From Conventional to E-Learning:
A Study of the Importance of E-Learning Methodology & the Requirements to Transform to it, with References to Arab & the Global E-Learning Experiences

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Abstract. The speedy evolution and development in information, computers and internet have influenced many fields in human's everyday life especially the learning and teaching field that it has become impossible to deny or even overlook. Accordingly, the present study aims at shedding lights on the importance of electronic learning (henceforth e-learning) through presenting its characteristics and benefits against the conventional learning to both teachers and students, and presenting its models and tools on which it is built and constructed as well as the steps followed to make this transformation possible, accessible and successful. Besides, the study also sheds lights on some of the modern global pioneering experiences beside few Arab world experiences in this field. Finally, the study concludes that e-learning methodology is an advanced style of education for the teaching and learning processes and is a must for all the globe.

1.Introduction

The last decade of the last century and the beginning of this century have witnessed a wide range of challenges at the various political, economic, social, cultural and educational levels. This, in turn, has formed the basis for the need to reform the educational system in all its fields; viz. elements, methods and tools, especially with the inability of the conventional learning system followed in many educational institutions to face challenges resulted from the process of transforming contemporary societies from industrial societies to information societies, in light of the global information explosion. In order to face these challenges and transformations, it has become necessary to develop the reality of the traditional methods used in the policy of education, including curricula and educational activities, as the goal of education is no longer providing students with knowledge and scientific facts, but also, goes beyond the need to develop their abilities and skills in addition to building their personalities to be able to interact with varying era and ,furthermore, capable of creating a future life based on sovereignty in education.

It is worth noting here that the massive revolution in information technologies and communication networks has led to the transformation of the contemporary world into a small village in which all temporal and spatial, political and cultural barriers have vanished, and the distances between distant societies have been brought closer. The tremendous development in information technology, computers and communications has resulted in the entry of these means into all aspects of life, one of which is the educational field. Teachers and students in developed countries use the internet and virtual classrooms with multimedia educational tools in all educational stages, starting with the initial and ending with the advanced processes of teaching and learning. Therefore, ignoring and neglecting these media in the field of teaching and learning has become impossible, especially if these areas want to achieve progress in the scientific and cognitive fields and move forward in the path of the massive knowledge revolution.

Problems of the Study

The current study addresses the following problems:

1.What is e-learning, and what are the differences between e-learning methodology and the conventional learning?

2. What are the advantages and benefits of e-learning?

3. What are the patterns and models through which the electronic environment for e-learning is built with?

4.What are the basic components and tools used in building an e-learning methodology?

5.What are the ways and requirements to transform to e-learning, and what are the difficulties and obstacles that hinder the transformation to e-learning?

6. What are the most important experiences of e-learning methodology in the Arab and global world that prove to be successful and pioneering?

Hypotheses

The present study assumes the following hypotheses:

1.E-learning methodology differs from conventional learning, as the former is the best method in avoiding the obstacles facing the latter, this is because it transcends the temporal and spatial limits in the educational process; besides, it provides greater opportunities of learning for students at various levels of study since it seeks to employ electronic technology and communications to serve the educational process.

2. It facilitates the process of reaching teachers even outside official working hours by providing them with several means, the most important of which are e-mails, forums, classrooms and communication between teachers and the students at any time and wherever they are. It is also one of the electronic means of providing knowledge, especially for individuals who are outside classrooms.

3.It is considered one of the modern alternatives to learning as it presents information in an interesting and enjoyable way, as it enables students to receive scientific materials in a manner that suits their abilities and capabilities, whether through visual, audio or reading methods.

4. It reduces the problems and burdens in developing the curriculum and subjects and following up their development.

5.It has many advantages and benefits and requires patterns and models through which new e-learning environment is build. There are many electronic, administrative and technical steps and requirements for the transition to the new environment; however, there are some obstacles facing the transformation process.

6.There are pioneering experiences of Arab and global countries in this field.

Objectives of the Study

The present study aims at managing the following:

1.Defining e-learning methodology and defining its objectives, characteristics, importance and positive aspects.

2.Making comparison between e-learning methodology and conventional learning to confirm the advantages of the former over the latter.

