Chapter-2

Review of Related Literature
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"Learning without thought is labor lost; thought without learning is perilous"

~ Confucius (551–479 BC)

2. Introduction
A literature review is an organized presentation of what has been published on a topic by scholars. It acts as a path finder in the process of research; the vision is directed towards achieving a particular goal. It helps to know where and what former scholars have left and how to start from that point.
The intention and rationale of this literature review is to better understand the research that has informed the development and design of e-learning. The following section begins with a review of e-learning, its role, impact and success. Subsequently, there is a discussion of courseware, tools and technology, softwares used, standards followed and supported by various key theoretical underpinnings. Finally, this section offers an examination of relationships among these factors. They have been drafted under the following paras:
   i. E-Learning: Role, Impact and Success
   ii. E-Learning Tools and Technology
   iii. E-Learning Softwares
   iv. E-Learning Standards
   v. E-Learning Courseware
   vi. E-Learning in Higher Education
   vii. E-Learning in LIS Education

2.1 E-LEARNING: ROLE, IMPACT AND SUCCESS

2.1.1 Role
E-learning has become an active learning methodology and teaching technique that it is instilling in students a sense of self discovery without sacrificing the basic tenants of educational taxonomy or a rigorous understanding of the foundation and development of the academic disciplines the student may be
studying and need to learn. The main roles of e-learning is to extend learning that involves the addition of discussion forums/email/virtual presentations, software simulations, etc. to existing learning and replace traditional learning with new and effective method of teaching and learning. The literature about the role of e-learning by various authors is summed up under.

Saeed & Samani (2014) says that the revolution brought by Information Technology and Tele-Communication has put a challenge for modern educationists to cope up and move quickly to join the revolution. The objective of the education from education for all is to be changed to distinguished education and excellence for all with the aim of using ICT for teachers, students and business men. Scientific research looks forward to improve the coming generation in the application of acquiring skills. In order to realize those aims, it requires the changing of traditional education pillars like teachers, learners and schools and changes it to more modern educational operations.

In present days, our societies are slowly becoming knowledge-centric and pushing people to learn more things in order for their day-to-day survival (Joshi, Subrahmanyam & Anvekar, 2014). In line with the societies' trend, majority of the organizations are completely becoming knowledge driven and hence, the success of any organization is highly dependent on how it trains, motivates and creates an environment which is conducive for learning, for their workforce in all levels, irrespective of their position in the corporate ranking. To address this, today's knowledge solutions must be crisp, quick and should be available readily at a handy distance. This forms the genesis and preamble for on-demand e-learning for customized skills enhancement.

The greatest asset to e-learning is its ability to allow the student to control the learning process by offering him an immediate, action oriented, practical learning experience (Kamsin, 2005a). The author feels it for sure that conventional learning will be replaced by e-learning in the forceable future. With web based learning, communication among learners from remote places are enhanced, knowledge being acquired and transferred among the learners,
the ability to conduct an open discussion is enhanced and students can learn according to their own schedule. All these facilities create the creative abilities that cannot be seen in conventional learning. According to author, the most important for the learning process, besides the above said points, is the flexibility and it can be best seen in e-learning.

Furthermore, e-learning aims at replacing old-fashioned time/place/content predetermined learning with a just-in-time/artwork-place/customized/on-demand process of learning (Alsultanny, 2006a). E-learning attempts to automate education, replace a paid instructor, and develop self-paced learning, but for this purpose, an efficient management support and IT platform is needed. Key to success is the ability to reduce the cycle time for learning and to adapt ‘content, size and style’ of learning to the respective user and their learning environment. E-Learning is ideal for global corporations with people in multiple time zones; there is no need to coordinate travel and delivery schedules. According to the author, Internet-based training can reduce costs, with housing and travel costs accounting for the majority of the savings.

In search of better, more cost effective ways to deliver instruction and training, universities and corporations have expanded their use of e-learning (Smart & Cappel, 2006). Estimates suggest that the amount of money U.S. companies spent on the IT-based delivery of training grew from $3 billion in 1999 to $11 billion in 2003. In addition, the worldwide market for e-learning was projected to be more than $18 billion by the end of 2005 with some organizations projecting that over half of their training and education will be delivered electronically over the next five years. This suggests the role and greater potential of e-learning in the promotion and enhancement of learning. Technology and online instruction can facilitate learning by providing real-life contexts to engage learners in solving complex problems.

Rising costs, shrinking budgets, and an increasing need for distance education are causing educational institutions to re-examine the way that education is delivered. In response to this changing environment, e-learning is being implemented more and more frequently in higher education, creating new and
exciting opportunities for both educational institutions and students (Wagner, Hassanein & Head, 2008a). Globally, the demand for post secondary education is increasing and these reasons have favoured the growth of the higher education e-learning industry. With the limited capacity of existing classrooms at academic institutions and the prohibitive cost of building new facilities, e-learning is an attractive alternative.

Due to the vast improvement in computer technologies, e-learning is ready to transform the educational scenario and is being accepted by more and more schools and institutions. It is now feasible to offer remote students full, interactive participation in a class that would previously have been restricted to students who were attending locally. The creation and delivery of information has increased the capabilities of learning and this enables the knowledge to be distributed widely (Kamins, 2005b). By utilizing e-learning effectively, university's ability to transfer knowledge and expertise to remote societies can be enhanced. E-learning is made up of several methods of learning and use network technology to create, deliver and to enhance learning capabilities through Internet.

Since faculty typically develop their own course content, it is important for institutions to consider faculty needs, interests, and capabilities as institutions begin to introduce web-based courses and online degree programs. If institutions have desired pedagogical standards for such courses, it is important for the instructors of those courses to feel confident in the course material as well as the instructional environment (Summers et al., 2005). While the online learning environment poses some challenges, there are some core teaching principles that continue to exist such as the setting and communication of expectations, providing student feedback, and the evaluation of student work.

University education in both Europe and the USA has for a couple of decades been in focus for revision and transformation. Several western researchers have described this development as “mass education.” More and more students are supposed to be educated within higher education by means of fewer and fewer resources. One way of supporting and improving education
may be found within the transformation of teaching and learning commonly referred to as flexible learning, i.e. developing courses with the help of flexible learning methods and the support of ICT (Karlsudd & Tagerud, 2008). Thus e-learning is better seen as the only viable solution for this mass education. The positive role of e-learning can be best viewed by looking at the pace of transformation of the Higher educational institutions who are increasingly moving toward the use of the Internet and related technologies for delivery of their courses, both on campus and at a distance (Siragusa, Dixon & Robert, 2007a). E-learning provides significantly different and interesting possibilities for computer-mediated communication and learning from other forms of educational technologies. The entire class website can be duplicated onto a CD-ROM for the students with slow and unreliable Internet access. In other cases, the lecturer may use a class website as a supplement to their face-to-face delivered classes. Students in higher education are demanding greater flexibility in the delivery of their courses and all this can be achieved with the idea of e-learning.

When a plane breaks the sound barrier, the noise reverberates for miles around. The advent of e-pedagogy produced no sonic boom, but the message educators are getting rings loud and clear. Technology is a potentially powerful tool for more effective teaching and deeper learning. Used wisely and well, it may break down barriers to learning that traditional classroom-based instruction has unintentionally created (Kuriloff, 2005). Face-to-face, real-time interactions offer immediacy, personal contact, and community—all highly regarded features of a positive learning environment— instructors creating courses for online delivery have commonly considered the absence of face-to-face interaction a loss and have struggled to compensate for that loss. The quest for good pedagogy along with the effort to employ technology as a tool to enhance learning has introduced new thinking about how we might teach more effectively. Instructors have only just begun to rise to that challenge.

