CHAPTER 2
THEORETICAL ORIENTATION AND REVIEW OF THE PAST STUDIES

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CHAPTER TWO
THEORETICAL ORIENTATION AND REVIEW OF THE PAST STUDIES

2.1 INTRODUCTION

The people are now living in a constantly evolving digital world. Information and communication technologies (ICT) become an integral and accepted part of everyday life of people in today’s world. ICT is increasing in importance in people’s lives and it is expected that this trend will continued, to the extent that ICT literacy will become a functional requirement for people’s work, social and personal lives. Their impact is revolutionary. Information and communication technologies (ICT) have become one of the most important factors to the formation of society in the twenty-first century.

Information and communication technologies (ICT) have become commonplace entities in all aspects of life. ICT includes the range of hardware and software devices and programme such as personal computers, assistive technology, scanners, digital cameras, multimedia programmes, image editing software, database and spreadsheet programmes. It also includes the communications equipment through which people seek and access information including the Internet, e-mail and video conferencing.

Information and communication technologies (ICT) are now affected in all aspects of society and many areas of human life, one of those is education. Education is undergoing constant changes under the effects of ICT. The effects of ICT bring rapid developments in educational systems across the world as ideas, values and knowledge, changing the roles of students and teachers, and producing a shift in society from industrialization towards an information-based society. It reflects the effect on culture and brings about a new form of cultural imperialism. The rise of new cultural imperialism is shaping children and the future citizens of the world into ‘global citizens’, intelligent people. The use of ICT in appropriate contexts in education can add value in teaching and learning, by enhancing the effectiveness of learning, or by adding a dimension to learning that was not previously available. ICT may also be a significant motivational factor in students’ learning, and can support students’ engagement with collaborative learning.
The modernization of education suggests that the students not only have to acquire skills and habits to work with the growing volume and more sophisticated information streams but have to possess ability to get new knowledge, independently to build the overall cognitive process in the surrounding ICT environment.

In the new ICT environment of special importance is the human adaptation to ever-changing conditions of working and life that require development of a number of key competencies associated with effective and efficient use of ICT. Through the use of digital technology in the learning process the students acquire skills to identify different sources of information in applications such as electronic media or video, to communicate through newsgroups, online discussion forums, web blogs or chat rooms, to search databases of local and global networks and create their own sites. It is suggested that the students also understand how to support the information society’s creative potential and innovation, how to understand problems of legality and reliability of the information. Work in the information society requires a critical and reflexive attitude towards available information and responsible use of the interactive media.

It can be said that across the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour within business, governance and mostly in education. It affects the way of life of people, their work and education. The new paradigm of modern education, thus, incorporates primarily the requirement for normalization of education as an important factor for its development. ICT is a very socially oriented activity and associates with educational quality. The use of ICT in education lends itself to more student-centred learning settings. Therefore, the world moving rapidly into digital media and information and the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in this century.

### 2.2 ROLES OF ICT IN EDUCATION

As technology becomes more and more embedded in culture and society, education should provide learners with relevant and contemporary experience that allow them to successfully engage with technology and prepare them for today life.
Jianwei Zhang (2004) illustrates that ICT in education has evolved from a very technology-focused view to a systematic view that emphasizes the interrelated changes in pedagogy as well as organizational culture. The aim of using ICT in education is to improve and transform educational practices by infusing ICT into curriculum and school systems. Therefore, the role of ICT in education is to empower the technology to present educational activities. ICT allow the learners to open source learning rather than manual source, hence encouraging students to learn new ideas. ICT also brings about active learning, collaborative, creative, integrative and evaluative aspects to the education sector.

ICT in education is recognized as a key element to learning in the 21st century. The roles of ICT in education has been well documented and researched for the development of twenty-first century skills to support the challenges of the modern work-place and the dynamic and rapidly changing knowledge society.

According to principle of education, students are all equal to the situations at the school. This is the aim of changing the learning management at inclusive schools. Since the students’ learning experiences and their ability to solve problems are different, they need different challenges, which inclusive schools provide if possible.

Due to changes of technology, society, and culture, the possibilities of the schools change all the time. Nowadays, the information and communication technology (ICT) is often used to provide adequate challenges to all students. It brings into focus initiatives with ICT fostering learning for all students. In particular, it focuses on the teachers’ need of inspiration and up-to-date knowledge. It suggests various initiatives suited for the sharing of knowledge about best practices. Skills such as problem solving, creativity and innovation, team work and collaboration as well as skills with modern information and communication technology (ICT) is needed for well supported by the teaching-learning. Highly structure and disciplined schooling systems do not necessary prepare students well for the dynamics and challenges of the twenty-first century work place and society. More self-motivated individualized, group and collaborative learning process, supported by ICT will contribute significantly to the preparation of a more agile modern work place.
As the increasing influence of globalization and the emerging information society, set new requirements for all areas of social life, including to education, e-Learning is one of the new methods which supports the changes in educational environment. E-Learning becomes an important instrument in the new educational environment in the digital age which creates student-centered learning and educational practice, offering new more flexible learning methods. The integration of e-learning into the education system is viewed as one of the responses to meet growing need for high quality education. E-learning services have evolved since computers first were used in education.

Since the number and use of computers has increased over the last 40 years, they have been gradually incorporated into educational settings. Initially used for teaching typing and word-processing, computers and software have evolved dramatically so that online education is now a reality for many students across the world. This electronic learning (or “e-learning”) is delivered by a variety of educational establishments to both local and remote students.

2.3 THEORETICAL ORIENTATION RELATED TO E-LEARNING

2.3.1 Definition of learning

Learning is a process where a human absorbs information, memorize and processes it for further use. Learning has been very teacher centered in the past centuries. Nowadays learning process has been changed to the learner-centered instruction. Learners are needed to be trained how to gain information and how to select and use them. This happens so quickly that learners have to learn how to use the Internet together with their teachers. The concept of learning to learn has become a very important element of teachers’ job. Due to the changes that took place in schools, the roles of teachers have to change too. In the past teachers used to be the major source of knowledge and used to be the authority in the class. Nowadays, teachers’ roles have to provide information and show their students how to tackle them. Although they are still considered to be a kind of leader in the class, they can be thought of as facilitators in the learning process (Hargreaves, A. and Fullan, M., 1992).
Bransford, Brown and Cocking (2004) emphasize the student centered learning on using preconception as a basis when students are consciously and systematically guided towards profound knowing. Teachers in new pattern of learning process are no longer lecturers, they should be the facilitators, their main task is to set goals and organise the learning process accordingly.

Theory of learning today focuses on constructivism. Constructivism is based on cognitive psychology which examines man’s inner processes like thinking, memory et cetera. In the constructivist learning process the learner constructs information through his own experiences, chooses and interprets it and analyzes it with his former knowledge. The constructivist principles can be used especially in independent learning. Learning environments are based on constructivist thinking. The basic idea behind humanistic psychology is the aspiration to holistic research on individuals. It emphasizes human’s creativeness and mental growth. Humanistic psychology has had its impact on learning through empiristic learning. The humanistic view on learning emphasizes the importance on the learner’s experiences (Verkkotutor 2005).

2.3.2 Definition of e-learning

The term e-learning has been adopted by a number of different learning constituencies. Many terms have been used to define e-learning in the past. For example web-based training, computer-based training or web-based learning, and online learning. There is a general consensus that e-learning is “the delivery of content via all electronic media, including the internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM” (Urdan and Weggen, 2000). E-learning in some way involves the use of ICTs to enhance and/or support learning activities or can be defined as the use of Internet and digital technologies to create experiences that educate fellow human beings (Horton, 2006).

Wentling et al. (2000) define e-learning as the acquisition and use of knowledge distributed and facilitated primarily by electronic means. This form of learning depends on networks and computers but may involve CD-ROMs, software, other media, and telecommunications. E-learning also likely to evolve into systems consisting of a variety of
channels (e.g., wireless, satellite), and technologies (e.g., cellular phones) as they are
developed and adopted e-learning can take the form of courses as well as modules and
smaller learning objects. E-learning may incorporate synchronous or asynchronous
access and may be distributed geographically with varied limits of time.

Khan (2005)\textsuperscript{8} defines e-learning as an innovative approach for delivering well-
designed, learner-centered, interactive, and facilitated learning environment to anyone,
anyplace, anytime by utilizing the attributes and resources of various digital technologies
along with other forms of learning materials suited for open, flexible, and distributed learning
environment.

Darien Elizabeth Rossiter (2006)\textsuperscript{9} define e-learning as the use of new multimedia
technologies and the internet to improve the quality of learning by facilitating access to
resources and services as well as remote exchanges and collaborations. This type of
learning depends on the use of electronic means for communication between teachers and
learners as well as between learners and educational institutions. E-learning leads to
consideration of a pivotal role of the innovation. Key characteristics or capabilities inherent in
e-learning (i.e. scalability, connectivity, flexibility, creativity and reusability), when applied
either alone or in various combinations, can prompt, enable or hasten fundamental change or
trends in teaching and learning.

Yet, Clark and Mayer (2007)\textsuperscript{10} define e-learning as the instruction delivered on a
computer by way of CD-ROM, internet, or intranet with the following features:
\begin{itemize}
  \item Includes content relevant to the learning objective
  \item Uses instructional methods such as examples and practice to help
  learning
  \item Uses media elements such as words and pictures to deliver the
  content and methods.
  \item May be instructor-led (synchronous e-learning) or designed for self-
paced individual study (asynchronous e-learning).
  \item Builds new knowledge and skills linked to individual learning goals or
  To improved organizational performance
\end{itemize}
Hadjerrouit (2007) makes an attempt to define e-learning from a technological point of view, is to look at the relationships between e-Learning and some closely related concepts: Internet-based learning, Web-based learning, online learning, and computer-based learning. He further says that the concept of Internet-based learning is broader than Web-based learning. Hence, the Web is only one of the Internet services that use Hypertext Markup Language (HTML), browsers, and URL. Internet offers many other services, not only Web, but also e-mail, file transfer facilities, etc. Learning could be based on the web, but also as correspondence via e-mail. Online learning could be organized through any network. Thus, Internet-based learning is only a subset of online learning. Learning may take place via any electronic medium. It is not automatically connected to a network e.g. learning that includes computer-based learning that is not network-based. As a result, e-learning includes both network-based (online learning, Internet-based learning, and web-based learning) and non-network-based learning or computer-based learning.

Suzan Kwegyir (2008) explains that e-Learning is a way of teaching and learning. It comprises of instructions delivered through electronic media including the Internet, Intranets, extranets, satellite broadcasts, audio/video tapes, interactive television (TV) and CD-ROMs. It facilitates access to knowledge that is relevant and useful. E-learning involves the delivery of education to anyone, anytime and anywhere. The development and delivery of e-learning materials in recent times by several organizations and institutes is under-pinned by a desire to solve authentic, learning, teaching and performance problems. The success of e-Learning depends on how learning takes place, that is, the underlying pedagogy and the real value of e-learning lies in the ability to deploy its attributes to train the right people to gain the right knowledge and skills at the right time.