3. Shedding lights on e-learning patterns and tools for designing e-learning.

4.Highlighting the technical and human requirements for the transformation process.

5. Shedding lights on some pioneering Arab and global experiences to show the advantages of e-learning on the teaching and learning processes.

Importance of the Study

The importance of the study lies in defining the education communities in general and the library and Information community in particular in accordance with e-learning, its importance and the amount of services and capabilities it provides to teachers and students unlike the conventional learning which restricts students to place and time boundaries. Besides, the study introduces the advantages and benefits of e-learning as well as its models and patterns in an effort to urge educational authorities in our countries to adopt this concept by shedding lights on some pioneering experiences, whether in the Arab or the global countries.

Methodology

The current study has adopted a descriptive approach through which the studied phenomenon; viz. e-learning, has been identified through its definition and the identification of its tools, patterns and importance. The present study has also conducted a descriptive and analytical study of the e-learning environment by reviewing its importance, advantages, and ways to transform to it. Furthermore, it highlights its most important aspects including the virtual classrooms and courses, and the Arab and global pioneering experiences in this field in general, and the experience of e-learning in Saudi Arabia (henceforth, Saudi Arabia), in particular.

Review of Literature

Although the application of the e-learning methodology in all its aspects has not exceeded a decade, it has a rich literature covering it. Many researchers and specialists in the fields of education and teaching have addressed this subject in many books, research and articles. Besides, many conferences and seminars

bearing this title have also been held addressing this topic from different points of view.

Accordingly, in a working paper presented to the e-learning symposium held in King Faisal schools, [1] addressed the issue of e-learning in terms of defining its concept, advantages and objectives. He also displayed e-learning strategies and the teachers' responses against this new educational experience. The researcher also presented some of the leading Arab experiences in this field and suggested some recommendations.

[2] dealt in his research with the issue of e-learning declaring its positive and negative effects when applying it by the faculty members of the Information Department at Umm Al-Qura University through a survey of their viewpoints on its use. The researcher concluded that the majority of the teachers – the sample of this study- were fully supporting the use of this advanced educational technology.

[3] also dealt with the issue of e-learning in terms of its positive advantages, and presented the obstacles that stand in the way of its application. Through this study, the researchers also developed a proposal for the establishment of an e-learning project within the University scope and identified the technical and functional requirements necessary for this application.

As for the present study, it dealt with the description and analysis of the e-learning environment by reviewing its importance, advantages and the methods of transforming to it. It also tried to shed lights on its most important techniques such as the virtual classrooms and the e-courses, as well as shedding lights on some Arab and international pioneering experiences in this field in general and the experience of e-learning in the Department of Libraries and information at the University of Imam Muhammad bin Saud, Saudi Arabia, in particular.

Definition of E-learning

E-learning is seen as the modern revolution in educational methods and techniques that utilizes the latest technology in hardware and software in the fields of computers and communications. It is considered a new and advanced method, an essential part of education tools to build specialized skills, a tool for knowledge and a broad participation of students and a technology to deliver information to students in a shortest time, less effort and a greater benefit starting with the use of electronic means of presentation to deliver lessons in traditional classes through the use of media. The various processes of classroom teaching and self-learning ending with building smart and virtual classrooms. Accordingly, there are several concepts and definitions of e-learning based on the method adopted in the learning process as follows:

[3] sees e-learning giving equal educational opportunities based on the internet to become an educational reality adding a new dimension to education and contributing to the development educational process in its various aspects in terms of foundations, concepts and objectives.

As for [1], he sees it as expanding the concept of the teaching and learning process to transcend the dimensions of the traditional classroom boundaries and launch into a rich multi-source environment in which interactive distance learning techniques have a key role so that the role of a teacher and a student is reformulated.

[2] asserts that e-learning contributes to providing a rich learning environment with multiple sources, encouraging communication between the parties of the educational system, contributing to modeling education and presenting it in a standardized form and preparing a generation of teachers and students capable of dealing with technology and furthermore armed with the latest technologies

[3] define it as a method of education using modern communication mechanisms namely: a computer, its networks and multimedia, such as sound, image, graphics, search engines, electronic libraries, as well as portals of the world wide web for information whether remotely or in the classroom. It is a system of all kinds of technology to deliver information to students in the shortest time, least effort and a greatest possible benefit.