Besides the possible illumination of poor educational systems in developing countries, e-learning can prove equally an alternative for the educational
support of the deaf, as a paradigm of deaf inclusion in the information society (Sapountzaki et al. 2006). Design and development of educational content for teaching GSL (Greek Sign Language) to early primary school deaf pupils, has resulted in a platform that uses a signing avatar to present educational objects. The platform employs standard techniques to present educational material presentation in deaf classes and also allows tutors the option of dynamically modifying educational material according to lecture planning and class needs. However, moderate extensibility of current functionalities and addition of content-related options will enable its exploitation as a bilingual application.

2.1.2 Impact

The impact of e-learning can be seen more clearly by the facts that there has been an extent in the nature and use of e-learning in further education worldwide. Learning attitude of teachers and learners has changed in a positive sense as more and more faculty members are ready to accept e-learning and its technology. The learner attitude and confidence has boosted with e-learning and the access to e-learning resources has increased many folds with the students able to plan, prepare, share materials and communicate with other learners. Following the positive impact of e-learning, numerous centres are being setup in various parts of the country and abroad. Universities and colleges are adopting new technology to keep pace with the changing world. The impact of e-learning can be ascertained from various studies worldwide among which some are mentioned below.

Patel & Shah (2014) believes that teaching and learning phase has been changed now a day. The students prefer global learning system rather than the physical, rigid learning process which was used till the time. Chalk sticks, board, duster, books and all those physical things have been replaced by e-learning process where fundamental focus is on internet. Students are posting their queries on the public forum to get answer and within short period of time they are getting very good response. The author’s believe that the goal is to integrate software and hardware for e-learning system, online education and
web technologies based multi-agent system, information technology integration to teaching which will result in advanced teaching and learning system.

The complexion of higher education sector has undergone a sea change in the last two decades. Internationally, a majority of the institutions offering higher education is making strenuous efforts to revise its academic orientations and the course delivery strategies in the light of the interplay of these global changes and emerging challenges. With the advent of the Internet technology, integration of the Information technology (IT) tools into higher education stream has become an easy task (Elango, Gudep & Selvam, 2008a). In this context, online learning mode has emerged as a major higher education option before the global student community and as a consequence, virtual universities are built directly on the computer networks to offer online education.

Further highlighting the impact of e-learning, Tutunea, Rus & Toader (2009) says that e-learning has developed as an alternative to traditional education because the globalization of the online environmental communication has influenced all sectors of human activity and education as a personal and professional training has undergone the same trends. Many universities are joining the trend of translation from traditional education to online learning environment and it increases the flexibility of students' study program. The permanent access to courses and the possibility to have quick feedback from teachers, on one hand, and their reduced time for study, on the other hand, determine the positive influence of the platform on the students' study time.

The lecturer's role is an important factor in the design of online learning environments in that various roles can be supported (Siragusa, Dixon & Robert, 2007b). A lecturer may need to assume a didactic role in order to guide student's learning. A lecturer with postgraduate students studying entirely online may assume a facilitative role and be available to assist students as required either through online communication facilities or via telephone. Lecturers should routinely check the online communication facilities for new postings and provide prompt and adequate replies to student questions. Lecturers with a low perception of the importance of online learning may not
fully consider how to apply online strategies to enhance their students’ learning. E-learning is pushing lecturers to show decision making input, online support and training and online abilities to enhance students’ learning.

The Internet has profoundly changed the way we communicate and interact with one another and has brought dramatic changes to education as well. As of 2003, 100% of public schools in the U.S. had Internet access, up from 98% in 2000. Ninety percent of public schools offered Internet courses using asynchronous computer-based instruction. Eighty-eight percent of public schools indicated plans to start or increase use of the Internet as a primary mode of instructional delivery (Lee-Post, 2009a). There has been 14% increase in distance learning courses, 123% in college enrollments and 45% increase in using asynchronous internet-based technologies in U.S.A. All this provide strong evidence that Internet-based technologies have transformed traditional in-class learning to a new way of learning called e-learning.

QAA (2006) in its report of the outcomes from 70 institutional audit institutions’ support for e-learning reported that institutions were meeting the challenges involved in implementing strategies and policies, resourcing and coordinating projects and initiatives, and providing guidance and support for staff developing and delivering e-learning. Several institutions had recognized their responsibility to provide training in the pedagogical, as well as the technical, aspects of e-learning. In view of the impact of blended teaching methods on students’ learning experience, several reports indicate that care had been taken in collecting student feedback. The reports confirm that students welcome the increased use of e-learning and are generally positive about the quality of their experience of e-learning and distance learning.

Further looking at the impact of e-learning, Goi & Ng (2009) has given the account that the govt. of Malaysia is interested in continuously developing the people by promoting a ‘Continuous Learning Concept’ at the industry, organization and individual level in both the public and private sectors. The Government will set up the national ‘Lifelong Learning Council and has directed the public and private higher educational institutions to establish one
centre of life-long learning. Universities in Malaysia have responded actively to this challenge, guided by the Ministry of Education's strategies to enhance the use of ICT in the e-learning. Thus e-learning has left a mark on the developing countries to improve the sector of education by accepting the new forms of learning.

Falcao and Soeiro (2007) maintained the impact of e-learning by saying that in Higher and Continuing Education, the use of e-Learning methodologies is becoming a common resource. Also, e-Learning is by its nature a multidisciplinary subject and, consequently, very complex. In the past years, e-learning strategies have been implemented in Institutions of Higher Education and others. Although these implementations have different objectives and follow different strategies, the importance of the use of e-learning technologies to improve the Quality of Education has been widely accepted. Implementation of e-learning is very diverse, technically and pedagogically, and the learning outcomes increase considerably as have been shown by the studies of various e-learning pilot projects.

E-learning has the potential to revolutionise the way we teach and how we learn. The recent developments in technology are changing the role of the teacher and the learning experiences of school children, engendering an exciting future where students study increasingly from places other than school. A new milestone in the development of e-learning in schools will be the use Virtual Learning Environments (VLEs), enabling new opportunities to personalize learning (Boulton & Trent, 2008). Increased development with e-learning in schools will enable a more flexible use of the school building and the school day, as well as vertical grouping and movement of students. In U.K. there has been an establishment of 10 broadband consortia to support the development of e-learning within schools. Thus the impact of e-learning is very visible and its future predictions are very clear.

The impact of e-learning is better seen on the industries as well. One of the famous industry analysts Brandon Hall found that companies using technology-delivered courses experience a 40-60 percent cost savings over instructor-led
education. Perhaps even more important than cost savings are the flexibility, adaptability, and responsiveness of the e-learning approach in a world where learning faster and better may be the only sustainable competitive advantage (Longmire, Tusso & Wagner, 2000). As the Internet has expanded and e-commerce has mushroomed, the possibilities for e-learning delivery have become increasingly attractive. A recent InformationWeek survey of 300 information technology executives indicated that online courses are likely to become the standard method of corporate training within the next few years.

The Corporate world has been the main driver of e-Learning. The main uses have been corporate training and knowledge management initiatives that are gradually merging, as organizations become more and more knowledge driven. It has altered training goals and expectations. It has also created a mechanism to develop and implement programs when and where needed. E-Learning is shown to be effective in changing organizational culture so as to facilitate the sharing of knowledge instead of continuing to reward the hoarding of it (Chakraborty, N.Da). It has been predicted that the number of corporate universities will exceed traditional ones by 2010. There are many reasons why e-Learning is entering the workplace. Firms view it as a new way to 'deliver instruction, boost worker productivity, broaden training opportunities, reduce costs, improve instructor productivity, stay competitive, improve motivation and morale, and implement strategic initiatives.'