Essi Kanninen (2008) state that e-learning is learning through an electronic interface that is using visual learning environment (VLE). VLE is software which enables the use of different learning tools over the Internet. The platform includes a possibility to share documents, video and audio, forum for discussion and tools for making different activities (e.g., questionnaires and exercises). Adaptive VLE which incorporates learning styles means that students’ learning preferences are automatically tracked and the information is used to provide individually tailored courses via a visual learning environment interface.
Awadh A. Alqahtani (2010) concluded that e-learning is the learning which involves multimedia (audio, image, video, text etc.) becomes important for delivering the content through electronic media (computer, internet). E-learning is concerned with all elements of the curriculum (objectives, content, activities, and evaluation). It is not necessarily to be from a distance, it could be in the classroom with the help of the instructor, and it could be designed for learning at one’s own pace. E-learning is a planned approach and well-designed to meet the needs of the learner. E-learning could be flexible in such a way that it becomes available for everyone irrespective of time, place and age, and that it gives the learner a positive role in the learning process, whereby the instructor’s role is to facilitate the learning process, though learning can proceed independently. E-learning tends to provide an interactive learning environment between learners and the instructor, learners themselves, as well as between learners and various learning resources.

Wikipedia (2012) states that e-learning in learning and education refers to the use of modern technology, such as computers, digital technology, networked digital devices (e.g., the Internet) and associated software and courseware. There are several aspects to describing the intellectual and technical development of e-learning, which can be categorized into discrete areas as follow:

- e-learning as an educational approach or tool that supports traditional subjects;
- e-learning as a technological medium that assists in the communication of knowledge, and its development and exchange;
- e-learning itself as an educational subject; such courses may be called "Computer Studies" or "Information and Communication Technology (ICT)";
- e-learning administrative tools such as education management information systems (EMIS).

From the above mentioned, it can be seen that e-learning is variously defined as the acquisition of knowledge where the medium of instruction or delivery learning using electronic means. It is the use of electronic media and information and communication technologies (ICT) in education which is broadly inclusive of all forms of educational technology i.e. technology-enhanced learning (TEL), computer-based instruction (CBI),
computer managed instruction, computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI), internet-based training (IBT), web-based training (WBT), online education, virtual education, virtual learning environments (VLE) (which are also called learning platforms), and digital educational collaboration.

E-learning includes numerous types of media that deliver text, audio, images, animation, and streaming video, and includes technology applications and processes such as audio or video tape, satellite TV, CD-ROM, DVE, cellular phones and computer-based learning, as well as local intranet/extranet and web-based learning.

E-learning covers a wide array of activities which aims to support learning. It facilitates access to knowledge that is relevant and useful. E-learning involves the delivery of education to anyone, anytime and anywhere. The success of e-learning depends on the ability to deploy its attributes to train the right people to gain the right knowledge and skills at the right time. E-learning can occur in or out of the classroom. It can be self-paced, asynchronous learning or may be instructor-led, synchronous learning. E-learning is suited to distance learning and flexible learning, but it can also be used in conjunction with face-to-face teaching.

2.3.3 Background and history of e-learning

E-learning is an electronically or technologically supports learning and teaching. Bernard Luskin (2010)\(^{16}\), a pioneer of e-learning, advocates that the "e" should be interpreted to mean "exciting, energetic, enthusiastic, emotional, extended, excellent, and educational" in addition to "electronic." This broad interpretation focuses on new applications and developments, and also brings learning and media psychology into consideration. Parks (2013)\(^{17}\) suggested that the "e" should refer to "everything, everyone, engaging, easy".

Depending on whether a particular aspect, component or delivery method is given emphasis, a wide array of similar or overlapping terms has been used. As such, e-learning encompasses multimedia learning, technology-enhanced learning (TEL), computer-based training (CBT), computer-assisted instruction (CAI), internet-based training (IBT), web-based training (WBT), online education, virtual education, virtual learning environments (VLE) which are also called learning platforms, m-learning, digital educational collaboration,
distributed learning, computer-mediated communication, cyber-learning, and multi-modal
instruction. Every one of these numerous terms has had its advocates, who point up
particular potential distinctions. In practice, as technology has advanced, the particular
"narrowly defined" aspect that was initially emphasized has blended into "e-learning."

In 1960, the University of Illinois initiated a classroom system based in linked
computer terminals where students could access informational resources on a particular
course while listening to the lectures that were recorded via some form of remotely linked
device like television or audio device (David R. Woolley, 2013)\textsuperscript{18}.

In the early 1960s, Stanford University psychology, Patrick Suppes (1971)\textsuperscript{19}
experimented with using computers to teach math and reading to young children in
elementary schools in East Palo Alto, California. Stanford’s Education Programme for Gifted
Youth is descended from those early experiments. In 1963, Bernard Luskin (2010)\textsuperscript{20}
installed the first computer in a community college for instruction, working with Stanford and others,
developed computer assisted instruction. Luskin completed his landmark UCLA dissertation
working with the Rand Corporation in analyzing obstacles to computer assisted instruction in
1970. Educational institutions began to take advantage of the new medium by offering
e-learning courses using computer networking for information. Early e-learning systems,
based on Computer-Based Learning/Training often attempted to replicate autocratic teaching
styles whereby the role of the e-learning system was assumed to be for transferring
knowledge, as opposed to systems developed later based on Computer Supported
Collaborative Learning (CSCL), which encouraged the shared development of knowledge.

Computer-based learning made up many early e-learning courses such as those
developed by Murray Turoff and Starr Roxanne Hiltz in the 1970s and 80s at the New Jersey
Institute of Technology, and the ones developed at the University of Guelph in Canada (Hiltz,
S., 1990)\textsuperscript{21} and (Mason, R. and Kaye, A., 1989)\textsuperscript{22}. In 1976, Bernard Luskin launched Coastline
Community College as a "college without walls" using television station KOCE-TV as a vehicle.
By the mid-1980s, accessing course content becomes possible at many college libraries.
Cassandra B. Whyte (1989)\textsuperscript{23} researched about the ever increasing role that computers
would play in higher education. This evolution, to include computer-supported collaborative
learning, in addition to data management, has been realized. The type of computers has changed over the years from cumbersome, slow devices taking up much space in the classroom, home, and office to laptops and handheld devices that are more portable in form and size and this minimalization of technology devices will continue.

The Open University in Britain and the University of British Columbia (where Web CT, now incorporated into Blackboard Inc. was first developed) began a revolution of using the Internet to deliver learning, making heavy use of web-based training and online learning and online discussion between students. Practitioners such as Harasim (1995) put heavy emphasis on the use of learning networks.

With the advent of World Wide Web in the 1990s, teachers embarked on the method using emerging technologies to employ multi-object oriented sites, which are text-based online virtual reality system, to create course websites along with simple sets instructions for its students. As the Internet becomes popularized, correspondence schools like University of Phoenix became highly interested with the virtual education, setting up a name for itself in 1980 (Farrell, Glen M., 1999). In 1993, Graziadei (1997) described an online computer-delivered lecture, tutorial and assessment project using electronic mail. By 1994, the first online high school had been founded. In 1997, Graziadei described criteria for evaluating products and developing technology-based courses include being portable, replicable, scalable, and affordable, and having a high probability of long-term cost-effectiveness.

By 1994, CALCampus presented its first online curriculum as Internet becoming more accessible through major telecommunications networks. CAL Campus is where concepts of online-based school first originated, this allowed to progress real-time classroom instructions and Quantum Link classrooms. With the drastic shift of Internet functionality, multimedia began introducing new schemes of communication; through the invention of webcams, educators can simply record lessons live and upload them on the website page. There are currently wide varieties of online education that are reachable for colleges, universities and K-12 students. In fact, the National Center for Education Statistics estimate the number of K-12 students enrolled in online learning programs increased by 65 percent.
from 2002 to 2005. This form of high learning allowed for greater flexibility by easing the
communication between teacher and student, now teachers received quick lecture
feedbacks from their students. The idea of Virtual Education soon became popular and many
institutions began following the new norm in the education history.

The emergence of e-learning is arguably one of the most powerful tools available
to the growing need for education. The need to improve access to education opportunities
allowed students who desire to pursue their education but are constricted due to the
institution to achieve education through "virtual connection" newly available to them. Online
education is rapidly increasing and becoming as a viable alternative for traditional
classrooms. According to a 2008 study conducted by the U.S Department of Education, back
in 2006-2007 academic year, about 66% of postsecondary public and private schools began
participating in student financial aid programs offered some learning courses, record shows
only 77% of enrollment in for-credit courses being for those with an online component. In
2008, the Council of Europe passed a statement endorsing e-learning’s potential to drive
equality and education improvements across the EU.

2.3.4 Purpose of e-learning

E-learning (also called electronic learning) is any type of learning that takes place
through or with a computer. E-learning is primarily facilitated through the Internet but can also
be accomplished with CD-ROMs and DVDs, streaming audio or video and other media. There
are many purposes of e-learning that can be concluded as follow: (Harmon et al., 1996)\textsuperscript{27},
(Stephenson, 2001)\textsuperscript{28}, and (Duderstadt, 1999)\textsuperscript{29}.

(i) Allow people to learn without physically attending: The purpose of
e-learning is to allow people to learn for personal accomplishment or to earn a professional
degree, without physically attending class sessions or a traditional university or academic
setting. E-learning can be applied for all levels of schooling from grade school to graduate
degrees, and is versatile enough to accommodate all learning styles.

(ii) A flexi-time approach: An e-Learning aims to offer a flexi-time, flexi-location
approach by changing the learning environment. It enables learning to take place in a variety
of different places, both physical and virtual.
(iii) **A mixed-mode, blended approach:** Most of people learn well when computer-mediated lessons are combined with virtual classes, study groups, team exercises, off-line and on-line assignments.

(iv) **A student-centered approach:** An e-Learning package not only provides a combination of Internet, digital technology and learning, but also facilitates student-centered learning. It is believed that in this approach, students are active participants and construct their own knowledge by interacting with the information available.

(v) **ICT empowerment:** E-Learning generally promotes greater proficiency in information technology skills. ICT can empower learner by offering choice and potentially more engaging and effective means of learning. ICT can accommodate a whole range of different learning styles and preferences.

(vi) **Global opportunities:** Exposure to the global learning community is increased. This is an important factor in the case of learners from disadvantaged rural communities where they do not have functional libraries or latest information that learners need. The Internet may provide this kind of information and more resources that may never be seen in a traditional classroom.

2.3.5 **Types of e-learning**

E-learning includes all forms of electronically supported learning and teaching, which are procedural in character and aim to effect the construction of knowledge with reference to individual experience, practice and knowledge of the learner. Information and communication systems serve as specific media to implement the learning process. E-learning refers to using electronic applications and processes to learn. E-learning applications and processes include Web-based learning, computer-based learning, virtual classrooms and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self paced or instructor led and includes media in the form of text, image, animation, streaming video and audio.

E-learning can be separated into two types i.e. synchronous or asynchronous. (Al- Musa & Al-Mobark (2005)\textsuperscript{30} and Mylott (2008)\textsuperscript{31}).
(1) **Synchronous e-learning**

This type of e-learning occurs in real-time with learners and requires learners and instructors to communicate online at the same time from different places. Synchronous learning involves the exchange of ideas and information with one or more participants during the same period of time. A face-to-face discussion is an example of synchronous communications. In e-learning environments, examples of synchronous communications include online real-time live teacher instruction and feedback, skype conversations, or chat rooms or virtual classrooms where everyone is online and working collaboratively at the same time. For this reason this type of e-learning needs modern equipments and good network connection. However, it has the advantage of immediate feedback and live online interaction. To conduct the synchronous e-learning, there are a number of tools that could be used such as video conferencing, audio conferencing, chat rooms, and white board (Mylott, 2008).³²

(2) **Asynchronous e-learning**

This type of e-learning does not require students and teachers to be online at the same time. Asynchronous learning may use technologies such as e-mail, blogs, wikis, and discussion boards, as well as web-supported textbooks, hypertext documents, audio video courses, and social networking. Asynchronous learning is self-paced and allows participants to engage in the exchange of ideas or information without the dependency of other participants' involvement at the same time.

