of e-Learning.

As described by Herrington, Reeves and Oliver (2010), the vision and the reality of participatory and collaborative virtual classroom technology is compelling. Learners, enrolled in a common unit of training, continuing professional development, certification course or the pursuit of an academic degree, will work together online to solve complex problems and complete authentic tasks, using web-based functions and tools to research,

create and publish original products. They further expressed that although they may never meet face-to-face, these highly motivated learners will form strong bonds that encompass productive teamwork, in-depth collaboration, and even lasting friendships. Through intensive engagement in the collaborative solutions for authentic problems, the learning outcomes accomplished by these learners will be of the highest order.

Kapp & O'Driscoll (2010, p. 59) described that "today's 'virtual-world' contexts provide rich presence that makes you being virtually there almost as good as being physically there. The mode of interaction mimics that of real life, and the sense of self and death of distance help create a powerful virtual context." Similarly, Aldrich (2009) argued that the current interactive virtual environment work better for e-Learning.

According to Kapp & O'Driscoll (2010), collaboration and peer-to-peer learning emerge naturally in a 3DLE (3 Dimensional Learning Experience) context. Given the immerse nature of the 3D environment, it allow the power of peer-to-peer collaboration to take hold once the challenge is set in motion. With the 3-D technology becoming common, the cost of 3-D monitors, 3-D televisions and 3-D hand held gadgets are becoming more affordable, and this is facilitating content providers to increase the number of programs available via more realistic 3-D format.

Referring to recent advances with the Simulation technology that is enhancing e-Learning, Clark and Mayer (2008) expressed that participants using simulation reported higher level of learning. According to Freitas and Maharg (2011), the emergence of serious and very engaging games movement in the USA and later in the UK, Japan and others have helped to spread applications from the homes into schools, colleges, universities and out into professional training and continuing professional development. Around 2009, Wii from Nintendo became an household name for its sports, teaching and training modules offering user friendly and effective virtualization and gaming technology. Today's games have certain strengths, indicated Freitas and Maharg (2011):

they have been associated with increased motivation, engagement, accelerated learning, targeting specific learner groups. Referring to recent innovations in educational technology Robinson and Shraw (2008, p. 39) described that "one of the reasons animations are now found so widely is that many people believe that animations can help learners come to understand complex ideas more easily."

A rapidly growing trend is the use of synchronous tools or Virtual classrooms in academia and the corporate training programs. The technology allows synchronous lecture demonstration, and peer collaboration, instant audio and video discussions via the web. Geographically dispersed participants can virtually come together and interact with a live instructor and other learners in a scheduled event. Use of WebEx, Skype, Net Meeting, Citrix are few examples in this direction. Companies are lured by the promise of a dramatic reduction in travel time, the cost of travel, and the cost of replacing the performer while they are away attending the training.

Technology and globalization have largely reduced barriers to education. "A new paradigm is emerging, the 'global classroom. "As in the workplace, global classrooms have led to increased numbers of multicultural teams, online and onsite," explained Richard Dool (as cited in Ubell 2010, p. 161). Thanks to virtual classroom technology supported by high speed internet, students can now take virtual global field trips or take a class from a teacher who is across the ocean, from the comfort of their classrooms.

Hardware. Early computers were klutzy and the size of refrigerators and their display monitors were equally klutzy, heavy and the only sound one could hear from them was beeps. In the last ten years computer hardware technology has significantly advanced. As described by Caladine (2008), size of today's personal computer hard disk could be anywhere from 100 GB (Giga Byte) to 2 TB (Terra Byte). Most mainframe and midrange computers of the 1980s and the early 1990s did not have this storage capability.

Dr. Singh had expressed that to support the "increasing demand for content to be digitized and placed online, there is a need for more space for storage." He anticipated that "the cost of storage will come down drastically in the next 10 years while the Nano and other technology may improve the storage capacity and its retrieval speed." Mr. Vikram had anticipated that the use of multi-media, increased processor speed in the computer, wireless connectivity using satellite technology...effective use of simulation and the animation capabilities to increase in the next 10 years that would further improve the effectiveness of e-Learning. Similarly Dr. Singh had expressed that the use of multi-media and animation, new technologies involving new processors will bring paradigm shift in the way we look at training delivery.