[3] also sees e-learning as an education that aims at creating an interactive environment rich in applications based on computer technologies and the global information network whereby students can access learning resources at any time and from anywhere he wants.

The term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked or web-based

learning. As the letter "e" in e-learning stands for the word "electronic", e-learning would incorporate all educational activities that are carried out by individuals or groups working online or offline, synchronously or asynchronously via networked or standalone computers and other electronic devices[6].

Other researchers believe that e-learning is an integrated education with elements and activities starting with the design of the interactive electronic curricula and ending with examination systems and continuous scientific assessment. It focuses on comprehensive knowledge skills and at the same time specialized knowledge by making use of information and communication technology systems and by adapting them to enrich all stages of education with resources. The necessary technical and educational tools and solutions, in addition to the use of international educational standards and specifications, e-learning emphasizes evaluating the outcomes and quality of education on a permanent and a continuous basis. While others see it as a means of education related to the use of information technology including the internet, the intranet, CDs and teleconferencing : a group of processes associated with the transfer and delivery of various types of knowledge and sciences to students around the world using information technology, which is an actual application of distance education. There are also those who see it as a technology that uses all multimedia including; the international information network and its speed flowing of information in various fields to facilitate the understanding of scientific materials at a lowest cost in a way that enables managing and controlling the educational process and measuring plus evaluating the performance of teachers and students as well. It has been possible for many governmental and private institutions, such as Cisco to provide their educational programs through local and external networks, and the students can direct their educational sessions and exams from their offices or homes [7].

In sum, there are some multiple features of the e-learning methodology; viz. it is an educational interaction on the part of both the teacher and the student, it is self-learning and a cooperative professions and it has the ability for researching, and it has a diversity of students and tools. It is a diversity of highly changing content, and an economical, an effective and democratic education from which

both society and individuals benefit from and become aware of the global culture of many countries of the world, In short, it is a set of processes associated with the transfer and communication of various types of knowledge and science to students in different parts of the world.

It is worth noting that many have confused the concepts of distance learning using the internet and e-learning. E-learning is an integrated system of data, concepts and interactive tools in the education environment which is much broader and more comprehensive than distance education. There is also a so-called direct e-learning which is a concept in which many techniques and methods based on the internet are included. CDs for education appeared previously as a method of e-learning, but they are negatively known by their defects including the lack of interaction between the material, the teacher and the student. So the method of simulation appeared on the internet which depends on the beneficiary learning from remote locations that are neither bounded by time nor by place [2].

Perhaps the best and simplest of these definitions is to provide electronic educational content through computer-based media and networks to the student in a way that allows him to actively interact with this content in the place, time and speed that suits him, as well as interact with the teacher and with peers whether synchronously or asynchronously. As well as the possibility of completing this learning in a time and place and at a speed that suits his circumstances and abilities, as well as the possibility of managing this learning electronically through these media as well.

Based on what has previously been mentioned, e-learning in general means the use of electronic and computer media and the internet in the process of transferring and communicating information to students, facilitating and developing their knowledge and skills in various fields in a low economical cost and shortening time and place restrictions to them.

E-Learning Development Stages:

The transformation of education to modern electronic form has witnessed several stages which can be summarized in four important stages through which e-learning has been developed which were mentioned by [4] and [5] as follows:

● The first stage, 1983: it is the era in

which the traditional teacher was in direct contact with the student in the classroom according to a specific study schedule.

● The second stage, 1984-1993: it is the era of multimedia in which many operating systems such as Windows and Macintosh as well as storage media such as magnetic disks were used as main tools for the development of education within the conventional learning environment.

● The third stage, 1993-2000: it was the era in which the global information network (the internet) appeared, and thought began to create a wide and distance learning environment.

● The Fourth stage 2001 and so forth: it is the era in which the design of websites on the World Wide Web has become more advanced. So classrooms have become virtual classes in which students receive the scientific material at any place and time they want.