At the professional educational level, training may include virtual operating rooms. Both the asynchronous and synchronous methods rely heavily on self-motivation, self-discipline, and the ability to communicate in writing effectively. The advantage of asynchronous e-learning is that the student will be able to choose the suitable time for him to access what he needs, and will allow him to do his learning at his own pace (Sussman, 2006).³³

On the other hand, with this type of e-learning students will be unable to get immediate feedback from the instructor and will be more isolated than synchronous e-learning. But as yet in both types of e-learning the students need to be motivated for learning in order to overcome the negative effects of the separation between from one another and from their instructor (Ellis, 2004).³⁴
In this regard Carlson (1997)\textsuperscript{35} emphasizes the importance of socialization, collaboration, and active participation in these types of e-learning to overcome such barriers. A number of tools could be used to conduct asynchronous e-learning such as e-mail and discussion boards (Horton, 2006)\textsuperscript{36}. However, with the development in the global network of information, technology contributed to the emergence of different methods and techniques of teaching and learning such as virtual classroom. These classrooms offer different tools that make courses more effective. For instance, they provide easy ways for uploading and sharing materials, for collecting and reviewing students’ assignments, for making online chats and debates, and for given exercises, for conducting surveys, and for recording grades (Cole, 2005)\textsuperscript{37}.

In this regard Dickinson (1995)\textsuperscript{38} defines the virtual classroom as “a teaching and learning environment located within a computer mediated communication system”. The virtual classroom mimics the traditional classroom with regard to the presence of teacher and students but on the World Wide Web rather than face-to-face environment. But as yet the former is superior the latter in many aspects. One of these aspects is that the virtual classroom accommodates any number of students irrespective of age, geographical location and time.

Furthermore, the virtual classroom offers tools which could help reduce the heavy tasks that the course management staff and teacher do in normal class such as following up students’ attendance, correcting and recording grads, and following up students’ progress.

All those activities could be done electronically and could allow management staff and teacher of the course to devote their time for other tasks which could improve the quality of the course (Young, 1999)\textsuperscript{39}. Another advantage of the virtual classroom is that it is cost-effective as it does not need buildings, not to mention the fact that it gives students more room to view and navigate through different sources of knowledge on the internet. Although, two types of virtual classrooms exist depending on the tools, software and techniques to be used, as follows:

- **Synchronous virtual classrooms**: Synchronous virtual classrooms are those which supported by software that enable the teacher and students to communicate online at
the same time from different locations (Hrastinski, 2008). The software used in synchronous virtual classroom has many advantages that could facilitate the learning processes. One of the advantages is the possibility that the teacher and students can see each other during the lectures and during discussion times. Moreover, the fact that the students might be taken on a synchronous tour on different websites where the students can see the sites that have been browsed by the teacher could be an advantage. Teacher and students in synchronous virtual classrooms often need modern devices in addition to high speed connection (Al-Musa & Al-Morak, 2005).

- **Asynchronous virtual classrooms**: Asynchronous virtual classrooms are self-paced e-learning systems that enable students to review the instructional material and therefore interact with the course content via internet at the appropriate time and place. The main advantage of asynchronous virtual classroom is the flexibility in the time, where the learner could log on to asynchronous virtual classroom any time to send messages to the instructor or colleagues and review or download documents. It also gives the students enough time to contribute more thoughtfully as compared to synchronous classroom (Hrastinski, 2008).

Learning management systems are an example of integrated software that could be used to help the faculty to implement and manage such classrooms (Papastergiou, 2006). Learning management systems have been defined as learning management software that can provide a variety of tools for sharing and delivering different types of instructional materials, and facilitate tasks such as giving immediate feedback, student registration etc. (Mimirinis & Bhattacharya, 2007; Ozdamli, 2007).

The second type of virtual classroom which is the asynchronous one is used in the current study. The asynchronous virtual classroom of the current study has been designed using one of the learning management systems called Moodle. It is open source of software, with the fastest growing number of users, and in the last few years it is becoming popular in many countries.

The Moodle system helps the instructor to upload the courses to the internet easily, and to organize the course in different ways. It could be organized in a weekly
format; each week contains the lectures, duties, exams etc, or in a topic format, where the course could be organized in the form of separate topics or separate units, or in a social format such as forums.

2.3.6 E-learning systems

E-learning systems have several names which basically mean the same: Virtual Learning Environment (VLE), Learning Management System (LMS), Course Management System (CMS), Learning Content Management System (LCMS), Managed Learning Environment (MLE), Learning Support System (LSS) and Learning Platform (LP). In Europe the term VLE is mostly used, but in United States the term CMS is favored over others.

Virtual learning environment (VLE) is computer software that enables the use of multimedia in a simple platform in the net. With the help of virtual learning environment the following basic learning tools of online learning can be used: text, still graphics and illustrations, sound and music, video and moving graphics, multimedia. Virtual learning environment includes users, courses and file management and maintenance. It offers several user levels such as students, teacher and administrator. There are several virtual learning environment offered to customers in the net, some of them are commercial and the others open source. The most used and famous ones are Blackboard, Moodle and WebCT.

According to Manninen (2000), the virtual learning environment the learner’s own activity is emphasized and studying takes place at least partly in a simulated situation. Students have an opportunity to directly interact with the learned matter. The learning environment emphasizes problem-centered over subject-centered learning in the planning of teaching. Studying is a comprehensive and lengthy process instead of divided short-term classes. There are different persons, mentors and experts to support the students. Teacher’s role changes from information deliverer to organizer and instructing person.

2.3.7 E-learning components

In order to design and develop successful e-learning programme, Ravenscroft Andrew (2001) remarks that it is necessary to understand the essential e-learning components i.e. Audience, Course structure, Page design, Content engagement, and Usability.
Audience: Among all of the components, none plays a larger role than the Audience. From concept to implementation, the audience is a critical factor in the process of developing e-learning courses. Everything designed and developed should be done with the audience in mind. One of the first steps in the e-learning process is to conduct an audience analysis. This analysis will help the constructor to determine the basic structure of the other four e-learning components. The following are the important factors to be considered for audience.

(i) Expectations: It is necessary to know the expected outcomes of the course. What will be required of the learner after completing the course? What skill level is required to be certified or qualified upon completing the course or training? Knowing these expectations will help in determining the structure, content, and format of the course.

(ii) Learning abilities (prerequisites): Before the development of e-learning course, it is needed to know about the audience’s learning abilities.

(iii) Available hardware/software: An important part of knowing the audience is to understand the capabilities of the learner to access the hardware and software.

(iv) Learning Environment: Another critical part of the analysis phase is to identify the environment of the audience. Where will the audience complete the course? Will it be in a classroom setting or at their workstation or desk? Answers to these questions help to design activities that best meet the environment requirements.

(v) Job Responsibilities: As an instructional designer, and especially as an e-learning developer, it is needed to know the job responsibilities of the audience. This information will help to create an effective e-learning course to meet with the required skills and current skills.

(vi) Preferences: This is one of the most overlooked areas when learning about audience. Audience will always have a preference in how they learn. Some are more prone to learn from video and audio exercises, while others need more simulated, hands-on exercises to learn. Knowing the learning styles will help to design a course that is interactive and achieve results.

Course Structure: Course structure refers to how a course is designed for e-learning. The structure of a course plays a critical role in how the audience learns the material. During the Design phase of e-learning, it is needed to brainstormed how the course
should be organized and structured. Consider the following items when structuring the e-
learning course:

(i) Group content into logical modules: Identify the flow of the course and then
determine how to modulate the information. Structuring the information into small "chunks" will
make it easier for the audience to follow and learn the materials. Most people can retain a lot
of information. However, the information must be organized and grouped into small segments
to ensure a greater retention percentage of the information.

(ii) Avoid creating modules that exceed 8-10 pages: Most people need to feel
like they are accomplishing something and need those mental check points that indicate that
they are progressing. Keeping the modules to 8-10 pages will help the learner feel a sense of
progress. Also, modules that tend to be long cause the learner to loose interest and thus, the
learning process becomes drudgery.

(iii) Incorporate interactive concepts: The course structure should also include
interactive concepts strategically placed throughout the course. Too much interactivity can
cause the learner to either forget why they are completing the course or simply loose interest.
A good rule of thumb is to include an exercise or activity every third page with one major
activity per module. This will establish a good balance between exchanging information and
sustaining the interest of the learner.

(iv) Use pictures/graphics to help explain ideas, concepts, or statements: It is
always a good practice to include images whenever possible. Many times, instructional
designers will insert an image just for the sake of inserting a picture. Each image should have
a purpose and should represent the subject presented on the page. By using images to
emphasize certain points of the page, it will draw the learner into the subject and he or she
will be able to better relate to the concepts presented.

❖ Page Design: The page design of an e-learning course is critical to the learning
process. How a page is designed can have a huge impact on the learning experience of the
audience?. Consider some of the following tips when formatting the e-learning course:

(i) Navigation must be intuitive. Make navigation simple and easy to follow.
The easier it is to navigate, the more engaging the course will be for the learner.

(ii) Appearance must not hinder the learning process. The purpose of the
course is to instruct the learner. The layout of the course should not be laborious for the
learner to understand what he or she must do on the page. If a page is confusing or frustrating for the learner, they will lose interest and will not achieve the learning objectives.

(iii) Balance between text and graphics is critical. Avoid over powering the text with graphics or images. Graphics are a powerful resource for instructional designers. Using graphics wisely to stress a concept is a great way to help the learner comprehend a complex topic. However, if the graphic becomes too dominate and over shadows the intent of the topic or concept on the page, the learner can become distracted and lose interest in the course. Also, too much text with little to no images can also have an affect on learner. Similar to images, too much text on a page can appear to laborious for the learner and can psychologically impact the learner in not reading the information. Thus, balance of images and text must be considered when designing a page.

(iv) White space is good. Some people like to use every bit of real estate on a screen. This makes the page look cluttered and unorganized. Having a lot of white space is actually a good practice to incorporate into e-learning course. Using white space effectively can promote a positive learning environment for the learner as he or she will not see the page as labor intensive to complete.

(v) Consistency is golden (includes fonts, layouts, and pop-ups). Being consistent throughout the e-learning course will improve the learning experience of the audience. Keeping objects and fonts consistent throughout the course helps the learner to become less frustrated in navigating through the learning.

(vi) Ease of scanning information is imperative. Most people like to scan through a page. Making the page user-friendly by organizing information using bullets or numbers can greatly improve the learning experience. Organizing concepts and topics using bullets or numbers ensure a greater retention percentage for the learner. It also helps the learner to quickly find key points or facts to assist in comprehending critical topics.

(vii) Chunking information is crucial. As mentioned before, chunking information into small bits of information will help the audience retain the information presented in the training. As mentioned, most people can retain vast amounts of information if the information is presented in a well organized fashion. Segmenting topics by steps, phases, or concepts will help the learner to remember and understand information within the course. It will also help to design an effective e-learning course.
Content Engagement: Because e-learning is a self-study medium, interacting with the learner becomes more important than most types of learning forums. Content engagement refers to how the learner interacts with content of the course. Because studies have shown that the learning experience is greatly enhanced when exercises or activities are incorporated into the learning process, content engagement is critical.

Engaging exercises or events within e-learning can compensate for the lack of an instructor who can add that human touch through personality and rhetorical interactions. Similar to classroom learning there must be a balance in applying engaging content. Consider the following when attempting to engage the learner in an e-learning environment.

(i) Use hyperlinks for additional concepts, explanations, or definitions. The advantage of e-learning is that it provides the learner with additional resources and information with just a click of the mouse. Linking to additional references can greatly improve the learning experience and offer added value to the content of the topic.