Simple flash card in a digital camera or an USB (Universal Serial Bus) Memory drive could store 5 to 20 GB of data. Caladine (2008) further explained that some of the smart phones such as iPhone of today can store up to 80 GB of data and are much sleek in size compared to hard disks of the early to mid 2000s. The move from mechanical Hard Disk Drive technology to Flash Memory technology has been a significant technological advancement in the storage space. Flash memory technology gaining significance around 2008, has not only contributed to the reduction in size of Hard Disk Drives but also the data storage and retrieval speed capabilities while eliminating the mechanical failures associated with the earlier technology.

According to Kumar (2011) the first USB drive was introduced in 2000 by IBM and came with a memory size of 64 Mb (mega bytes) and with the continuous advances the memory size moved to about 250 Mb in 2005. Currently the USB flash drive, also called the USB 3.0, have storage capacities up to 256 GB. This is almost equivalent to the size of an Hard Disk in a PC in 2005. With continuous technological advances including the Nano technology, within the last five years, the size of hard drives have been reduced significantly while increasing the storage space and reducing cost per megabyte making it

more affordable to individual user. According to Zamer (2001) of Intel Corporation, currently disk capacities are doubling every nine months and this is helping with the digitization, storage and retrieval of volumes of media rich course contents.

m-Learning or Mobile Learning. Having used PDAs and Blackberries to support "Learning on the Go," Mr. Ram, Mr. Patel, Mr. Johnson, Dr. Singh and Mr. Vikram had predicted that the mobile technology would advance further and the cost of transmission would be more affordable thereby enabling the anywhere and anytime use of e-Learning. With the introduction of iPhone in 2006, the multi-functional smart phone era has began and the popularity of m-Learning became a world-wide phenomenon. As indicated by these participants, prior to the introduction of smart phones, the mobile learning or "Learning on the Go" was limited to email and text communication.

m-Learning is any activity that allows individuals to be more productive when consuming, interacting with, or creating information, mediated through a compact digital portable device that the individual carries on a regular basis, has reliable connectivity, and fits in a pocket or purse (Quinn 2010). With the current ability to provide learning content containing rich text, audio, video and graphics to a variety of mobile devices the learners can access from anywhere, anytime the mission critical information, just in time, without returning to their offices or homes or even turn on their laptop computers. This is gaining significant importance and has led to the availability of a variety of powerful smart phones and tablet PCs that could exceed the speed, processing power, multi-tasking capabilities and storage capacity of the early desktop or laptop computers .

Finn (2010) explained that today's mobile devices such as smart phones are much more than simple phones but include features such as GPS (Global Positioning System), Audio/ music player, recorder (audio and video), camera, video conference, voice mails, instant / text messaging, web browser, email, calendar/ schedule, phone book/ contacts, notes/ memos, tasks/ to Dos, games, video streaming and many more with limitless

number of applications (currently about 230,000 applications on Apple Computer's iPhone).

According to Asif (2011) Mobile Communications is one of the most valuable innovations of the twentieth century. It started in the 1970s and became one of the most common forms of communications in the mid 2000s. Mobile wireless communication is continuously evolving and mobile phone is all set to become the Third Screens after TV and computer. Asif further described that it is a single technology that enables voice communications like traditional landline, broadband data communications like DSL (Digital Subscriber Line), financial services like banks and infotainment like TV.

As per Gartner Group/ AMR Research predictions (as cited in Liebowitz & Frank, 2011), the number of device types will explode in this coming decade as part of our connected experience to information. By 2012, for every personal computer (PC) that ships, whether it is a laptop, desktop, or server, there will be twice as many alternate devices that ship. The PC as we have known it since the 1980s will give way to more situational devices. Of these devices, six out of ten shipping in 2012 will be smart phones.