E-learning has enrolled itself in the educational society and to meet the growing demands of students, teachers are required to be able to blend themselves effectively in such an environment. For this reason, UNESCO's took an initiative for the Next Generation of Teachers (Next Gen) Project which is designed to assist Teacher Education Institutions (TEI) in the Asia-Pacific region to prepare them to judiciously use technologies for teaching and learning to address the new classroom environment (Bogart, 2009). The basic change that’s taking place in learning methodologies is changing the focus from a teacher centered classroom to a student centered class room.
Rural students look to e-learning for advanced courses (Collins, 2005). More and more, students in rural districts are looking to distance education, or e-learning, to take advanced-level courses that aren't available in their schools. A study released in March by the U.S. Department of Education found that one-third of public school districts had students enrolled in distance education courses in 2002-03. Nearly half of all rural school districts had students taking distance education courses. Less than 10 years ago, no state used the Internet to provide courses to middle or high school students. But distance learning has exploded in popularity over the past few years as technology has improved and budget constraints have made it increasingly difficult for schools to offer a wide variety of courses.

The concept of digital divide is quite prevalent between rural and urban India (Mukherjee, 2002). When it comes to the availability of resources, rural sector has always suffered. Now with the passage of time, there has been a shift in the government decisions in terms of spreading education in rural areas. The rationale behind the idea is to enable them utilize the natural resources by providing them the vocational training with an academic perspective which is available in their area in order to make their living. Various initiatives like Gramjyoti, Gyandoot, Byrraju foundation, AKSHYA, AAROHI etc. have been taken by the central and state governments after the importance of distance and online education was felt.

Over the last six years, the Australian Government has invested over $95m to enhance e-learning in the vocational education and training (VET) sector. This investment was based on the espoused benefits of e-learning. There is much anecdotal evidence and some research to corroborate the benefits of e-learning and provide support for the return on investment in e-learning technologies (Choy, 2007). In 2004 the Australian Flexible Learning Framework developed a suite of quantitative and qualitative indicators on the uptake, use and impact of e-learning in the Vocational Education and Training (VET) sector. It was the intention of the Framework to develop the indicators, test these and make them
available for users to adapt these to establish organizational goals and benchmarks for e-learning.

2.1.3 Success

The success of e-learning has been visible with the growing market of e-learning. The market for global higher education has grown beyond expectations and today, the success goes in billions and still growing. With the limited capacity of existing classrooms at academic institutions and the prohibitive cost of building new facilities, e-learning is an attractive alternative. The success of e-learning has been summed in the below mentioned reviews of literature on e-learning benchmarks and success.

E-Learning is a boomerang around the world. Government and corporations see it as an essence of business strategy, and the students have gone mad for the courseware and the flexibility of the system (Rajpal, Singh, Bhardwaj & Mittal, 2008). Many organizations in India like ICAI, ICSI, ICWAI, ICFAI and others have developed the successful distance learning coursewares and modules. These organizations have been successful in the operation of this modular distance-learning model since their inception. The success of these Institutes can be attributed to the fact that being a distance-education society, they provided the latest industry oriented curriculum and syllable, fair and robust evaluation systems and the management and administration by professionals of the same field.

In 2001, Northumbria University rolled out an institution wide adoption of the Blackboard Virtual Learning Environment (VLE) and within few years, there was over 90% take up by academic staff with 32000+ students attached to live sites and now this e-learning platform (eLP) has became the integral part to e-learning of virtually all their students (Bell & Farrier, 2008). The university had recognized that e-learning is not simply making use of a VLE but covers a broader spectrum of information and communication technologies (ICT). Till then, it continues to improve and upgrade its virtual learning environment and the continued cycle of improvement in which the university engaged provided
benefits for the whole institution, individual areas within it and for the wider higher education community in the UK.

The success of the e-learning is better analyzed by the stakeholder matrix in which the responsibility for the success of e-learning is dependent on various stakeholders’ viz. students, instructors, content providers, technology providers, employers and accreditation bodies (Wagner, Hassanein & Head, 2008b). Each stakeholder group has an important role towards the common goal of enhancing the overall learning experience. Students and Instructors should provide feedback to improve future experiences, and communicate the learning possibilities that e-learning creates. Institutions should provide the technical infrastructure and support while as Content and Technology Providers should provide high quality, interoperable solutions that consider learning principles. Accreditation Bodies should provide and enforce clear guidelines for this new form of learning delivery. Employers need to recognize the validity of this form of education and work with other stakeholders to ensure that graduates meet the needs of the job market.

DeLone and McLean (2003) brought an e-learning success model which succeeded in bringing together an integrated view of information systems success. Lee-Post (2009b) also came up with a success model which was adapted from DeLone and McLean’s model and it not only succeeded in the same perspective as that of the said model, but the model also helped instill a process approach to information systems success. The process approach posits that the overall success of e-learning initiatives depends on the attainment of success at each of the three stages of e-learning systems development: design, delivery, and outcome analysis. A primary contribution of this research is in furthering our understanding of how to define, assess, and promote e-learning success.

Elango, Gudip & Selvam (2008b) tried to find out the quality and success of e-learning and reached to the following conclusions after their study: (a) e-learning never resort to any kind of malpractice; (b) e-books, e-journals, blackboards and WebCT are useful; (c) testing instruments and grading are
satisfactory; (d) graphic animations makes it interesting. But weaknesses were also observed which, in their opinion, could be rectified more easily by imparting a better approach and perspective. A holistic approach needs to be adopted by all concerned for the success of the e-learning system with regard to various vital aspects such as administrative issues, course contents, instructor support, viper sessions, grading and assessment etc. so as to maintain the standard at par with the other most effective traditional methods of learning.

2.2 E-LEARNING TOOLS AND TECHNOLOGY

For many faculty and students, web-based instruction and learning is often a new experience. Without previous e-learning experience, it can be difficult to transfer traditional course practices to the new medium (Su, 2005). Newer technologies and the evolution of older technologies, such as forums, chatrooms, and pod casts help make the online learning environment highly interactive; however, without adequate preparation to use the technology, the technology seldom meets expectations.

The rapid expansion of Internet technologies has provided a range of learning management systems that can support teaching and learning activities through e-learning in educational and training institutions around the world. A web-based learning tool known as Course Management System (CMS) or Learning Management System (LMS) is generally used to deliver e-learning courses' (Daniel, 2013). One such example is the Divine Word University which is embracing the use of e-learning technology through the adoption of the Moodle platform to support and improve teaching and learning activities.

Academic ability also influences the way students use e-learning tools to support their learning. Students enter universities and higher educational institutions with varying levels of academic background (Rodgers, 2008). Some may be fast learners while others need longer time spans in order to master skills being taught or learned. Some will know and understand the value of education while others may not be serious about getting an education. Students also enter tertiary institutions with varying levels of experience and exposure to computing technologies. Those who have some form of computer
experience will be more eager to use e-learning as a tool for learning than those with limited or no knowledge of it. This can hinder their progress in learning if they are not supported well by the learning institutions especially if the learning institutions use e-learning packages as teaching tools.

Various perceptions and attitudes on the use of technology for teaching and learning influence the way users embrace its use and application in learning environments. The study on the use of e-learning technology for teaching and learning showed users’ perception of this mode of teaching and learning had a significant effect on students’ interaction with the e-learning package (Ijahad, et al., 2012). This suggests that whatever perceptions users have on the use of e-learning courses will influence their willingness or unwillingness to interact with them.

El-Khouly (2005) argued that CD-ROM technology, when used as a means for storing and sharing data, can ameliorate the current limitations of e-learning courses often been viewed as a competitor to the Internet. While CD-ROM production is normally the realm of professional content creators using complex tools, the Internet has developed as a medium for which almost anyone can create content. Considering the poor connections of internet available in many developing countries, CD-ROMs become an attractive method for transporting static information, particularly if it is voluminous. Using a CD-ROM does not preclude the complimentary use of the Internet; it merely provides an alternate vehicle for the transmission of static content.

Foregrounding further the use of various e-learning tools, learning objects are given the top priority. The formal term for the “packaged” knowledge is a learning object (Cohen & Nycz, 2006). One of the most important aspects of e-learning are Learning Objects and the various software tools that aid in their development, storage, use in teaching, and administration. This is because e-learning is often delivered using specialized software and Learning Objects are the raw material of such systems. Commonly, learning objects’ presentations include a variety of media, that is, they are multimedia in format. Likewise,
commonly their content is organized around standards like SCORM, IEEE etc. to create metadata about the contents of the learning object resource.