(ii) Incorporate interactive graphics such as animations or simulations. If pictures are worth a thousand words, then interactive graphics should be worth 2,000 words. Creating interactive images help the learner to experience a hands-on learning process that accelerates the learning.

(iii) Provide additional options/choices for the learner. In today’s world, people love the ability to choose various options. This is important when it comes to learning because everyone learns differently, including various learning style preferences. For example, most people learn visually. However, there are some people that learn better via audio. By incorporating both the visual and the audio aspects into learning, it will allow the learner to choose an option that best meets his or her learning needs.

(iv) Incorporate quizzes, tests, skill assessments. Another way to engage the learner is to test them on the things that they learned within the course. This allows both the learner to verify that they understood the content while at the same time the instructional designer can verify that the materials achieved the training objectives. This also helps to establish check points for the learner to know if they can move on within the course or return to previous topics to review the information again.

(v) Create fun activities such as games or other educational methods of interactive learning. When learning is fun, people can maintain their interest longer in the
topic. As the incorporate activities into learning, remember to make it fun. Use games or other methods that help to increase the learning experience. However, use caution in creating the games so as not to allow the games to over shadow the intent of the topic. Remember, the intent of these activities is to provide context around the explanation of the topic.

(vi) Keep activities focused on the course objective. Always ensure that the concepts must compliment the learning objectives or topics. The temptation for many is to become so engrossed in interactive concepts that the reason for the learning is often forgotten.

(v) Avoid letting the technology overshadow the course objectives. Similar to the previous bullet, never allow technology to become the main focus of the learning. Technology is a tool and should be used as such in order to help people learn the learning objectives. When technology becomes the center of attention within an online course, the learner will often fall short in achieving the course objectives.

 Usability: Many creative ideas are discarded because they do not work. Likewise, a well organized e-learning course can be ill-received if it does not function properly. Usability refers to the testing of e-learning content and applications. Consider the following when you conduct your usability analysis.

- Verify that all links work properly
- Ensure that activities function as designed
- Inspect content to ensure that grammar and spelling are correct
- Ensure that graphics are visible
- Verify that the course works appropriately in all applicable server environments
- Verify that screen resolution works for the intended audience
- Verify that course objectives and expectations are met

From the above mentioned, it can be concluded that knowing and understanding these five major e-learning components will help to build instructionally sound and successful e-learning programmes.
2.3.8 Steps of creating an effective e-learning programme

CapitalWave (2010) suggests 7 steps for creating the effective e-learning programme.

Step 1: Assessment: The first step for creating an effective e-learning programme is to assess the current learning situation in three parts: content, learners, and systems. In order to assess e-learning, it is necessary to look at content, both existing and future. Before looking at the existing content, the creator should decide what is appropriate for e-learning. In many cases, informational course material is the best way to start with an e-learning programme. This type of material can be made easily interactive and lends itself to participants who are not in a classroom. Tutorials, pre-work, and some collaborative exercises such as case studies may also be good candidates for transformation to an e-learning platform. As far as the future content, it is necessary to see what content is being used and in what contexts is to go out to major Learning Management System vendors.

To assess the learners, the creator has to know where the learners are located, how many exist, and what jobs they hold. For successfully implement an e-learning program, the creator must go deeper into the learner's skills and abilities as they relate to technology. Are the learners "tech-savvy"? Do they have exposure to computers and computer programmes every day? Do the learners are able to learn via online programmes?

After the assessment of learners, it is necessary to assess the system and organization's requirements. The first requirement is simply a question of budget. How much money will spend on e-learning development and delivery? Once the creators have an idea, take a look at the vendors again to see what they have to offer - and at what cost. But before asking for a demo, one should decide what "bells and whistles" the system will have. Do the creator want or need to use streaming video or will a simple platform with basic graphics suffice? Do the creators have a large number of learners? Finally, determine what technology is already out there - and decide if these computers and equipment stand up to the test of modern e-learning software and applications.

Step 2: Create and Convert: The second step in the creation of an effective e-learning programme is to convert and create content. The converting existing content is not
as simple as dumping pages into an online learning management system or content builder
application. The conversion takes careful planning and adherence to some general
standards on content. The e-learning content should be brief, learner directed, interactive
and must not wander. "Wandering" content is somewhat more acceptable in traditional
learning materials, because typically participants take the written materials with them as
references. In e-learning, the participant is going to learn what content is directed their way
and they are probably not going to take anything with them. The content should be in a brief
format by trying to keep each frame to 70 words or less. The content should be point to the
realm of "need to know" versus "nice to know". The content should be made a special impact
in the learner's mind.

Along the lines of learner-direction, e-learning content should be interactive.
Learners can read handouts that are e-mailed just as easily as logging into the learning
management system, so create a way for the learner to interact every few frames. This
interaction may be as simple as a review question, a callout, or a quick interactive exercise.
In more sophisticated delivery systems, the interaction could be a collaboration with other
learners, a video, or even a tutorial or simulation. The idea is to keep the learner's interest by
asking them to interact every few minutes. One of the final things to keep in mind on e-
learning content is that modules should ideally be thirty minutes or less.

Step 3: E-learning system: The third step in creating an effective e-learning
program is the development of a system that will deliver the e-learning programme. The
organization must have some type of delivery system for the online learning programme,
commonly referred to as a Learning Management System (LMS). There are numerous
questions to analyze and topics to consider before choosing a system. It is necessary to take
a look at the topics that the organization can begin asking the right questions in order to
implement the right delivery system. First, the origin of the delivery system must be
considered. Will the organization choose a vendor to assist or will it go with internal expertise,
namely the IT department? When considering this important decision, remember that there
are benefits and drawbacks for both. A vendor-purchased system is typically made-to-order
by a group that specializes in just that. On the drawback side, the specifications can
sometimes be costly - and changes can be slow and costly, as well. A homegrown LMS is
optional if the expertise and resources in-house are built. An in-house development team knows the organization, its growth, and its audience. Plus, a homegrown system “may” cost less in the long run. The potential roadblocks to this path are that the expertise must be present in-house - and they must be able to devote themselves pretty much full time to the project.

Step 4: Implementation: The fourth step in creating an effective e-learning programme is the implementation. First, marketing is not reserved for the organization's products. Marketing must occur with an e-learning implementation. It is necessary to determine the "brand" of e-learning. Technologically advanced, such as blogs, online collaboration, e-newsletters, and Intranet articles can be used for presentation of the message and marketing. The implementing e-learning is a change in the mindset of many organizations. The best thing to do with "mindset" is to make a list of all of the considerations, from buy- in to accountability to hourly pay - and decide how the organization will work with each. This way, no question will go unanswered during the implementation phase.

Step 5: Evaluation: The fifth step in creating an effective e-learning program is evaluation. Evaluation should be occurring at all times. But keep in mind that e-learning evaluation is different; the goal may be the same but methods will change slightly. When evaluate the e-learning programme, there are two areas to focus on: learner and content. The initial evaluation of e-learning programme can take place both at the beginning of the programme and throughout its lifetime.

Step 6: Modification: The sixth step in creating an effective e-learning programme is modification. The evaluation data can be used to make constant modifications to e-learning programme. Every piece of data, whether it seems small or not, can help the creator to modify the e-learning programme, keep it fresh, and move it into prominence with the organization. Three common areas i.e. system, course design and delivery, and marketing are considered to modify the programme.

Any of these characteristics can show the specific and overall problems with the programme: (i) problems may caused by a slow running system, (ii) malfunctions in video streaming or interactivity, or (iii) overall system preparedness. If it is found that there are
issues with the system, make a list of the problems and a list of the solution that would like to see. If the system is functioning slowly, know what the optimum time should be. Once a list of requirements and optimum functions should be prepared, go back to the vendor or in-house IT department and present it. The next area to look at is course design and delivery. In evaluation, there will be the number of users per course, how many of those users finish the course, and how many leave the system without a course completion. If the system is functioning well, then it should be considered the possibility that the courses are not presented as well as they could be. The questions can be done such as: Are the courses too long? Are individual frames covered with text and little interaction? Is the content appropriate for e-learning deployment? Are certain courses used infrequently?

Modification of the e-learning programme should be gradual, however. Some organizations have been known to pull large parts of the programme offline in order to modify it. This may not be the best way to take care of changes. Determine which areas need the most attention and work on those first. But avoid taking whole pieces of the program offline at all costs. Modifications should be so gradual that the learner notices the small changes each time he or she logs in to the system. The modification should be a “no shock” plan.

Step 7: Regular Monitoring: The last step in creating an effective e-learning programme is a combination of all the steps: monitoring the programme. The e-learning programme requires a constant eye on various areas to ensure that nothing goes off track. One tiny flaw can create large problems, and with large problems comes a loss of users. Organizations have made the mistake of letting the e-learning programme “ride”, only to find that one day no one is using it.

First, continue to monitor user data. Next, be sure to look at the system data. One of the often-forgotten pieces of data for LM Systems is, believe it or not, cost. Once the budget is entered, billing for certain things on an LMS becomes automatic. Be sure that someone is looking at cost for upward trends. For example, the number of users may drop to a point where each one costs more. Or, higher bandwidth use may begin costing the organization more in terms of the overall communications cost. The information can be monitored on a regular basis and can give a great deal of insight into the e-learning delivery
system. Course data is also an important monitoring point. Finally, don’t forget to monitor the training staff. It’s easy to assume that once the programme is up and running the staff will have less to do.

It can be said that an effective e-learning programme saves money and time and creates an effective platform to educate the workforce.

2.3.9 Advantage and disadvantage of e-learning

The advantages and disadvantages of e-learning have been referred by a number of Researchers. Awadh A. Alqahtani (2010) concluded some of these advantages and disadvantage of e-learning as follow:

**Advantage of e-learning**

(i) It focuses on the needs of an individual learner as an important factor in the educational process rather than on the needs of the instructors, or the educational institution.

(ii) Flexibility in terms of time and place, where every student chooses the time and place that suits him.

(iii) Enhancing the efficiency of knowledge and qualifications through accessibility to a vast amount of information, including access to expertise featuring global.

(iv) E-learning is cost effective as students do not need to travel, which insure more costs if they do. E-learning reduces travel time and travel costs for off-campus students. Self-paced learning modules allow students to work at their own pace. It also provides learning opportunities for a maximum number of students without the need for more buildings. Students can study anywhere they have access to a computer and Internet connection.

(v) Provides opportunities for interaction between learners through discussion forums and through eliminating the barriers that might hinder participation such as fear to talk to others.

(vi) E-learning always takes into account the differences between individual learners. For example, some learners prefer to focus on certain parts of the course, while others are ready to review the whole course.
(vii) Students may have the option to select learning materials that meet their
level of knowledge and interest. E-learning also can accommodate different learning styles
and facilitate learning through a variety of activities.

**Disadvantages of e-learning**

(i) In e-learning the learner might suffer from introversion, isolation, and lack of
social interaction, therefore the learner needs a strong motivation and skills with regard to
time management to reduce this effect.

(ii) E-learning might have negative impact on the development of communication
skills of learners. Instructor may not always be available when students are studying or need help.

(iii) E-learning might be less effective than traditional learning in terms of
clarification and explanation as the learning process becomes easier through face to face
encounter.

(iv) In e-learning cheating cannot be regulated as assessment tests could
possibly be done by proxy.

(v) Slow Internet connections or older computers may make accessing course
materials frustrating. Managing computer files and online learning software can sometimes
seem complex for students with beginner-level computer skills.