According to Kumar (2010), new innovations in mobile devices and the software are enabling better and faster web browsing, email, media, instant messaging, games, video streaming and audio players. According to Asif (2011), mobile devices are turning from a mere voice only tool to a data centric and multimedia rich commodity. 3G wireless devices are fundamentally redesigned to meet the growing demands of information, communication and entertainment needs of the users.

m-Learning is a natural outcome of the growth in small portable devices such as PDAs, mobile phones, MP3 players and sound recorders. The trend is to combine mobile phone technology with hand-held computer equipment to gain the functionality of both. "You can now receive your emails almost anywhere through devices such as Blackberries and it is normal for phones to be combined with other feature such as camera" (Allen

2008, p. 18). Allen added that m-Learning increases the flexibility of learning so that you can study as you travel or in the short intervals between other activities (e.g. waiting for an appointment). It provides you with the means of fitting learning into your busy life. It is ideal if you are a commuter or a field based employee.

m-Learning is big already, and is growing bigger at a rapid pace. The time to be thinking m-Learning is now (Quinn, 2011). With powerful applications, ability to work across a variety of bandwidths and the worldwide telecommunication networks, mobile devices have already become part of learning and knowledge sharing in most corporations. Quinn (2011) explained that mobile applications and tools are becoming more powerful and easier to use. Providers are making sure that developed contents can operate on a wide variety of platforms, and conversion tools mean content already developed can be more widely deployed. With these growing technological advances in m-Learning, e-Learning seem to have found a new and effective channel that is already exploding globally.

Finn (2010) cautioned that m-Learning is not about putting e-Learning courses on a phone; you should not think about m-Learning as delivery of courses. m-Learning is about augmenting our learning - and our performance. Finn further explained that m-Learning includes a role in formal learning and, occasionally can be the delivery mechanism for a full learning solution, but the real opportunity is augmenting learning and performance, not just learning delivery.

The mobile technology will change the world. The ability to augment our capabilities in synergistic ways will empower us to new opportunities to interact, share and learn. It is up to us to harness this capability in useful ways (Finn, 2010). Similarly, Lawrence and Belem (2009) explained that it is clear that new types of devices - small, handheld, graphical tablets which are internet enabled - are going to change the way we communicate, collaborate and learn.

Cloud Computing. Cloud computing offers significant advantages in its low startup costs and quick delivery of computing resources, as well as its pay-as-you-go cost structure. In addition, "Cloud Computing offers ease of management, scalability of systems as needs grow, and device and location independence so people can access these systems from many different devices from a PC to a virtualized desktop to an iPad to a smart phone like a Blackberry or iPhone" (Hugos & Hulitzky, 2011, p. 88).

New Media Consortium called Cloud Computing as 'imminent' (as cited in Herrington et al., 2010). Cloud computing promises to revolutionize Information Technology and business by making computing available as a utility over the internet (Shroff, 2010). When technologies involving the Internet, web browsers, virtualized servers, parallel computing, and open source software are combined, they produce an entirely fresh set of possibilities for delivering computing resources. The term Cloud Computing is the concise description of these combined technologies (hardware, software and services combined) - that the companies and users access without the need to know exactly where that hardware and software is physically located (Hugos & Hulitzky, 2011).

"Cloud Computing Defined: Today's cloud computing services provide common business applications online that are accessed from a web browser, while more traditional computing models of the 1960s through the 1990s involved users accessing software resident on a computer owned by the company or (after the introduction of the personal computer) on the very computer they were using" (Hugos & Hulitzky, 2011, p 44).

Marks and Lozano (2010) indicated that increasingly many organizations have started to take advantage of Cloud due to its advantage of agility, capability alignment, and fixed cost avoidance to outpace their competition. Hugos and Hulitzky (2011) explained that Cloud Computing arises from the combination of technologies that have been developing over the last several decades. And the ongoing rapid evolution of cloud

technology is driven by the pressing needs of organizations to cope with change in their markets and change in their financial situations. In a time where information and communication technology is mission critical to every facet of business operations and where safe bets are hard to find, it is safer to explore new markets and new ventures on a pay-as-you-go basis instead of investing a large sum of money up front and hoping the investment pays off. Hurwitz, Bloor, Kaufman and Halper (2010) believes that Cloud Computing makes this possible. It can be quickly rolled out; it can be quickly scaled up to handle increased volumes if business takes off; and it can be just as quickly discontinued or scaled back to cut costs if businesses does not take off. This variable cost operating model allows companies to replace capital expenses with operating expenses, and that is critical to any organization operating in high-change, unpredictable environments. Cloud computing enables companies to best align operating expenses with revenue and protect their cash flow and operating profits.