Further highlighted the importance of e-learning tools, Fetaji (2009) identified 18 indicators; they are defined as (1) learner education background; (2) computing skills level (3) type of learners, (4) their learning style and multiple intelligence, (5) obstacles they face in e-learning (e-learning barriers), (6) attention, (7) content (suitability, format preferences), (8) instructional design, (9) organizational specifics, (10) preferences of e-learning logistics; (11) preferences of e-learning design; (12) technical capabilities available to respondents; (13) collaboration; (14) accessibility available to respondents; (15) motivation, (16) attitudes and interest; and (17) performance-self-efficacy (the learner sense their effectiveness in e-learning environment); (18) learning outcomes. According to author, each e-learning initiative when measured against the provided indicators and based on them designed and build, the e-learning will be sustainable.

LMS portal defined as a tool by Ramshirish and Singh (2006) has the power of Communication, Organization, Management and Training. All e-learning developers don’t have access to programming support, or they don’t want to be restricted to simple HTML. This need has given rise to a varied number of commercial as well as open-source software products that could be used as specialist e-learning authoring tools. LMS is a technology driven platform that enables educational institutions and business organizations to move teaching, training and learning initiatives and programs on the Internet for e-learning to take place. It provides Internet/intranet based infrastructure for teachers, instructors, trainers and program directors to manage and track a student, employee, trainee’s participation and performance in e-learning.

WWW has led to a new challenge in the form of distributed information which is interpretable by humans only and machine support is limited. In e-learning it can pose a problem for the generation of hypertexts and could be overcome by the help of semantic web. The important property of the Semantic Web architecture i.e. (common-shared-meaning and machine-processable metadata),
enabled by a set of suitable agents, establishes a powerful approach to satisfy
the e-Learning requirements (Alsultanny, 2006b). Semantic Web can be
exploited as a very suitable platform for implementing an e-Learning system,
because it provides all means for e-Learning: ontology development, ontology-
based annotation of learning materials, their composition in learning courses
and (pro) active delivery of the learning materials through e-Learning portals.
The process is based on semantic querying and navigation through learning
materials, enabled by the ontological background.
Two of the Wikis, Enviwiki and WikiPedFile are the portals that have
effectively been used in the Czech Republic in preparation of e-learning
materials. Wiki tools, which became known mainly due to Wikipedia
encyclopedia, represent quite a new phenomenon on the Internet. Both of these
if linked with LMS Moodle can offer a guaranteed source of brief information
which can be used by students as an outline of the taught topics and a source of
exact definitions (Jancarik & Jancarikova, 2010). Wiki tools may be used in
development of e-learning courses not only for creation of a knowledge
database but also for sharing of experience and teacher training; Wiki tools
have also been successfully used in this area by the University of Athens for
several years.
Reusable learning objects (RLOs), considered as one of the e-learning tools,
are granular chunks of information that teach one or more objectives and can
be meaningfully incorporated into multiple training contexts. To be useful for
an organization’s knowledge management strategy, RLOs must provide user
access, content modifiability, content standards and interoperability in terms of
platform and delivery mode, consistency in the design and development of
content, and the scalability of digital entities (Chakraborty, N.D.b). Meta
tagging of these knowledge bits allows learners to find and utilize reusable
knowledge objects quickly and efficiently. While knowledge may "never
generate itself," according to the author, technology can help in the process of
sharing, stretching, compacting, and re-purposing it. However, agreed upon
standards and specifications will be needed for the development cycle of content and coursework.

According to Massa (2009), Dreamweaver and Macromedia Flash are an excellent starter tools for WBT and general web-page authoring. Essentially, Dreamweaver automates the authoring of web content by generating HTML and JavaScript code through a WYSIWYG interface. Among its many capabilities, Dreamweaver makes it easy to create animations and show/hide layers for WBT pages. Animations are one of the creative methods to make e-learning interesting and easy to grasp. Even though extensions are also available which they allows to create quizzes, including drag-and-drop exercises, and also to track learner results and output them to standards-compliant learning management systems (LMS). Author finds Dreamweaver fairly quick to learn and develop on but its capabilities are limited; Flash's output is practically unlimited. This is because Flash creates its own application file (SWF file) that runs inside the browser window but does not depend on the browser's native capabilities.

As the technology advances in the area of e-Learning, many e-Learning tools are coming up to aid in the development and delivery of courses, interoperability, transferability of skills and customization are becoming the major issues (Eswari et. al. N.D). XML gives flexibility to create customizable user interface architecture. In e-learning, learning content can be structured using XML documents. Content structured in XML has a self describing quality, allowing it to be played on any XML-enabled LMS regardless of the authoring environment in which it originated. To make student data and course material easy to read and exchange, the author stressed about the use of XML to tag or markup such information. XML also allows creating structured content that can be manipulated in different ways to achieve different educational deliverables.

Besides various tools, technology had a great impact on the success of e-learning. It is an inescapable element of business in the new economy. It is estimated that 50% of all employees' skills become outdated within 3–5 years.
Time-to competency is a major factor of determining competitiveness of all companies. As a promising solution, e-Learning technology has been widely adopted by many companies to expand their training market to previously out-of-reach employees (Zhang & Nunamaker, 2003). It is only because of the internet and related technology that synchronous and non-synchronous e-learning has been possible by which learning event is delivered in real-time to remote learners.

ICT and e-Learning platforms provide alternative channels for improving the quality of education and extending its reach to broader audiences. ICT and e-Learning strategies and advances in wireless standards and technologies—particularly in the areas of Wi-Fi, Worldwide Interoperability for Microwave Access (WiMAX), and mobile computing—can help bridge the digital divide in education (Symth, 2006). Using open broadband wireless standards and implementing mobile computing architectures, challenges of terrain, infrastructure and finance to increase could be getting over. Expanding these benefits to previously underserved populations generates improvements in education and income, and begins to close the digital divide.

The heterogeneity and distributed nature of web led to the need for web portals, web sites providing access to collections of interesting URLs and ‘dumb’ (i.e. keyword-based) search for information. However, differently from dumb web portals, semantic portals are “smarter” and carry out intelligent reasoning behind the scenes. We can think of a scenario where educational services can be mediated on student behalf and that is what author has referred to as semantic portal. The advantage of having such a portal is that students need not to look for courses distributed across many locations (Dutta, 2006). From the author’s pedagogical perspective, semantic portals are an enabling technology allowing students to determine the learning agenda and be in control of their own learning. It is anticipated that semantic web technologies will influence the next generation of e-learning systems and applications.

Olisevicova (2006) had perused on another innovative technology known ad Topic maps. Topic maps are the ISO/IEC 13250 standards which can become
the core of an e-learning portal that will integrate different kinds of information and knowledge resources, available in the educational institution. The Topic Maps model defined by the author has three basic building blocks: topic, association, and occurrence, which are the computer representations, relevant information sources and associations, which finds out if two or more topics are in association to recall. The author has explained how Topic Maps can be used for knowledge representation in distributed knowledge management systems and understands the exchange of Topic Maps to be the exchange of explicit knowledge.

2.3 E-LEARNING SOFTWARES

Authorware, also known as authoring tool, learning softwares, virtual learning environments, learning management systems, content management systems, learning content management systems, is a program that helps us write hypertext or multimedia applications, create quality online courses and manage learner outcomes. For e-learning to be a success, authoring tools offer a way to achieve that goal. E-Learning authoring tools enable trainers to integrate an array of media to create professional, engaging and interactive training content. With an authoring tool, we can repurpose digitized elements or learning objects from an existing course for use in a new course.