2.4 LECTURE AND TEXTBOOK METHOD OF TEACHING

Teaching in the educational institutions is heavily oriented toward the lecture.
Lecture method of teaching is the oldest teaching method applied in educational institution.
This teaching method is one way channel of communication of information. Students’
involvement in this teaching method is just to listen and sometimes pen down some notes
during the lecture (Umar Farooq, 2012)\(^5\).

2.4.1 Definition of lecture method of teaching

Lecture method of teaching is variously defined by a number of experts. Some
definitions of lecture method of teaching are given below.

Donald A. Bligh (2000)\(^5\) defines a lecture as an oral presentation intended to
present information or teach people about a particular subject, for example by a university or
college teacher. Lectures are used to convey critical information, history, background, theories and equations. Usually the lecturer will stand at the front of the room and recite information relevant to the lecture's content. Lecturing is mainly a one-way method of communication that does not involve significant audience participation. Therefore, lecturing is often contrasted to active learning. Lectures delivered by talented speakers can be highly stimulating; at the very least, lectures have survived in academia as a quick, cheap and efficient way of introducing large numbers of students to a particular field of study.

Rick Paker (2010) states that the lecture is defined loosely as a continuing oral presentation of information and ideas by the professor; it is presumably a synthesis of his own reading, research and experiences, interpreted in light of his own insights. Theoretically, in the true lecture, little or no active student participation is involved. There is a varying degree of use of the blackboard, slide projector, assignments to be done outside of class and question and answer sessions: but all of these variants involve the lecturer as the primary agent in the instruction.

Melissa Kelly (2012) explains that lecture is a teaching method where an instructor is the central focus of information transfer. Typically, an instructor will stand before a class and present information for the students to learn. Sometimes, they will write on a board or use technology. Students are expected to take notes while listening to the lecture. Usually, very little exchange occurs between the instructor and the students during a lecture.

Meenu Sharma (2012) describes that lecture method is the oldest method of teaching. It is based on the philosophy of idealism. This method refers to the explanation of the topic to the students. The emphasis is on the presentation of the content. The teacher clarifies the content matter to the students by using gestures, simple devices, by changing voice, change in position and facial expressions. Teachers are more active and students are passive but the teacher also asks questions to keep the students attentive.

Lectures are one tool in a teacher's arsenal of teaching methods. Lecture should use only when most appropriate. Teachers should be cautioned that before heading into numerous classes full of nothing but lectures; they need to provide their students with note taking skills. Only by helping students understand verbal clues and learn methods of
organizing and taking notes will they truly help them become successful and get the most out of lectures.

From the definition of lecture method of teaching mentioned above, it can be concluded that lecture method of teaching is a teaching method which the presenter or an instructor teaches orally to a group of class participation. Lectures are used to convey the contents, ideas, experiences, history, critical information, theories and equations. It is the learning process where the teacher conveys the knowledge to learners through speaking, narrating, and explaining on the content and the subject that the teacher had been well prepared, studied, and searched. Learners only listen, and might note down important contents while listening. The instructor might give a chance in asking questions and expressing ideas.

In this study, the lecture method of teaching was used for the control group, through the speaking, narrating, demonstrating, and enumerating, giving the depicting information as well as the data information, while learners just listen. Learners might note down on important content during the lecture and could ask questions. The lecture method of teaching in this study was used along with the textbook on the educational research methodology.

2.4.2 Objectives of lecture method

The objectives of lecture method are as follows: (Manisa Sangtaptim, 2006)

(1) Lecture Method stresses on the content presented by the instructor, giving some chances for questioning in the end. The instructor would lead on presenting the problem and ways in solving problems, then conclude on the best method according to the principle.

(2) Lecture Method emphasizes on a variety of concept for learners before concluding into just one concept or the best opinion.

2.4.3 Stages of lecture method of teaching

There are three stages of lecture method of teaching (Manisa Sangtaptim. 2006)

Stage 1: Preparation stage: The preparation stage is divided into seven stages as follow:
(i) Stipulate the purpose on each time of lecturing explicitly.
(ii) Study the background of learners, such as their basic knowledge, experience, requirement, interest, and information necessary for the lecture.
(iii) Amalgamate all contents to be lectured, such as study the treatise, papers, documents, and knowledge sources, including personal experience and skill of the instructor.
(iv) Assign the structure and sequence the content with an appropriate presentation to the time and character of learners.
(v) Prepare descriptive details such as examples, information, illustration, analogous information, statistical information, questions, and creating climate.
(vi) Prepare the lecturing media, such as pictures, puppet, work paper, worksheet, audio visual aid, and presentations through computer and projector, etc.
(vii) Prepare the evaluation, such as the pretest and the posttest, and the performance test, observing form, etc.

State 2: Lecture stage: The lecture stage is divided to three stages as follow:
(i) Introduction: This is an access into the text where the teacher might just talk or ask question, or revise on original knowledge to associate this knowledge to the new one; or there might be a question to incite an interest, referring on important event or put up samples. Then advise on the learning purpose and the scope of content. The end of introduction is the pretest.
(ii) Explanation: This is the presentation of the contents for the learning, where the teacher must elucidate the explanation sequentially, with an enumeration, illustration, statistical information, analogous information, using questions during the lecture, and creating a good climate, such as the sense of humour, using polite words enunciatively, in a natural voice, with a smiling and a friendly gesture. He should not speak too fast or too slow, with a correct orthography, in a good tempo, stressing on important points. He should also meet the eyes of learners amicably. Moreover, all the media should be adopted precisely in harmony with the matter.
(iii) Conclusion: This is a conclusion on the quintessence of the lecture. In this stage, the learner might conclude by questioning learners on the lectured essence
through queries. Then give a short intermittent for the learners to think and to answer the question. Their replies would become a feedback, and can become another way of evaluation on learners.

**Stage 3: Evaluation stage**: This is an evaluation on learners through the learning achievement test (Posttest).

The lecture method is a way of instruction which the researcher adopted for the control group of learners. The sample group in this place is the first year university students of educational research methodology subject.

### 2.4.4 Advantage and disadvantage of lecture method of teaching

#### Advantage of lecture method of teaching

The advantage of lecture method of teaching has been debated in many aspects. Some of the specific advantages of the lecture method are presented by Donald A. Bligh (2000)\(^5\).

1. Lecture method may arouse, stimulate, give perspective on a subject, prepare the way for discussion, and exhibit a mode of thought. It serves to channel the thinking of all students in a given direction, and at the same time allows for clarification of and increased emphasis upon important points. It is adaptable to the needs, interests, and background knowledge of each particular group of students. It is excellent for introducing a new topic, for giving perspective to the class, and for summarizing what should have been learned.

2. Lecture method can operate promptly with a great deal of content and knowledge, and less time compared to other methods.

3. Lecture method is easy to elucidate because there is no need for the lecturing media. It is the simplest method for teachers and does not require any arrangements. The instructor only needs to prepare the lecture content. The instructor only uses the work sheet and the appliance of audio visual aid.

4. Lecture method is a straightforward way to impart knowledge to students quickly. It gives the students training in listening. It provides an opportunity for better clarification of the topics and laying stress on significant ideas.
Lecture method is economical of time, cost and materials and can be used among large number of students or a very large audience.

Many concepts can be given by lecture method because the lecturer is particularly versed in the subject. In this teaching method, a large amount of topics can be covered in a single class period. Therefore, the most college courses are lecture-based, students gain experience in this predominant instructional delivery method.

Instructors also have a greater control over what is being taught in the classroom because they are the sole source of information.

**Disadvantage of lecture method of teaching**

There are many disadvantage of lecture method of teaching, but it also has some limitations. (Umar Farooq, 2012)

1. Lecture method makes students’ passive learners. There is very little scope for students’ activity. It is against the principle of learning by doing. Learning is an active process thus study should encourage to actively participating in the classroom instead of just listening the teacher. This knowledge getting from lecture comes only from listening and is forgettable, in a transient memory. The lecture are often forgotten by the students soon after while learning is retained if activities are experienced. The evidence showing that learning has to be an active process involving considerable interaction between teacher and student.

2. Lecture method does not take into consideration individual differences and does not develop power of rezoning of the students. It becomes monotonous to the students. Teachers usually deliver the same lecture to students without recognizing the individual differences. Lecture method is unable to respond on the interpersonal diversity and needs, because everyone must acknowledge in the same subject at the same time.

3. Students can find lectures boring causing them to lose interest if the point matter is not arranged properly. In order to make the students have more attention on the lesson, the students should be encouraged to ask the questions and teaching aids should also used the lecture effective. The content of the lecture should be logical and according to the standard of the students.

4. Students who are weak in note-taking skills will have trouble understanding what they should remember from lectures. They are not able to get full advantage of the
(5) The notes of the teacher for his lecture are taken from texts to which the students have ready access, and which they can read in instead of hearing. The assumption is that the task of the teacher is to tell the students. The passive listening role saves the students from assuming too much responsibility for their own education.

(6) Contents from the lecture do not arise directly through the empirical learning of learners but these contents are knowledge from the discourse of the instructor. Thus, the teacher must create the lecture climate through the rhetoric or the good media, and provide them the activities or practices so that learners would not lose their interest.

2.5 TEXTBOOK

2.5.1 Definition of textbook

One of the more useful tools in an instructional process is the textbook. Using a textbook to its best advantage seems to be overlooked when the teachers prepare for teaching. All of hand books focus on the presentation of the concept of revision (Mike Bruner, 2010)\textsuperscript{59}.

Wikipedia (2007)\textsuperscript{60} defines textbook as a manual of instruction or a standard book in any branch of study. They are produced according to the demand of the educational institutions. Textbooks are usually published in printed format, some can now be viewed online. Textbook is a teaching tool (material) which presents the subject matter defined by the curriculum. A university textbook is required to contain the complete overview of the subject, including the theories, as well as to be of a more permanent character. Textbooks are usually part of a pedagogical design, i.e. it can be the center piece of a course syllabus, it can be used for self-study (students and professionals) and teachers can assign just parts for reading.

Daniel K. Schneide (2007)\textsuperscript{61} explains that textbook is a special form of a non-fiction book used for teaching. It contains didactically prepared learning matter and materials. The textbook is an instructional manual or a standard book in any branch of study. They can be different according to target population and subject matter.

Olivia Angula (2012)\textsuperscript{62} mentions that textbook is a book someone uses to learn. It is usually supplied in classrooms form primary school to post secondary school. People use it
to learn from it about a certain subject. Textbook is a collection of the knowledge, concepts, and principles of a selected topic or course. It's usually written by one or more teachers, college professors, or education experts who are authorities in a specific field. Most textbooks are accompanied by teacher guides, which provide the supplemental teaching materials, ideas, and activities to use throughout the academic use.

From the definition mentioned above, it can be concluded that textbook is a set of written, printed materials. It is a collection of the knowledge, concepts, and principles of a selected topic or course. It is a manual of instruction in any branch of study. Textbook are produce according to the demands of educational institutions. Textbooks are accompanied by teacher guides, which provide the supplemental teaching materials, ideas, and activities to use throughout the academic use. Most textbooks are only published in printed format, many are now available as online electronic books. Textbook is used by students as a standard work for a particular branch study of a subject.

2.5.2 Use of textbook

As major teaching aid with a lot of built-in pedagogy, e.g. review questions, self-assessment, textbook helps the teacher to prepare a class. It can be used as reading assignment to cover specific concepts and as supplementary reading for various purposes. The major uses of textbooks in class were for diagrams and data, and to verify factual information. Occasionally, questions in textbooks were used as homework to test and/or consolidate knowledge (Lepionka, Mary Ellen, 2003)63.