E-Learning Forms:

As for the methods of learning through this electronic environment, there are two basic models of e-learning represented as follows [8], [9],[10]:

1- Computer-Based Learning (CBL): this method of education uses many and varied methods and methods, including the following:

● Computer Assisted Teaching (CAT): this method is used as a self-teaching tool to provide individual lessons and specific and limited learning objectives; such as teaching - e-books.

● Computer Managed Instruction (CMI): It uses computer storage records through electronic book drivers.

● Computer Mediate Communication(CMC): this method is considered one of the computer applications as it facilitates communication, such as delivering lessons via e-mails and holding conferences via computers.

2- Web Based Learning (WBL): this method includes two basic types, which are as follows:

A- Synchronous Education: it is an education that takes into account the time dimension through which the teacher meets with students at the same time to have synchronous communication between them via platforms or through chatting whether by text, audio or movement represented by video, in order to teach the scientific material and receive it while the spatial distances separate the teacher (the educational service provider)

and the student (the recipient of this service). Among the most prominent examples of simultaneous e-learning are online lectures, audio and video conferences, as well as web conferencing via one of the educational electronic platforms.

B - Asynchronous Education: it is an indirect communication separated by the temporal and spatial dimension "Place Scale" between the teacher and the student. Asynchronous teaching enables the teacher to place the resources with the teaching plan and assessment on the educational site, and then the student enters the site at any time he wants and follows the teacher's instructions to complete the process without being a simultaneous connection between them.

The aforementioned e-learning models can be illustrated through the following diagram:
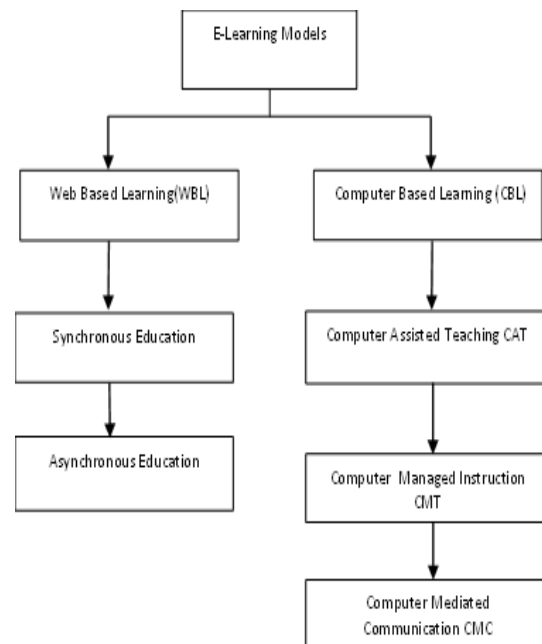

Figure No. (1): E-Learning Models

Another form of e-learning can be added as follows:

3- Blended learning: it is what was early known as a learning method in which several means of communication are simultaneously combined and connected together to teach/learn a specific subject. However, and precisely after the spread of the Corona pandemic accompanied by the application of social distancing and a complete isolation followed by the gradual opening up, the term has become a term for the education process that combines both the conventional learning

and the e-learning. This is to ensure two important things, namely, ensuring the protection of society from the spread of the pandemic, on the one hand, and ensuring the progress of the educational process, especially for applied specialties, on the other.

Noteworthy also is that there are several forms and patterns through which students can practice the learning process within the e-learning environment such as follows [2], [11]:

1. E-learning by self-learning: student here can control the time of starting and finishing the lesson, such as the educational materials stored on CDs.

2. E-learning by direct broadcasting from educational website: it is similar to the conventional learning, but it is done via direct electronic broadcasting without the need for of teachers to be present with the students in the same hall in a classroom.

Factors Required for Transformation to E-Learning:

There are several factors that led to the emergence of e-learning and the necessity of transforming to it. [12], [13] list some of which as follows:

1. The inability of conventional education institutions to accept all students who wish to study.

2. Classroom overcrowding on the one hand, and the relative shortage of teachers, on another.

3. The explosion of knowledge in various fields.

4. The great development in the field of computers and communications among computers through local networks (LAN) and the global networks (WAN), and the need to benefit from in the field of education as the cases in service organizations.