Al-Ajlan & Zedan (2007) have presented the key points of SOA (Service Oriented Architecture) that involve extended, loosely coupled activities among two or more independent academic and/or business partners. Such activities can be thought of as academic and business processes that engage several services in a manner that brings about the desired academic outcome. According to authors, SOA has the potential to bring about a decrease in programming difficulty and expense, lower maintenance costs, quicker time-to-market, new revenue streams and improved operational efficiency. They sense that deploying techniques like service descriptions, registrations, discovery and binding will open wide the door for collaborative VLE services that run under a flexible, distributed and effective manner. All these possibilities were proved by open source software Moodle.
There are economic reasons as well why programmers favour open source. The most important one is that they can build on existing code. The costs of a new solution can be lower than that of software made from scratch or built on commercial components. While standard economic theory holds that free-riding inhibits private investments in non-rival goods such as software (Bessen, 2001). According to author, the economic value of open source software can be in for-profit services that are sold with it or the reputation gained by the programmers combined with interesting job offers. Giving away the basic product for free and with the source code speeds up the network effect and thus increases the number of users.

Carabaneanu, Trandafir & Mierlus-Mazilu (2006) tried to provide a summary of current trends in the development of e-learning. The author finds that by recognizing that e-learning truly is a methodology, one can experience the greatest benefits that e-learning has to offer now and in the future. In the end, the fact remains that, with respect to e-learning, poor quality procurement practices are a barrier to growth and adoption. According to them, it is necessary to make a thorough evaluation when it comes to choose e-learning software for education in order to improve the knowledge of learners, the learning outcomes, the performance outcomes, and the business and policy impact and in order to value the money spent.

An evaluation of the most widely used open source learning management systems was done by Aydin & Tirkes (2010) to identify the most suitable open source e-learning platform. They analyzed and compared some open source learning management systems by using the full access versions reached from their web sites and a detailed analysis carried out by creating courses on each LMS proved that Moodle is the only LMS which has wider options with different access possibilities, modular structure, and advanced backup tools. Comparisons showed that, Moodle has the ability to view full user logging and tracking and activity reports for each student and has an advanced online exam module with time, date and duration constraints. All in all, it is possible to state that; due to the fast improvements of distance-learning, generalization of the
use of open source software Moodle would provide the development of learning tools and educational quality.

Wiley (2006) describes about the growth of open source softwares in the public and at large has begun to make itself felt in various ways within the arena of education. According to author, the growth is visible due to the influence in the wide array of open source software applications now available to educational institutions and instructors. Educational institutions have a growing array of options to consider when acquiring software and author opines that course management systems (CMS) like WebCT and Blackboard can now be replaced by attractive open source alternatives like Sakai and Moodle. Meanwhile, a plethora of educational applications are available to support student learning in higher education and Open source applications are, by design, adaptable and can therefore be applied to a variety of uses.

Talking about choosing criteria one should consider while choosing a suitable system, Mohammadi et al (2008) gave some of the inclusions like documentation, usage rate, structure, standards support and educational strategy. The authors feel that to buy or to design is the basic problem which needs to be looked upon. There are three ways one can choose from: purchasing software from an external vendor; purchasing software from an external vendor and producing the contents, internally or to use and develop the open-source E-learning systems. They find open source softwares more suitable for higher education because it is possible to change software according to the universities needs and add specific features to such systems by in-house professionals. The suggested solution is to use the open-source software and their further development or at least making a partial use of their architecture to come up with a new E-learning software system.

Moodle is a Content Management System (CMS) - a software package designed to help educators create quality online courses and manage learner outcomes. Moodle is Open Source software, which means it is free to download, use, modify and even distribute it (under the terms of the GNU General Public License). It is a free web application that educators can use to
create effective online learning sites. Moodle has a large and diverse user community with over 929431 registered users on this Moodle site alone, speaking over 78 languages in 211 countries. Moodle runs without modification on Unix, Linux, windows, Mac OS X, Netware and any other system that supports PHP, including most web host providers. Data is stored in a single database: MySQL and PostgreSQL are best supported, but it can also be used with Oracle, Access, Interbase, ODBC and others. Moodle also supports 50 languages.

Another software known as Sakai is a community of academic institutions, commercial organizations and individuals who work together to develop a common Collaboration and Learning Environment (CLE). The Sakai CLE is a free, community source, educational software platform distributed under the Educational Community License. The Sakai CLE is used for teaching, research and collaboration. Sakai increases our control over our investment levels, enabling us to leverage the functionality and support models that best meet the needs of our institution. Sakai is a Java-based, service-oriented application suite that is designed to be scalable, reliable, interoperable and extensible. While Sakai can be used for teaching and learning (similar to Blackboard and Moodle), it is a Collaboration and Learning Environment (CLE) because it embraces uses beyond the classroom.

Released under Open Source license, the Claroline platform allows hundreds of organizations from 93 countries to create and administer courses and collaboration spaces online. Claroline is capable of hosting a large number of users easily. It is compatible with Linux, Mac and Windows environments. Claroline is based on free technologies like PHP and MySQL and uses the current standards like SCORM and IMS/QTI for the exchange of contents. Claroline has been developed following teachers' pedagogical experience and needs. It offers intuitive and clear spaces administration interface. Translated into 35 languages, Claroline has a large worldwide users' and developers' community. Adjustable to various training contexts, Claroline is not only used
by schools and universities, but also by training centres, associations and companies.

Designed to be the first of its kind, Coggno makes it possible for learning content to be an asset that can be monetized in ways it never has before. Coggno leverages the power of the Internet to facilitate the acquisition and sale of high quality curriculum, enabling organizations and individuals to teach and learn more, as well as evaluate, and verify participation in the learning experience. Coggno provides a means to deliver best in breed training by harnessing the collective intellectual property of a given knowledge community with outstanding delivery tools. Coggno is a technological breakthrough for the learning world, combining data management and authoring capabilities with e-commerce technologies.

Joomla LMS is an aggregate of e-learning tools compiling into a powerful learning management system. It is a fully functional eLearning platform with innovative training/testing options (self-assessments) and advanced conferencing applications. Joomla LMS has a multi-language user interface and provides a convenient publishing mechanism as well as an opportunity to configure LMS front page and edit Graphic User Interface. Courses in Joomla LMS can be filtered by category, imported/exported and saved as course templates for further use. Documents in different formats (including various multimedia formats) as well as .zip content packages can be uploaded and managed. Storing documents in File Library provides an excellent opportunity to share documents for different courses. Forums and chats can be added to courses. Learners and teachers can exchange messages using embedded e-mail or the Dropbox tool that allows exchanging files without using e-mail. These features make Joomla one of the best e-learning software.

DSpace is the software of choice for academic, non-profit, and commercial organizations building open digital repositories. It is free and easy to install "out of the box" and completely customizable to fit the needs of any organization. DSpace preserves and enables easy and open access to all types of digital content including text, images, moving images, mpegs and data sets.
And with an ever-growing community of developers, committed to continuously expanding and improving the software, each DSpace installation benefits from the next. DSpace is freely available as open source software. 

LAMS is a revolutionary new tool for designing, managing and delivering online collaborative learning activities. It provides teachers with a highly intuitive visual authoring environment for creating sequences of learning activities. These activities can include a range of individual tasks, small group work and whole class activities based on both content and collaboration. It provides teachers with a highly intuitive visual authoring environment for creating sequences of learning activities. LAMS is free and open source. 

Dokeos is software for distance training (or learning management system). With a simple implementation and self-explaining for its users (trainers, trainees, audience of continuing education, etc.), Dokeos offers many tools dedicated to organizing trainings. Dokeos also offers a simple and powerful administration interface, making it possible to handle users, trainings, classes or sessions individually or in groups. Management of the entire platform is also possible through the administration interface. In addition to this ease of use, Dokeos has the great advantage being free software of which the source code is accessible and can be modified or adapted for more specific needs.