In addition to its financial impact, cloud computing also affects how companies structure their organizations, how they coordinate their daily operations, and how they engage and motivate their people and their business partners (Hugos & Hulitzky 2011). They further described that 'IT Commons' are being created right now by companies like Amazon, Google, Hewlett-Packard, IBM, Microsoft, and other IT vendors who are building out enormous data centers and offering their computing power and software applications on a pay-as-you-go basis, running nonstrategic business functions like running data centers and standard applications like email, Human Resource Information System, Enterprise resource planning (ERP), Knowledge Management, Customer Relationship management (CRM), and so on.

The rise of the Cloud is more than just another platform shift. It will undoubtedly transform the Information Technology industry, but it will also profoundly change the way companies operate, people work, communicate and learn (Williams 2010). Pay-as-

you-go cost structure - because there are no long-term commitments, the cost of Cloud Computing resources is a variable cost, not a fixed cost; cost fluctuates depending on the amount of usage; organizations will start slowly moving into Cloud Computing.

In terms of e-Learning, Cloud Computing model offers enough flexibility to choose the programs, pilot, test and retest their effectiveness and the impact on the business instead of investing heavily upfront, as fixed expenditure, and often end up not using those programs. According to Liebowitz and Frank (2011), Cloud Computing will have a major impact on the workforce in terms of ubiquity and reach. "The cloud can span across many different types of networks, such as broadband, cellular, or new wireless sensor networks such as Zigbee, as well as across multiple organizations with a common mission. New scenarios will be possible that will make it easier for workers to remain in the context of their business process or learning environment " (Liebowitz & Frank, 2011, p. 32).

The concept of Cloud Computing is very nascent, there are several major issues including the data integrity, confidentiality and security etc. need to be addressed (Marks & Lozano 2010). However, anticipating significant growth in Cloud Computing, several leading technology companies including Google, Microsoft, Amazon, IBM are already building huge Data Centers. As indicated by Babcock (2010), Microsoft's new facility in Chicago is designed for 300,000 servers, and according to Microsoft's president of servers and tools, Bob Muglia, as best he knows, it is the largest data center on earth. As we know, businesses now built around web-servers and Cloud Computing seem to be the next phase of Internet computing, communicating and learning. It will be interesting as to how this new concept will evolve within the next few years and impact e-Learning.

Recommendations for Further Research

The purpose of this study was to understand e-Learning as a phenomenon, identify its evolution, investigate its current status and the advances that can be

anticipated in the future, from a global context. Findings in this study were consistent with prior research and several advances have significantly progressed as predicted while new concepts such as m-Learning (mobile learning) and the Cloud Computing have recently emerged. This study has resulted in several significant findings and conclusions, and is intended to evoke further discussions and research. It is the hope of the researcher that the study will stimulate further research on this topic. Therefore, the following recommendations are offered as an opportunity for further research.

Mobile e-Learning Technologies

The first recommendation would be to investigate additional technology and tools that would help improve the e-Learning. These may further advance synchronous learning capabilities and replicate the traditional classroom environment. Technology, such as smart phones, tablet PCs that could stream text, hypertext, audio and video contents and allow chat and instant messaging may generate more intimate learning environment allowing students to debate and collaborate in real-time setting irrespective of time and space. With this technology being very new and evolving, further research is recommended in this area.