Textbooks are especially helpful for beginning teachers. The material to be covered and the design of each lesson are carefully spelled out in detail. Textbooks provide organized units of work, provides a balanced, chronological presentation of information. Textbooks are a detailed sequence of teaching procedures that tell the reader what to do and when to do it. Textbooks provide administrators and teachers with a complete programme. The series is typically based on the latest research and teaching strategies. Good textbooks are excellent teaching aids. They’re a resource for both teachers and students.
2.5.3 Effective use of textbooks

A textbook is only as good as the teacher who uses it. It’s important to remember that a textbook is just one tool, perhaps a very important tool for teaching and learning arsenal. Sometimes, teachers over-rely on textbooks and don’t consider other aids or other materials for the classroom. Some teachers reject a textbook approach to learning because the textbook is outdated or insufficiently covers a topic or subject area.

As a teacher, it is necessary to make many decisions, and one of those is how the reader wants to use the textbook. As good as they may appear on the surface, textbooks do have some limitations. When thinking about how to use textbooks, consider the following:

- Use the textbook as a resource for students.
- Use a textbook as a guide, not a mandate, for instruction.
- Be free to modify, change, eliminate, or add to the material in the textbook.
- Supplement the textbook with lots of outside readings.
- Supplement teacher information in the textbook with teacher resource books; attendance at local, regional, or national conferences; articles in professional periodicals; and conversations with experienced teachers.

Some textbooks may fail to arouse student interest. It is not unusual for students to reject textbooks simply because of what they are compendiums of large masses of data for large masses of students. Students may find it difficult to understand the relevance of so much data to their personal lives.

The following table lists some of the most common weaknesses of textbooks, along with ways of overcoming those difficulties.

<table>
<thead>
<tr>
<th>Weakness</th>
<th>Ways of Overcoming Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>The textbook is designed as a sole source of information.</td>
<td>Provide students with lots of information sources such as trade books, CD-ROMS, websites, encyclopedias, etc.</td>
</tr>
<tr>
<td>Textbook is old or outdated.</td>
<td>Use textbook sparingly or supplement with other materials.</td>
</tr>
</tbody>
</table>
Continued

<table>
<thead>
<tr>
<th>Weakness</th>
<th>Ways of Overcoming Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook questions tend to be low level or fact-based.</td>
<td>Ask higher-level questions and provide creative thinking and problem-solving activities.</td>
</tr>
<tr>
<td>Textbook doesn't take students' background knowledge into account.</td>
<td>Discover what students know about a topic prior to teaching. Design the lesson based on that knowledge.</td>
</tr>
<tr>
<td>Reading level of the textbook is too difficult.</td>
<td>Use lots of supplemental materials such as library books, Internet, CD-ROMs, etc.</td>
</tr>
<tr>
<td>The textbook does not encourage the reader to create the new ideas.</td>
<td>Involve students in problem-solving activities, higher-level thinking questions, and extending activities.</td>
</tr>
</tbody>
</table>

2.6 REVIEW OF THE PAST STUDIES

2.6.1 Definition of review of the past studies

A review of the past studies is an essential part of the research work. It is a careful examination of a body of literature pointing toward the answer to the research question. The review of the past studies is a link between the research proposed and the past researches. It tells the researcher about various aspects that have been already established or conducted and concluded by other authors. It gives a chance for readers to appreciate the evidence that has already been collected by previous research.

Hart (1998) defined the literature review as “the use of ideas in the literature to justify the particular approach to the topic, the selection of methods, and demonstration that this research contributes something new”. Shaw (1995) noted that the process of the review should “explain how one piece of research builds on another”. Webster and Watson (2002) defined an effective literature review as one that “creates a firm foundation for advancing knowledge.”
Galvan, J. (2006) states that the review of the past studies is an effective evaluation of the selected documents which focuses on a specific research topic of interest to the researcher and includes a critical analysis of the relationship among different works, and relating to the researcher’s work. It may be written as a stand-alone paper or to provide a theoretical framework and rationale for a research study.

Review of the past studies typically includes scholarly journals, scholarly books, authoritative databases and primary sources. Sometimes it includes newspapers, magazines, other books, films, audio/video tapes, and other secondary sources. Primary sources are the origin of information under study, fundamental documents relating to a particular subject or idea. Often they are first hand accounts written by a witness or researcher at the time of an event or discovery. These may be accessible as physical publications, as publications in electronic databases, or on the Internet. Secondary sources are documents or recordings that relate to or discuss information originally presented elsewhere.

Kim Lie (2012) describes the review of the past studies as a critical synthesis of previous research. It is a text written by someone to consider the critical points of current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic.

In the conclusion, it can be said that review of the past studies is an effective and careful evaluation of the selected documents which focuses on a specific research topic which links between the research purpose and the past researches.

Hart (1998) lists the following purposes of a review of the past studies:

- Distinguishing what has been done from what needs to be done;
- Discovering important variables relevant to the topic;
- Synthesizing and gaining a new perspective;
- Identifying relationships between ideas and practice;
- Establishing the context of the topic or problem;
- Rationalizing the significance of the problem;
- Enhancing and acquiring the subject vocabulary;
- Understanding the structure of the subject;
- Relating ideas and theory to applications;
- Identifying methodologies and techniques that have been used;
- Placing the research in a historical context to show familiarity with state-of-the-art developments.

2.6.2 Importance of review of the past studies

The review of past studies is very important aspect of any research both for the work planning as well as to show its relevance and significance. Doing a careful and thorough the review of the past studies is essential for the research to write a research.

A review of past studies helps the research to create a sense of rapport with readers so that they can trust the fact that the researcher has done the research work. The effective literature review helps the researcher to understand the existing body of knowledge including where excess research exists. It provides a solid theoretical foundation for the proposed study. The effective literature review also help to substantiate the presence of the research problem, justify the proposed study as one that contributes something new to the body of knowledge, and frame the valid research methodologies, approach, goals, and research questions for the proposed study (Leedy and Ormrod, 2005).

According to Justus Randolph (2012), review of the past studies goes beyond the information search. It helps the research to identify and articulate the relationships between the literature and the field of research. He has summarized following importance of review of the past studies as follow:

- It provides a context for the research,
- It ensures the research has not been done before,
- It shows where the research fits into the existing body of knowledge,
- It enables the researcher to learn from previous theory on the subject,
- It illustrates how the subject has been studied previously,
- It highlights flaws in previous research,
- It outlines gaps in previous research,
- It assists on refining, refocusing or even changing the topic
- It describes how the proposed research is related to statistics.
• It shows the originality and relevance of research problem.
• It justifies the proposed methodology.
• It demonstrates the preparedness to complete the research.

Kumar, V. (2009) states that a large part of review of literature actually needs to be done even before the research project is formalized. This is essential to make sure that the researches are not repeating the work that someone has already done earlier. Sometimes, if the research has already been undertaken earlier, then it provides an option of modifying the work by adding a new perspective or altering some of the methods of research to obtain a perspective that will be different from earlier works and thus more valuable. Occasionally, the work may be exact repetition of the work done earlier, but with a different set of data or sources of facts, and purpose of the research may just be seen if the results are similar to earlier works.

It can be concluded that the review of the past studies is necessary to show the available evidence to solve the problem adequately and thus the risk of duplication can also be avoided. It provides ideas, theories, explanations or hypotheses valuable in formulating the problem. It also suggests methods of research appropriate to the problem, to locate comparative data useful in the interpretation of results and to contribute to the general scholarship of the researcher. Review of literature is also important to highlight difference in opinions, contradictory findings or evidence, and the different explanations given for their conclusions and differences by different authors. Thus review of literature is a very important part of one’s research.

2.6.3 Past studies related to the effectiveness of e-learning on learning achievement and research skills

This chapter presents 10 past researches related to the effectiveness of e-learning on learning achievement and research skills which was already done in Thailand and in foreign countries:
STUDY 1: A Comparison of Traditional Method and e-learning on Students’ Achievement in General Science. (Kittikun Thavornkul, 2006)

Objective of the study: The purpose of this study was to examine the effect of e-learning on student achievement in general science as compared to traditional method of instruction.

Research design: The experimental research was designed to see the effect of e-learning on students’ achievement in general science subject in the comparison to the traditional method of instruction. Students of the experimental group received e-learning, for a period of eight weeks and the control group studied general science in their class as traditional method.

Tool used in the study: e-learning programme for the experiment and textbook for control group were developed by the researcher, covering four chapters (eight weeks) in general science for secondary classes.

Pretest and Posttest was a learning achievement test comprising one hundred multiple-choice items, measuring knowledge and application components of achievement in three types of the selected content area i.e. biology, chemistry and physics.

Sample of the study: An experiment was conducted with 10th grade students in academic year 2005 studying general science at Bangkok Secondary School.

Technique of analysis of data: The null hypotheses were tested by analyzing the data on learning achievement test. Paired t-test (independent) was applied to determine the significant difference between the mean scores of learning achievement of the experimental and control groups.

Major findings: The results of the study revealed that the students in experimental group obtained greater mean score on learning achievement in general science than the students in traditional method of instruction. It was found that the students like the e-learning programme and benefited from it. They found it better mode of instruction than the traditional method.

Objective of the study: The objectives of this study was to investigate the effect of e-learning on students’ achievement in social studies. The essential question investigated is that "Is there any significant difference between traditional classroom and e-learning with respect to achievement?".

Research design: The quasi-experimental research was designed to see the effect of e-learning on students’ achievement of higher education students in the social studies subject. E-learning was applied to the experimental group whereas traditional instruction which is teacher-centered and lecturing method was given to the control group.

Tool used in the study: E-learning programme for the experimental group and traditional method of instruction for control group were developed by the researcher using for the first year higher education students. 30 questions in learning achievement test were use to be the pretest and posttest of the study.

Sample of the study: This study based on experimental method was carried out in 2004-2005 academic year for higher educational students in Bangkok university. 60 first year bachelor degree students were select by stratified random sampling to be the sample of the study. 30 students were in experimental group whereas the other 30 students were assigned to be the control group.

Technique of analysis of data: The data collected from 30 questions from a multiple choice-test. Mean (\(X\)), Standard deviation (S.D.), and t-test (independent) were used to analyze the data.

Major findings: The results of the study revealed that the experimental group is more successful with respect to the levels knowledge and application than traditional method. At the end of the study, it is determined that e-learning in social studies is more effective for acquiring knowledge, comprehension and application level behaviours than traditional instruction.

Objective of the study: The purpose of this study was to investigate the effect of using e-learning programme on the achievement of secondary students in English language subject.

Research design: The quasi-experimental research was designed to see the effect of e-learning on achievement of secondary school students in the English language subject. E-learning was applied to the experimental group and lecturing method was used for the control group.

Tool used in the study: The instrument of the study in the experimental group was e-learning programme in English language subject whereas the instrument of the control group was the lecture method of teaching. 50 questions in English grammar were used to test the learning achievement of students in experimental group and control group.

Sample of the study: The sample of the study consisted of 80 secondary school students distributed randomly on 1 experimental group (40 students) and 1 control groups (40 students).

Technique of analysis of data: Mean (\( \bar{X} \)), Standard deviation (S.D.), and t-test (independent) were used to find out the significant difference between mean scores of students’ learning achievement in English grammar.

Major findings: The results of the study revealed that the student of experimental group obtained more successful than the students in control group.

(1) There was statistically significant difference between mean scores on English grammar of the students’ achievement in experimental group and control group. This difference is in favour of the students in the experimental group using e-learning.

(2) There was statistically significant difference between mean scores on English grammar of the students’ achievement classified by gender. This difference is in favour of girl students.
(3) There was statistically significant difference between mean scores on English grammar of the students’ achievement classified by stream of study. This difference is in favour of the scientific stream students.