2.4 E-LEARNING STANDARDS

It is becoming clear that developing standards to enable instructors and learners to create, find, evaluate, reuse and share electronic content is essential to the long-term success of e-learning. Users are going to want to use and reuse content from lots of sources. Elliot Massie, President of the Masie Center, has said that content will be coming from lots of places “and I want learning and content to come from lots of sources.” In order for this to happen though there need to be mechanisms for people to be able to find and use the content. Education, and e-learning within it, encompasses such a range of creative and human activities that many standards are going to be needed, cognitive, pedagogical, technical, accessibility, disciplinary. If e-learning standards are to support this vast creative complexity then they need to be more than a means of
demonstrating compliance or supporting technology (Marshall, 2004a). Standards must support the development of e-learning capability across entire sectors of tertiary education, rather than encouraging piecemeal and isolated initiatives. The author is of the opinion that unless standards are developed in an open way that enables learning, not only for students, but also for institutions and teachers, most elearning standards will be a strait jacket of compliance and rigid management which will be lost in a history of forgotten and ignored ‘fads’.

To secure long-term investment and sustainability there is a need to consider reusability. The more a costly digital production is used, the better its return on investment for the institution, thus paying for its creation. This opens opportunities for selling and trading online learning products and services, including non-commercial open content publishing along the lines of Open Course Ware (OCW). But, as Greller & Casey (2007) admits, modular content standards are not enough to guarantee reusability of learning content, and initiatives to standardize context and process descriptions are to date still not mature enough to be usable by a broader than the specialist community.

Wood & George (2003) outlined an approach to quality assurance in online teaching and learning, which actually has been developed by the University of South Australia. They have described the development of a checklist and supporting website, in which shared understanding about the scholarship of teaching and learning in resources developed for online delivery is made explicit. The authors determined that this approach involves the development of a review tool comprising a paper-based checklist of agreed good practice and supporting website focusing on four areas – instructional design, interface design, use of media and technical aspects. According to them, the review tool provides an opportunity for just-in-time academic staff development by providing the accepted standards, information about how to meet these and examples of good practice, as well as providing a framework for involving other academics in the process of peer review.
Alves & Uhomoibhi (2010) investigated the issues related to e-learning standards and identity management and critically examined existing e-learning standards and the tools and processes applied to managing the identity of learners registered for programmes of study in higher education. The authors argue that the creation of identity management federations is mandatory to provide the mobility of users and to permit the exchange of contents and services between institutions. It was revealed that it is crucial to create identity management federation to provide for ease of mobility and facilitate collaboration and sharing information amongst staff and students in higher education. Also the challenges arising from language, culture and differences in systems for the regions require consideration.

A preliminary assessment of the adequacy of existing e-Learning standards for supporting the introduction of adaptation techniques in e-Learning systems was done by Paramythis, Loidl-Reisinger & Kepler (2004). Their analysis pointed out that existing standards do have some provisions for adaptation, but require substantial extensions to accommodate common practice in ALEs. Also, Standardization at the level of adaptation components and services has only recently been addressed in the context of research efforts. It is argued that extensions to standards / specifications should happen in a way that keeps the “entry cost” of employing adaptation facilities in the development of e-Learning materials, to as low level as possible. The authors opined that it is important that future extensibility of (new or enhanced) standards is seriously taken into consideration.

It is important to emphasize the fact that learning technology standards implement a certain level of interoperability (Varlamis & Apostolakis, 2006). The authors argue that in order to achieve the smooth co-operation of all e-learning components we should impose standards in every procedure. According to them, a major complaint about e-learning standards is that products claiming conformance do not work together without further tweaking. This translates into lost time and expensive service engagements. As a result of this challenge, there is an increasing emphasis on developing conformance tests
and certification programs. They feel it is necessary that e-learning standards must be adopted by everyone without any customization or modification. Jayal & Shepperd (2007) presented a summary of various e-learning standards in order to make them more accessible and understandable, and provide preliminary evidence as to their utility and adoption by the various UK higher and further education institutions. They have focused on eight emerging standards on the basis of their influence in e-learning. They discovered that the proliferation of standards and standards bodies is problematic, leading to unnecessary complexity and there is a significant overlap and differences between standards. They have recommended a need for explicit provision for automatic marking / assessment of subjective text based answers and quality parameters in component interfaces. They took only one UK higher education institution, because of which the results cannot be generalized over the whole higher education community.

Marshall (2004b) in his study casts a critical eye over current developments and suggests closer attention to the role of standards in improving quality and supporting teachers and learners rather than constraining them. He opined that standards must reflect the diversity of student learning capabilities and desired outcomes, and must evolve to meet the challenges of new forms of technology, and new types of pedagogy, and ideally they should stimulate the discussion, application and research that result in that evolution. He further suggests that standards activities need to acknowledge the learning context more explicitly, if they are to inform and support learning rather than just standardize it. Unless, clear models of success, which can be used as generic exemplars, are identified, teachers and institutions are left groping blindly and by instinct for how to use e-learning effectively in the context of their students’ needs.

Sicilia & Garcia (N.D.) submits that the use of formal ontologies to describe reusable learning objects provides a better support for the development of ‘intelligent’ tools, since the semantics of ontology definition languages are richer than those of RDF and also of simple information structuring XML schemas. But widespread adoption of ontology-based learning objects would
not come without a cost, since a significant effort, and novel tools and metrics would be required to properly annotate an organization’s knowledge assets, to a level of detail that enables their automated handling. They have stressed on the use of LOM (learning object metadata) into formal semantic descriptions. According to the authors, more comprehensive learning object specifications, including the description of learning process, should be addressed in the future, as part of a far reaching research agenda that has been outlined elsewhere.

2.5 E-LEARNING COURSEWARE

Library literature approaches the problem of integrating resources into course paces from various angles. Some of the literature focuses on specific issues of electronic reserves, methods of linking to resources, or incorporating tutorials within the course space environment.

John Shank divides librarian efforts to incorporate resources into online courses into two distinguishable categories – librarian involvement at the macro-level, and involvement at the micro-level, depending on the librarian’s role in the development of the course and degree of interaction with the courseware software. Involvement at the macro-level is characterized by a “generic, global presence (Shank & Dewald, 2003). This would be equivalent to establishing a link to the libraries’ web page and online catalog. Information on these pages is updated independently of the course software, so no updating or editing within the courseware is necessary. Working at the macro-level is highly scalable. However, a “generic, global presence” does not provide any opportunities for targeted instruction or links specific to different research projects or assignments.

Sung & Chang (2007) tried to monitor the e-learning quality in order to ensure effectiveness of e-learning courseware. Although establishing a mechanism for certificating e-learning quality has became an important method to monitor and manage e-learning courseware. Using 44 courseware from initial inspection and re-examination in version 1.04 as the sample, the results indicated that the difficulty value of most items (38%) were between .60 and .70. The interviewed data were analyzed and according to the grounded theory, the
certification system can serve as a valid and reliable gate-keeper of e-learning materials. Most e-learning courseware under the certification system demonstrated medium to high quality, especially when the design was revised.

E-learning courseware may be thought of as a salad bar, offering a menu of options sufficient to meet individual preferences: various lettuces, tomatoes, carrots, radishes, cottage cheese, strawberries, peanuts, and peaches. The challenge for faculty lies in selecting from among the variety of e-learning options the most appropriate methods to feed the hunger for learning and the passion for teaching of many different types of students and instructors (Donohue & Howe-Steiger, 2005). E-learning will have a place in the academy of the future whether one accepts it or not. Establishing a new tradition of written collaborative agreements that use existing copyright law to design rewards and frame relationships reflecting the unique culture of the academy will help administrators attract the attention, creativity, and involvement of their faculty—their core intellectual and instructional resource—in the exploration and effective development of e-learning courseware.