Localization of e-Learning Globally

As expressed by Martin Schell (as cited in Edmundson 2007, p.155), "considering that 347 languages have over 1 million speakers each and account for 94 percent of the world's population, cultural inclusion and localization of e-Learning while globalizing the design, content and delivery would be a major challenge." Schell further described that since much of the current e-Learning is produced in the United States, Canada and Western Europe, countries such as China, Japan, India, Middle East and Africa are currently left out of e-Learning designs. According to Ruth Gannon Cook and Caroline Crawford (as cited in Edmundson, 2007, p. 187) "the question of how to provide e-Learning that accommodates diverse learning needs of multicultural and multinational

learners is becoming critical. Central to cultural challenges in globalized or e-world learning is the issues around language." Since majority of Internet content is in the English language (Batton, 2000; Van Dam & Rogers, 2002; Wilborn, 1999), non-English speaking individuals may feel that technology has nothing to offer them since they cannot understand the content. Gunawardena et al. (2003, p. 771) stated that "future researchers need to conceptualize identity issues in cross-cultural studies to go beyond simplistic stereotyping and use qualitative methods to understand how people define themselves." Further research in this area is recommended.

Summary of the Study

The growth and development of e-Learning has become a dynamic component of education, training and knowledge management, providing added flexibility and learning opportunities without the constraints of time and space. Results demonstrate that e-Learning has evolved over a period of time as a global phenomenon and has transformed the way we learn. On-demand, anywhere, anytime, synchronous and asynchronous features of e-Learning and the introduction of the World Wide Web soon gave another channel to reach a vast pool of learners compared to traditional learning methods. Providing a pathway for rapid propagation of files and student assignments, the internet was viewed to have a greater impact on the development of education.

We have witnessed significant increase in the speed of internet, computer storage and the processor capabilities. While early versions of computers were klutzy and the size of refrigerators, today we carry Laptops, Personal Digital Assistants (PDA), Handheld or Tablet PCs, Smart Phones and other electronic gadgets to the beach and surf the Web or download class assignments over wireless connections at the speed that was unheard just a few years ago.

In today's knowledge driven global economy, this study has helped me understand the evolution, current state and the future trends of e-Learning. The study has

also convinced that e-Learning is both effective and efficient. While this study may help the user communities around the world to embrace e-Learning and be part of the global knowledge force, this may also influence decision makers to envision the trends of e-Learning and strategize its implementation to develop, sustain and improve the competitiveness of their human capital. While this research has made a few recommendations that could help balance the perceptions held towards e-Learning which may intensify its acceptance, it appears that only time and the continued advancements may facilitate its further adoption, globally.

As explained by Negroponte (2007), one clear issue is that nearly 2 billion children in the developing world, consigned to poverty and isolation, are inadequately educated or receive no education at all. According to Volery and Lord (2000), if universities and corporations do not embrace e-Learning technologies, they will be left behind in the race for globalization and the technological development. With the future of learning inextricably tied to the use of technology, and as Cheung et al. (2004) ascribed, e-Learning is an answer to tomorrow's learning needs.

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APPENDIX: INVITATION TO PARTICIPATE

Dear

Greetings,

I am Sudendra R. Rao, PhD Candidate at the School of Education, Colorado State University, Colorado, USA and come from over 20 years of International Human Resources and Business background. I and my PhD program Advisor, Dr. Gary Geroy, Professor in Human Capital and Economic Development, Colorado State University, Fort Collins, Colorado, USA are conducting a research study leading to a dissertation.

The title of the Research Study is "Global e-Learning: A Phenomenological Study." Dr. Geroy is the Principal Investigator and I am the Co-Principal Investigator of this research study.

This study will focus on understanding from your perspectives, the evolution of e-Learning, technological advances and the trends that can be anticipated in the foreseeable future, say, in the next ten years or so. Based on your convenience, preference and feasibility, interviews will be conducted either over Telephone, Email, Web Chat or in-person. The duration of the interview will be approximately 60 minutes.

This is an opportunity for us to learn from your expertise and knowledge in e-Learning, based on your Research, publication/s and /or experience. Your participation in this research is voluntary. If you decide not to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

For your review, attached to this email is a Consent Form providing you with details about this study, our contact particulars and a list of Interview Questions. If interested to participate, please communicate your consent to me through a means that is convenient to you including email, phone, letter or fax.

Please feel free to contact me or my Advisor Dr. Geroy, if we can provide you with any additional information or clarifications about this study.

I earnestly look forward to your participation in this study and thank you in advance.

Sincerely,

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August 15, 2006