In light of the findings of the study, it was recommended that e-learning was more effected on secondary school students’ achievement than lecture method of teaching.

STUDY 4 : The Effectiveness of Using E-learning, Blended Learning and Traditional Learning on Students’ Achievement and Attitudes in a Course on Islamic Culture: an Experimental study  
(Awadh A. Alqahtani, 2010)

Objective of the study : The main objective of this study was to make a contribution towards improving the quality of teaching religion-related subjects in the Saudi universities by investigating the impact of the e-learning method and the blended learning method on students’ achievement and attitudes. Hence, in essence the specific objectives of this study are as follows:

(1) To examine the impact of the e-learning method on the student’s Achievement compared to the traditional learning method with regard to religion-related subjects in Saudi universities.

(2) To identify the effect of the blended learning method on the student’s Achievement compared to the traditional learning method with regard to religion-related subjects in Saudi universities.

(3) To determine if there is a positive impact of the blended learning method on the student’s achievement as compared to the e-learning method with regard to teaching religion-related subjects in the Saudi universities.

(4) To identify the influence of the e-learning method on the student’s attitude as compared to the traditional methods with regard to teaching religion-related subjects in the Saudi universities.

(5) To identify the effect of the blended learning method on the student’s attitude toward as compared to the traditional methods with regard to teaching religion related subjects in Saudi universities.

(6) To identify the impact of the blended learning method on the student’s Attitude toward as compared to the e-learning method with regard to the teaching of religion
related subjects in the Saudi universities.

**Research design:** In order to test the research hypotheses pretest and posttest control groups have been selected. This type of experimental design should consist of at least two groups that could be expanded to three or more groups. This current research involves three equivalent groups, two experimental groups and one control group. All research groups were given a pre-test achievement, then the two experimental groups were exposed to the independent variable; the first group was taught by e-learning method and the second group by blended learning, while the control group received the usual treatment which was the traditional learning method. The differences between the three groups were then identified.

**Tool used in the study:** For the purpose of achieving the research objectives the following instruments and materials have been designed:

1. E-learning programme
2. Blended learning programme
3. Tradition learning
4. Learning achievement test featuring the Islamic Culture course (101) at Umm Al-Qura University in Saudi Arabia
5. Students’ attitude scale

For this purpose an ethics unit drawn from an Islamic culture course (101) has been electronically designed using a learning and content management system programme known as Moodle, based on the ADDIE model.

**Sample of the study** Two experimental groups together with a control group have been involved. The three groups have been randomly selected and assigned with the first and second experimental groups consisting of 43 and 55 participants respectively, and the control group consisting of 50 participants. After verifying their reliability and validity pre-achievement and post-achievement tests as well as attitude scale supported by interviews have been used as instruments for assessing students’ achievement and attitudes in the different groups.
**Technique of analysis of data**: The data obtained from the research instruments was analyzed using SPSS (Statistical Package for Social Sciences). Accordingly, the following statistical tools were deemed the most appropriate for data analysis:

1. Cronbach Alpha Coefficient was carried out using the statistical package for social sciences (SPSS) to measure the internal reliability of research instruments.

2. Chi-Square test was carried out using the statistical package for social sciences (SPSS) to ensure that there were no significant differences between the study sample groups in relation to computer and Internet literacy.

3. One-way ANOVA test was carried out using the statistical package for social sciences (SPSS) first, to ensure that there were no significant differences among study sample groups in the pre-test of the ethics unit, and second to investigate if there were any significant differences between study sample groups regarding their attitude towards the methods of teaching.

4. Analysis of Covariance (ANCOVA) was carried out using the statistical package for social sciences (SPSS) to investigate as to whether there were any significant differences existed between the different groups of the study sample in relation to the post-test of the ethics unit.

5. Pearson correlation coefficient was carried out using the statistical package for social sciences (SPSS) to investigate the relationship between students’ achievement and attitude in the study sample groups.

6. The effect size based on means to identify the size of impact of the independent variable (method of teaching) on the dependent variable (students’ achievement) through the calculation of differences between groups means divided by pooled standard deviation.

**Major findings**: The results of the study have revealed that there is a statistically significant difference (at the 0.05 level) between the three methods in terms of students’ achievement favouring blended learning method, while no statistically significant differences exist (at the 0.05 level) between e-learning and traditional learning in terms of students’ achievement. Yet, in terms of attitude, the results of this study have indicated that there is a statistically significant difference (at the 0.05 level) between the two experimental groups on
the one hand and control group on the other hand favouring the former, while no statistically significant difference (at the 0.05 level) exist between blended learning and e-learning in terms of students’ attitude. However, based on these results the researcher has managed to put forward a number of recommendations and suggestions.

STUDY 5 : Effect of e-learning on Secondary School Students’ Performance in Biology. (Sadawan Poonchai, 2010)

Objective of the study : The study investigated the effect of e-learning on the performance of secondary school students in biology. Specifically, the study examined:

(1) The difference in performance in biology of secondary school students in experimental group (taught by e-learning) and control group (taught by textbook).

(2) The influence of students’ gender on their performance in biology.

Research design: This study was a quasi-experimental type, of the pretest, posttest, non-equivalents, non-randomized, design.

Tool used in the study : The instruments for this research were the treatment instrument “e-learning” and the “textbook”. The treatment instrument, e-learning on Biology, was a self-instructional package of 10 hours. It contained five lessons. It was developed by the researchers, with the assistance of a professional programme developer.

The test instrument, Biology Performance Test (BIOPET), was a 30 item multiple-choice objective test with five options. The test content was based on cognitive domain of learning.

Sample of the study The target population of this research was the secondary school students in Bangkok, Thailand. The nature of the study, however, required that the research sample was purposively selected. The sample for experimental group was 40 students while the control group was also 40 students.

Technique of analysis of data : All the groups (experimental and control groups) were subjected to the Biology Performance Test (BIOPET) as pretest. The scores of students in the two groups were analyzed using Mean (X̄), Standard deviation (S.D.), and t-test (independent).
**Major findings**: The results of the study are as follow:

1. There was the significant difference in the performance of students in biology when they are exposed to e-learning and textbook.
2. There was no significant difference between the performance of boy and girl students in biology when they are exposed to both type of treatments.

STUDY 6: A Comparative Study on Effect of e-learning and Instructor-led Methods on Nurses’ Documentation Competency (Abbas Abbaszadeh et al, 2011)

**Objective of the study**: The objectives of this study was to compare the e-learning method with the traditional instructor-led method.

**Research design**: This was a quasi-experimental study which aimed to compare the effect of two teaching methods (e-learning and instructor-led method) on nursing documentation and examine the differences in acquiring competency on documentation between nurses who participated in the e-learning (n = 30) and nurses in an instructor-led method group (n = 31).

First, after obtaining the permission of holding report writing training courses, all the volunteers were enrolled and the nurses who had inclusion criteria entered the study and divided into e-learning and lecture groups using table of random numbers. By nurses’ documentation competency, attitude and performance in report writing each of which separately was evaluated by a questionnaire and mean score of these three questionnaires was considered as the competency score of the nurses in report writing or documentation.

The nurses in the instructor-led method received two training sessions of report writing classes by lecture method. Educational contents included objectives and importance of nursing documentation, features of registering a proper nursing report, different nursing documentations systems, correcting the mistakes of the documented cases and how to record pharmacological information and symptoms and generally all the conducted cares and treatments for the patient as well as patient’s responses to them. Knowledge rate, attitude and performance of the lecture group subjects were compared to each other before and after the intervention. In the e-learning group, each one of the study subjects were given a special username and password to use electronic database of nursing documentation.
education at [www.gozareshnevisi.com](http://www.gozareshnevisi.com) that had been designed by the relevant expert of this field. This website had pretest, training, posttest, FAQ, different links to other universities and also the patient teaching section. After teaching how to use this site, the nurses of this group were requested to obtain the required information through searching and studying it.

Electronic educational content of the website (nursing documentation education) was similar to the educational content of lecture classes, except that the same contents were in the form of text files, movies and flash and also the possibility of question and answer of the users to each other and administrator of the website. Username and password of the study subjects were active for two weeks and during this period they could achieve the educational content at any time and any place through the internet connection. To use this website, first of all the users should have completed the pretest questionnaire so that the users could access the education content when they had answered the entire pretest questionnaire and saved it. Thereafter, they could access the content of the educational section; then, they should have answered the posttest questions. The possibility of downloading the educational files also was provided only for the users who completed the posttest fully and saved it.

**Tool used in the study**: The e-learning and the instructor-led method on nurses’ documentary competency were used as the main instrument.

Tools in this study also included a researcher-made questionnaire consisted of four parts including demographic and personnel information, assessment of the knowledge (including 14 questions regarding the principles of nursing documentation), assessment of the attitude (including 13 questions regarding the importance, necessity and applications of nursing report writing based on the scale of “I agree”, “I have no idea” and “I disagree”) and checklist of the performance (including 45 cases based on scale of “it was done” and “it was not done”) and their validity and reliability were assessed before collecting the data.

**Sample of the study**: The sample of the study were 61 students. 30 nurse students participated in the e-learning programme (n = 30) and 31 nurses in an instructor-led method group (n = 31).

**Technique of analysis of data**: In order to assess the validity of the questionnaire, content validity index was used using comments of 10 faculty members of
School of Nursing and Midwifery of Mashhad. Moreover, to assess the face validity, in addition to comments of the experts, some of the nurses were asked to express their comments about questions of the questionnaire.

To assess the reliability of assessment of knowledge and attitude questionnaires, Cronbach’s alpha method was used that the obtained coefficient respectively were 88 and 96 percent. Reliability coefficient of the performance checklist obtained 92% using inter-observer reliability method.

To assess performance of the nurses about report writing, a health history of a hypothetical patient with recorded administration and description of the physician for the patients was given to the study subjects and they were asked to register their nursing report for the mentioned hypothetical patient in nursing report sheet. The obtained data were analyzed using software SPSS14 for finding out mean, standard deviation, t-test, and correlation.

**Major findings**: The results of the study indicated that there was no significant difference between the two groups. The findings also revealed that there was no significant correlation between the two groups toward demographic variables. However, it was believed that due to benefits of e-learning against traditional instructor-led method, and according to their equal effect on nurses’ documentation competency, it can be a qualified substitute for traditional instructor-led method.

Results of this study showed that e-learning method as a wide learner-centered educational method could increase the competency of the nurses in documentation as equal as instructor-led method. Therefore, electronic education as well as instructor-led method can be used for facilitating nursing educational programmes.

**STUDY 7: The Effectiveness of e-learning on Classroom Research Subject** (Somruthai Sirichaiya, 2012)

**Objective of the study**: The objective of this study was to examine the effectiveness of e-learning for student teacher on classroom research subject.

(1) To study the effectiveness of e-learning for student teacher on learning achievement (pretest-posttest) in classroom research subject
(2) To test the difference between the effectiveness of e-learning for student teacher on learning achievement (pretest-posttest) in classroom research subject

(3) To study the students’ opinions towards e-learning for student teacher on classroom research subject

Research design: This research was a pre-experimental study aimed to compare the effect of e-learning on learning achievement of students in classroom research subject.

Tools used in the study: The instruments employed for the study were the e-learning and learning achievement test which was designed to measure the students’ achievement on classroom research subject.

Sample of the study: Sample of this study consisted of 40 student teachers. Male students comprised 25% (10 students), while female students constituted 75% (30 students) of the sample.