Hanisch (2000) has specified that strictly separating structure, content and design is a key towards easy creation, modification and extension of courseware. A generator component creates the entire courseware automatically from its content, structure and design information, then comes solving the problem of providing the user interface for data input. In the case of web-based courseware, authors should be enabled to input core data online—right on the spot. Courseware will also have to include elements like virtual experiments that allow interacting with all essential parameters of a topic and visualizing all essential relationships properly. The needs for interactive, hypermedial courseware as well as for their rapid development and easy enhancement imply the development of problem-based authoring and programming tools. The basic requirements for such tools are interdisciplinary. The author has described general concepts to meet the task of providing international, consistent, adaptive and highly interactive content.
When designing for pedagogical-based courseware should consider perspective of pedagogy in e-learning context and is usually corresponded to three theories of behaviorism, cognitivism, and constructivism (Monsakul, 2008). It also involves pedagogical work of Chickering and Gamson’s seven principles for good practice in higher education. The author finds that in higher education, e-learning courseware depends on two major phases; first, the designing phase which involves three main theories of e-learning, including behaviorism, cognitivism, and constructivism and second the development phase in which a courseware is considered as an e-lecture, or virtual lecture, which is alternative to traditional lectures in e-Learning context.

According to Khan (2004), in e-learning process, people are involved in creating e-learning materials and making them available to a specified audience and keeping the role of people in mind, Khan has given his P3 model which can be used to map a comprehensive picture of e-learning. The author has tried to identify various roles and responsibilities involved in e-learning. Some roles and responsibilities may be relevant to specific stages of the e-learning process. He feels that individuals involved in various stages of the e-learning process should be in contact with each other on a regular basis and revise materials whenever needed. The E-Learning P3 Model provides a comprehensive picture of the e-learning process and helps to identify the roles and responsibilities for the design, development, evaluation, implementation, and management of all e-learning and blended learning materials and systems.

Stoel & Lee (2003) tried to find out the student’s acceptance of e-learning courseware. The authors are of the opinion that longitudinal exposure to courseware increases student perceptions that the courseware is easy to use, increasing positive attitude towards the technology, and in turn increasing intention to use the technology. Among the three usage variables included in the study, frequency of WebCT usage was the most powerful outcome of the intention to use. This study also suggests that university course designers, namely instructors, should stress the ease of use and usefulness for their web-courseware. In addition, providing contact information for technology help
may also influence perceptions of ease of use. Therefore instructors who intend to use the web-courseware as a technology assistant should fully and strongly emphasize the usefulness of the courseware.

Pankratius, Stucky & Vossen (2005) have proposed solutions to problems related to the maintenance and update of already existing e-learning courseware. They took a structured approach in form of a reference model for the re-engineering of existing educational material and according to the authors, software product lines for e-learning material provide a global framework for coordinating the re-engineering and reuse of components. They argue that the maintenance of learning material in educational as well as in enterprise environments has been underestimated and vastly overlooked in the past and this problem is to be solved due to the re-engineering approach as the absence of single dominating standard for the exchange of educational content, as well as the missing economic incentives for interoperability are missing.

According to Lewis (2007), faculty who participate in courseware and online education development must possess skills and techniques in incorporating design, technology, pedagogy, and communication to provide online instruction in an effective manner. While some faculty personally seeks out development opportunities, the institution's role (perhaps even responsibility) in preparing the faculty to teach online should not be overlooked. Without schools providing support or making available resources for faculty to develop their web-based instructional skills, institutions risk not meeting the needs and interests of the faculty as well as the students. From a General Systems Theory point of view, failing to adequately address faculty performance can have a considerable impact on the organization as a whole.

2.6 E-LEARNING IN HIGHER EDUCATION

Education has become a commodity in which people seek to invest for their own personal gain, to ensure equality of opportunity and as a route to a better life. As a result, providers of Higher Education are finding themselves competing more than ever for students, funding, research, and recognition within the wider society. During the last decade and through the development
of virtual education i.e. distance methods of delivery and new communication
methods, higher education has become internationalized; providers are able to
export themselves and as a result competition has been extended beyond
national boundaries. Following this extension, various opines of authors have
been listed as under:
Institutions of higher education are increasingly embracing online education
and the number of students enrolled in distance programs are on the rapid rise
(Bonk & Kim, 2005). The higher education survey by the author indicated that
there will be enormous growth in online certification and recertification
programs, associate and master’s degrees, and blended learning. It further
revealed an interest in wireless technologies, simulations, digital libraries and
reusable content objects among the students, scholars and professors.
According to author, the explosion in online learning will bring increased
attention to workshops, courses and degree programs in how to moderate or
mentor within online learning. The study provided a glimpse of the pedagogical
as well as technological possibilities.
Due to the vast cultural and social diversity in India, it is difficult to change the
social background of students, parents and their economical conditions.
Government is providing elementary and primary education at no or negligible
cost. There are enough schools, teachers and facilities for students and teachers,
but still there is a great variation in the quality of education due to the social
background of students, parents, different standards of teaching and teachers
training programs (Pawar, N.D.). Therefore in the author’s point of view, the
only options left for India is to provide uniform or standardize teaching, for
high quality education throughout India there must be some nationwide
network, which provides equal quality education to all students, including the
students from the rural areas and villages. The solution to this is Web-Based
Learning resources or methods.
E-learning could be a highly disruptive technology for education - if we allow
it to be (Laurillard, 2004). We should do, because it serves the very paradigm
shift that educators have been arguing for throughout the last century. New
ways of learning require new forms of institutional management and if universities are to rethink their methods of teaching, they need a management structure that is capable of supporting innovation. We need systems capable of continuously reconfiguring themselves to create new sources of public value. This means interactively linking the different layer and functions of governance, not searching for a static blueprint that predefines their relative weight. The author finds a need to find a way of creating the common infrastructure of agreed standards of interoperability that enable, and do not frustrate innovation.

E-learning could be embedded in higher education but it requires an understanding of how it fits into organizational strategy and its incorporation into departmental and other operational plans. The cultural changes required affect teaching, support, administrative and management staff. Staff development needs to be embedded in the “production process” and the processes of changing policies and procedures (Stiles, 2004). However, the author has stressed that relationship to policy and procedure, administrative and management staff must be involved fully in this process and embedding must imply senior management commitment to real change at strategic and operational levels.

The Humbold tradition during the 19th century promoted culture and civilization, a holistic idea of human beings as the ultimate goal of higher education. This vision was replaced in the late 20th century by the idea of centres of excellence which are highly specialized but rather narrow in their approach to knowledge (Varis, 2006). On the basis of three principles, success of e-learning in higher education can be verified. First, the institution must demonstrate how it will achieve its goals. Second, the assessment should provide assurance that standards of quality are successfully maintained at an appropriate level regardless of the medium of the course or the methods of instruction adopted and thirdly, the responsibility for the conduct of assessment should be appropriately delegated and shared.
The number of new Virtual Learning Environments (VLEs) is increasing and they have been advertised as being a solution for remote and cross-border education. This is extremely important when the tasks cannot be practiced in real life. (Koskela et al 2005). The authors found VLEs feasible for higher education. A good feature of VLEs is that students can themselves control the speed of studying. The VLE students appreciated this feature. However, authors suggest that VLEs must be used with caution. VLEs must add something special to the course or the subject. VLEs have been proved to be particularly successful in so-called introduction courses. In order to get good learning results with a VLE, they need to be designed well and the needs of the user group must be considered thoroughly.

However, further looking at the use of learning objects in higher education, the author opined that learning objects are still in its introductory stages, more so in some disciplines than in others. Most of the disciplines using learning objects are, not surprisingly, in the natural and physical sciences, computer sciences, and medical sciences, such as nursing. There are some barriers that still exist to creating and/or adopting the use of learning objects. Either it is difficult to integrate it in CMS or there is a lack of a pedagogical model that suggests best practices, ownership issues and lack of collaboration (Griffith, 2003). The author is of the opinion that learning objects are best suited for online asynchronous learning but could be adapted for hybrid classes as well as for lecture presentations. Institutions of higher education must take into account the potential stress generated by embracing the new technologies when change is not well informed and/or well paced.

One vision of the future of universities is that Virtualization and remote working technologies will enable us to study at any university in the world, from home (Mackeogh & Fox, 2009). Universities will have to introduce strategies and policies which implement flexible academic frameworks, innovative pedagogical approaches, new forms of assessments, cross-institutional accreditation and credit transfer agreements, institutional collaboration in development and delivery, and, most crucially, commitment to
equivalence of access for students on and off-campus. In developing this e-
learning strategy, it is vital to (a) have a clear vision of desired outcome (b) an
understanding of the current capacity and attitudes of the relevant staff and (c)
a coherent set of steps to move from the current situation to the desired
outcome. Next steps include adopting a series of actions designed to enhance e-
learning capacity through awareness raising, training, funding flagship
programmes, and adopting mandatory credits of online learning in all
programmes.

Catherall (2004) notes the fact that more people than ever are going to
university today, but many students now have to face financial difficulties, as
well as feeling compelled to gain more marketable skills. All this has led to a
demand for more core study skills and flexible approaches to support course
delivery in a low-contact study context. The author argues that one of the most
important characteristics of e-learning lies in the fact that many systems
endeavour to provide an interface that is both intuitive and usable.
Furthermore, there is the 'e-tutor', whose role encompasses a wide range of
activities, such as e-learning management interface to upload course materials,
managing user access to online courses and interacting with students via
communication features.

2.7 E-LEARNING IN LIS EDUCATION
Like most other institutions libraries are also facing dramatic changes in its
dimensions. Particularly, the growing use of ICT in library activities is
enforcing many changes. Kumbhar (2009), stressing on the use of e-learning in
LIS education, advocates that in most of the Indian libraries, staff working
there are not well convergent with ICT because the ICT came long after they
had their education and e-learning is the most suitable teaching-learning
method for imparting education on the modern terminology. Besides it will
increase the expectations from employees as well as users. The author opines
that e-learning can impart education according to the job-specific needs,
improves image of the teaching profession providing more content within short
duration and will make it possible to change with time and technology.
Understanding the impact of e-teaching, e-learning and e-education is seen as fundamental to moving us forward so that we can make greater use of the opportunities provided by the Internet (Sen, 2009a). The author finds e-teachers as central to the move toward e-education and the way in which ICT is integrated in the academics. According to the author, an initiative must be taken in academic libraries which will develop e-learning smart classrooms, along with video conferencing and assignment tools enabling flexible learning and teaching with the students studying at their own place. Further the academic library must have a holistic approach in e-learning whereby different traditional and digital methods and media are integrated in learning and teaching. An academic would be wise to undertake an assessment of the learning and programmatic outcomes it hopes to achieve through e-education and according to her, including e-teachers in this process will ensure that the pedagogy, staff development and budgetary concerns are viewed with due consideration.

Further verbalizing the role of academic librarians in e-teaching and learning, Sen (2009b) says that modern librarians are a part of e-learning process and provides online and in person modules, guides, subject and class based lists, as well as reference. In her opinion, the librarians should play a dedicated role in supporting instructors and administrators to realize the potential of e-learning through the provision of service models unique to libraries. There must be a blended approach to information literacy which will offer students and instructors with an ability to address diverse learning styles and encourage active participation along the presentation to a 24x7 access that may foster increased student contact with the librarians.

Networked technologies are facilitating learning, anytime and anywhere. The prospect for online LIS education in India seems to be very encouraging but there are many challenges towards it (Naushad & Samar, 2006). The authors, while highlighting some of the objectives of LIS education in India, lay equal emphasis on embracing new frontiers of librarianship as Library and Information Science has made its own impression in India by starting various
courses in an online environment. However, lack of infrastructure, absence of accreditation body at national level and lack of finance are some of the major challenges and issues that LIS education system is facing.

Many libraries are in the process of delivering information services and resources through online chat rooms, e-mail services, list servers or free online databases and reference services, teleconferencing and toll free numbers (Vatnal, Mathapati & Prakash, 2004). According to authors, library services can be developed in e-learning environment when the students at remote sites will get information resources supporting their learning by the formation of digital libraries which can help in effective searches. Along with the access, consultation services, references services, inter-library loan and consortia sharing will contribute in effective and judicious use of library materials, in turn making it possible for libraries to raise and grow in e-learning environment.

Developing inter-institutional collaborative agreements for online education offers the potential benefit of increasing participants’ access to resources and decreasing costs to institutions (Montague, 2005). Giving the account of only 55 LIS schools in United States and Canada, the author finds it a challenge for faculty and staff to reach-out to those who are unable to relocate to pursue studies on-campus. According to 2003 Association of Library and Information Science Education (ALISE) Statistical Report, 88% of schools offer courses via distance education (including online, video-conferencing, and off-site delivery). In 2003, WISE (web-based information science education) consortium pilot project was started and as per the viewpoints of students, they find it more interesting with opportunities to take classes in different formats, thus proving that e-learning in LIS education will endure and prosper in future.

Singh & Devi (2009a) aver that ICT has not only affected operations of library services but also LIS education. So there is a need to integrate the qualitative changes in the LIS Education. They feel that proper utilization of educational technology for imparting courses can produce better results and as per them, it has become essential to consider the utilization of virtual learning environment
in LIS education. One of the most important activities concerning learning in virtual environment is the access to web resources.

The e-learning environment has ushered new avenues for libraries to blend their traditional resources and services with electronic ones to meet the information needs of wider clientele (Pujar & Kamat, 2009). According to them, the psyche of librarians regarding the technology as "cutting the mustard" needs to be changed. This might be possible with changing the recruitment profiles for the librarians and/or by incorporating more technology-based components in today's bachelors and masters program of library and information science. There is no doubt that the winds of e-learning are forcing the libraries and LIS community to lead towards the Library 2.0 movement. In order to achieve the goal of Library 2.0, there is a need of common exploration by academicians, e-learning experts, and library professionals.

Singh & Devi (2009b) highlighted that LIS education has undergone rapid expansion in the area of ICT but learning in virtual environments are giving rise to many issues and challenges. They find it feasible to introduce new courses based on ICTs in different schools to face the challenges. However, some of the issues presented by them like the need for learners to be trained in handling of new media, teachers training, courseware development, and equal access to technology are necessary to consider for effective implementation of web-based learning in LIS education. They opines that web-based mode of teaching has become an important component of LIS education in India and that is why many organizations like IGNOU, IATLIS, IUC-TEFED, Nodlinet etc. are coming up with the initiatives for providing virtual education.

2.8 DISCUSSION

Web-based learning continues to be seen as a viable avenue by many institutions to supplement institutional goals, it is important to understand how institutions support faculty as they embrace the web-based instructional environment. It is clear from the literature that the ultimate potential of online technology to enrich higher education resides less in the technology itself than in the practices and discourses that it prompts individually and institutionally.
By understanding how institutions of higher education are preparing and supporting web-based classes, the information can be utilized to help further develop human expertise in the area of web-based instruction with the purpose of improving performance. The literature has demonstrated that an e-learning service infrastructure that is based on reusable multi-media learning objects, and advanced e-learning technologies that support collaborative, adaptable, flexible and customizable learning are the keys to realize this vision. The developed tools and software system components can be replicated and installed at many websites to enable the establishment of many virtual e-learning communities for knowledge sharing in different problem domains.

In India, e-learning is seen as the future of education. At present, it just supplements traditional learning methods rather than replacing them. The probable reasons for that are lack of finance, inadequate infrastructure including software and hardware access, lack of technological expertise, nature and level of courses to be designed and offered, instructional delivery methods, required faculty, accessibility and affordability of technology from the learner's side, evaluation methods etc. But the prospect of online LIS education in India seems to be very encouraging. Tremendous growth of personal computers, expenses of regular professional courses and increasing network from the home, office and public places will lead to the development of Internet based learning as a cost effective and convenient educational method. Learning systems will play an important role in future in delivering education in remote parts of the country, provided an improvement of infrastructure facilities and support systems is done to meet the needs and expectations of the students.
References


Chapter 2 Review of Related Literature

http://library.blackboard.com/docs/media/BB_ScrippsHoward_July192005.pdf


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