Technique of analysis of data: To investigate the effectiveness of e-learning of student teachers, the learning achievement in terms of mean (\( \bar{X} \)), standard deviation (S.D.) and t-test (dependent) were analyzed.

Major Findings: The results of the study were as follow:

(1) The effectiveness of e-learning on pretest score of learning achievement in classroom research subject was at poor level whereas the effectiveness of e-learning on posttest score of learning achievement in classroom research subject was at excellence level.

(2) There was the significant difference between pretest and posttest score of learning achievement of student teachers in classroom research subject taught by e-learning. The finding indicates the posttest score of learning achievement of student teachers in classroom research subject taught by e-learning has greater value than that of the pretest score.

(3) The mean score of students’ opinions towards e-learning in classroom research subject was at high level.
STUDY 8: The Effect of e-learning on Reading Comprehension Skills (Sanchai Tipmontha, 2012)

Objective of the study: The objective of this study was to examine the effect of e-learning on reading comprehension skills.

Research design: This research was a pre-experimental study which aimed to compare the effect of e-learning on reading comprehension skills of 10th grade students.

Tools used in the study: The instruments employed for the study were the e-learning programme, which lasted for 10 weeks in reading comprehension. It was implemented to find out its impact on 10th grade students’ reading comprehension skills. Using e-learning, the students was taught by e-learning.

Sample of the study: Sample of this study consisted of 40 tenth grade students.

Technique of analysis of data: Pretest and posttest procedure was used to measure the impact of e-learning on the students' achievement. Mean (X), Standard deviation (S.D.), and t-test (independent) was used for analysis of data.

Major Findings: It was found from the study that there was the significant difference in the subjects' achievement in reading comprehension skills, in favour of the posttest score. Therefore, it is recommended that e-learning can be effectively use for increasing the learning achievement on reading comprehensive skills of students.

STUDY 9: A Comparative Study of the Effectiveness of e-learning and Management-Based Scaffolding on Science Subject (Sunanta Srisawad, 2013)

Objectives of the study: The objectives of the study were to examine the effectiveness of e-learning in comparison with the Management-Based scaffolding conditions on a performance outcome of science subject.

Research design: This research was a quasi-experimental study which aimed to compare the effectiveness of two teaching methods (e-learning and management-based scaffolding) on science subject.
Tools used in the study: To achieve the objectives, e-learning and the management-based scaffolding method of teaching were used for two groups of students. The learning achievement test was used to evaluate the learning achievement of students in both the groups.

Sample of the study: Sample of this study consisted of students enrolled in Technical College in Bangkok in the academic year 2011.

Technique of analysis of data: For data analysis, SPSS software (version 16) was applied. To analyze the data, mean (\( \bar{X} \)), standard deviation (S.D.) and paired-samples t-test (independent) were calculated.

Major Findings: The study found that:

The results of this study indicated that there was no statistically significant effect of e-learning and management-based scaffolding method on the learning achievement of students. Both e-learning and management-based scaffolding methods have similar effects on improving the knowledge and skills of students in science subject.

STUDY 10: The Effect of E-learning Versus Lecture Teaching Methods on the Knowledge and Practice of Oncology Nurses about Safety Standards with Cytotoxic Drugs in Shiraz University of Medical Sciences (Khadijeh Abbasi. et al., 2013)

Objective of the study: The purpose of this study was to compare the effect of teacher-centered (lecture) and student-centered (e-learning) teaching methods in relation to safety standards with cytotoxic drugs on the knowledge and practice of oncology nurses.

Research design: This research was a quasi-experimental study with two intervention groups (e-learning and lecture). In this study, 86 nurses in Shiraz, Fars province in 2011, who participated in the prescription of cytotoxic drugs to patients were selected and randomly divided into two groups. The experimental group used e-learning, the control group was taught by lecturer in the classroom.

Tool used in the study: The data on demographic information were collected by a questionnaire containing 6 questions. The nurses' knowledge was evaluated by a self-made questionnaire, which was scored 30. This questionnaire consisted of 25 multiple choice
questions (1 score for each), and 10 True or False questions (0.5 core for each). Furthermore, to study the nurses’ practice, a checklist was used. This checklist has been used in Hazrati’s study. In this study, only the protective aspects that should be practiced by staff during medication administration were evaluated. Therefore, five experts in this field revised it and some protective remarks were added to the checklist and the non-protective remarks were eliminated. The checklist included 50 practical cases in three fields of preparing (25 cases), administrating (12 cases), and disposing of cytotoxic drugs (13 cases), all having the same value as 1. The total score was 50. The data about knowledge and practice of three groups (lecture, module and control) were collected before and 8 weeks after the intervention. For an exact observation, the personnel’s practice in two opposite shifts was observed and mean of the two observations was considered as the performance for each individual.

The questionnaire and the checklist were provided through the review of the literature. As to its content validity, the opinions of five expert persons in this field were applied for its reliability, the statistical test of Kuder-Richardson 20 was applied for questionnaire. For reliability of the checklist, inter-observer reliability test was used; the obtained correlation coefficient was 0.94.

**Sample of the study:** In this research, the number of the samples required for the study was equal to the total study population. This study had two methods of teaching (lecture and e-learning). In order to avoid the information distribution between groups, the simple random method was used for selection of sample. In Namazi Hospital lecture method (28 students) was presented. In Amir hospital e-learning method was used (29 students).

**Technique of analysis of data:** To statistically analyze the data, SPSS software (version 16) was applied. To analyze the data, Mean ($\bar{X}$), Standard deviation (S.D.), paired-samples $t$-test (independent) were used.

**Major findings:** The results of the study revealed that there was no significant difference between the mean scores of students’ achievement classified by age, marital status, work experience. It was found that there was no significant difference between the mean scores of students’ achievement in lecture group and e-learning group in the increase of knowledge and improvement of practice. It can be said that both the groups (e-learning
and lecture methods) have similar effects on improving the knowledge and practice of nurses in oncology wards.

2.7 SUMMARY OF THE REVIEW OF THE PAST STUDIES

There were 10 past studies presented in this chapter. All the researches aim to examine the effectiveness of e-learning on students’ learning achievement. The past studies examine the effects of e-learning on students’ achievement in various subjects i.e. general science, biology, classroom research, social studies, English, religion, reading comprehensive skills, and competency on documentation. The quasi-experimental research was used for eight studies whereas the pre-experimental research was used for two studies.

Out of ten past studies, eight studies were the quasi-experimental research whereas the other two studies were pre-experimental research. For pre-experimental research, the one group-pretest-posttest and posttest only were used as the research design. For quasi –experimental research, the experimental group (taught by e-learning) and control group (taught by traditional method) were used as the research design.

Various tools were used for the studies i.e.

1. The e-learning in different subjects i.e. general science, biology, classroom research, social studies, and English.

2. Blended learning programme

3. Traditional learning

4. The learning achievement in terms of multiple choices, checklist, and observation form

5. Attitude scale

Sample of the past researches were the secondary school students, under graduate students, and higher education students.

Several techniques were used for analyzing the data, such as, mean (\( \bar{X} \)), standard deviation (S.D.), t-test (dependent) for Pretest and post-test procedure, t-test (independent), Chi-square, One way ANOVA, Analysis of Co-variance (ANCOVA), Scheffe tests were performed after the significance of ANOVA as all post hoc comparisons among
means, Pearson product Moment Correlation Coefficient and percentage.

2.8 UNIQUENESS OF THE PRESENT STUDY

After the review of ten past studies related to the effectiveness of e-learning on learning achievement and research skills, it can be seen the uniqueness of the present study as follow:

(1) The past studies examine about the effectiveness of e-learning and different methods of teaching. The present research aimed to develop the e-learning and textbook on educational research methodology for university students.

The uniqueness of the present research is the development of e-learning and textbook on educational research methodology for university students. The researcher spent more effort in preparing two kinds of tools for the present research and try out for their efficiency and effectiveness. The process of preparing e-learning and textbook on educational research methodology for university students was not seen in any past studies.

(2) In the present researches, the e-learning was constructed in asynchronous type. This type of e-learning does not require students and teachers to be online at the same time. Asynchronous learning use technologies such as e-mail, blogs, wikis, and discussion boards, as well as web-supported textbooks, hypertext documents, audio video courses, and social networking. Asynchronous learning is self-paced and allows participants to engage in the exchange of ideas or information without the dependency of other participants’ involvement at the same time. In the past studies, e-learning were constructed in synchronous type. Synchronous type of e-learning occurs in real-time with learners and requires learners and instructors to communicate online at the same time from different places. Synchronous learning involve the exchange of ideas and information with one or more participants during the same period of time. A face-to-face discussion is an example of synchronous communications. This type of e-learning was flexible in terms of time and place, where every student chooses the time and place that suits him. It takes into account the differences between individual learners.

(3) In the present research, the e-learning, lecture and textbook, learning achievement test, and students’ feedback sheet were used as the tools of the study. They are the first construction by the researcher. All of these tools were unique tool which is not
appearing in any research. It was established for the item analysis (i.e. validity, discrimination, reliability). Construct validity was used for establishment of validity of the scale. Item-Test Correlation was applied to the data obtained from 100 respondents. The Pearson Product Moment was calculated for the $r_{xy}$ value from the total scores and the score of each item.

(4) Sample of the present was the physical education students participated in educational research methodology subject. This is also the uniqueness of the present study.

(5) The research design of the past studies were quasi-experimental research and pre-experimental research. One study selected only one design for the study. The research design of the present study was the combination of both design i.e. quasi-experimental research and pre-experimental research. In quasi-experimental research design, the significant difference between mean scores of the effectiveness on students’ learning achievement in experimental group and control group were tested. In pre-experimental research the significant difference between the pretest and posttest scores of the effectiveness on students’ learning achievement in experimental group were tested and the significant difference between the pretest and posttest scores of the effectiveness on students’ learning achievement in control group were also tested.

(6) In the present research, the analysis of data and interpretation of the results in tabulated form with inferences related to the e-learning and lecture and textbook was presented into four parts.

(i) The study of the level of the effectiveness of e-learning on learning achievement in educational research methodology subject of university students in experimental group (taught by e-learning).

(ii) The study of the level of the effectiveness of lecture and textbook method of teaching on learning achievement in educational research methodology subject of university students in control group (taught by lecture and textbook method).

(iii) The comparison between mean scores on learning achievement (pretest and posttests scores) in educational research methodology subject of university students in experimental group (taught by e-learning) and control group (taught by lecture and textbook method).
(iv) The comparison between the scores on learning achievement (pretest and posttests scores) in educational research subject of university students in experimental group (taught by e-learning).

(v) The comparison between the scores on learning achievement (pretest and posttests scores) in educational research subject of university students in control group (taught by lecture and textbook method).

(vi) The study of the level of the research skills in educational research methodology subject of university students in experimental group (taught by e-learning).

(vii) The study of the level of the research skills in educational research methodology subject of university students in control group (taught by lecture and textbook method).

(viii) The comparison between mean scores on research skills (pretest and posttests scores) in educational research methodology subject of university students in experimental group (taught by e-learning) and control group (taught by lecture and textbook method).

(ix) The comparison between the scores on research skills (pretest and posttests scores) in educational research subject of university students in experimental group (taught by e-learning).

(x) The comparison between the scores on research skills (pretest and posttests scores) in educational research subject of university students in control group (taught by lecture and textbook method).

(xi) The students’ feedback towards the e-learning as well as the lecture and textbook method of teaching in educational research methodology subject.

This type of presentation of the analysis of data was not seen in any research. This is also one of the uniqueness of this research.

After viewing the present study, one can say that this research is a unique research which is not seen before.

The next chapter will discuss about method and procedure.
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