5. The relentless pursuit of providing a comprehensive infrastructure capable of rapid and massive development in rapid means of communication on the one hand, and the emergence of advanced computer laboratories on the other.

6. Raising awareness to the continuous training of teachers on the use of these techniques.

7. The necessity of building attractive and scalable educational curricula and materials as well as enriching knowledge and technology with multi-medias to motivate students to learn, especially at a time when games, entertainment and communications have grown through advanced technology means.

8. Providing educational materials all the day.

9. The constant and urgent need for education and training in all fields.

10. The high level of awareness of the importance of education and its obligation in most countries of the world today.

11. Creating an effective program for managing the educational process, including student registration, following-up and evaluation.

A Comparison between the Conventional Learning & E-Learning Methodology:

The importance of e-learning can be highlighted by comparing it with the Conventional learning as follows [12], [14]:

1- Educational interaction from both sides: the current traditional system tries to find interactions between the student on the one hand and the sources of his learning represented by the teacher and the book on the other. As for the new e-learning methodology, computers allow learning by connecting to local and global information networks, or even through multi-media software and interactive knowledge circuits.

2- Self-learning: it is the most important feature that distinguishes the e-learning methodology against the current traditional system. In other words, the former provides students with an opportunity to learn in a self-motivated form with a desire to learn the topics he chooses in a manner suiting his circumstances, needs and inclinations regardless whether this learning takes place at school or at home. On the contrary, learning in the traditional system is considered compulsory regardless of students' circumstances, tendencies or needs at all.

3- Cooperative learning: e-learning is one of the modern trends in the educational arena and it is analogous to individual learning in the traditional system through educational television, the teacher and the textbook. As for the e-learning methodology, students are placed on computers in learning groups through multi-media, CDs or through communication with each other through personal computers.

4- Apprenticeship: the conventional education depends on ineffective comprehension and timed collection of information that quickly disappear after a short period of time after exams are taken. As for the e-learning methodology, it depends on self-agreement of information ensuring its survival for a longer period.

5- The highly changing content: the huge and prevalent knowledge explosion in the current information revolution era required a

continuous change of the contents of the curricula and during short periods, which led to the difficulty of keeping pace with that faced by many of those in charge of the conventional education system. As for the e-learning methodology, this is not a problem at all, as the student always gets the updated information for the connected semester through the internet.

6- Beneficial for individuals and society: as e-learning methodology is an effective and a functional education that benefits both the teacher, the student and the community alike. It seeks to achieve higher-order thinking skills using individual learning methods, multi-media and self-evaluation methods. In the conventional education, the matter is only, exclusively and orally limited between the teacher and the student in the classroom.

Advantages of E-Learning:

From the previous comparison, it becomes clear that there are many advantages and characteristics of this type of education; however, the most important of which are the following [13]:

1. E-learning avoids some of the obstacles that are facing the traditional method as it exceeds the restrictions of time and place in the educational process.

2. It is one of the modern alternatives to learning and to obtaining information in an interesting way; besides, it is one of the educational methods that depends on electronic multi-media.

3. It provides the curricula throughout the whole day and week. In addition, it is constantly updated and developed to keep pace with the plans and requirements of the times without additional expensive costs.

4. It provides flexible ways to deal with curricula and syllabuses which leads to facilitating the communication with the teacher and discuss number of points that are difficult to understand at any time and place the student wants and the teacher permits.

5. This method facilitates the matter of reaching the teacher during or even after the official working hours which was impossible in the traditional environment, through different means, the most important of which are e-mail, chat-rooms and platforms etc. which are quick means of communication to obtaining the needed information.

Another source adds other advantages, represented by the following [11] :

6. It helps to develop the student's abilities to express himself and his ideas, search for scientific facts, encourage him and increase his self-reliance to do assignments by different means, as the matter is no longer limited to the usual oral expression in the traditional classrooms.

7. It helps to develop both the students' and teachers' skills in the field of computer and internet thus providing them with multiple skills which they lack in the conventional learning.

8. Introducing the technical quality component which requires possessing the latest and most powerful international technologies in the technical fields.

9. Providing a huge and renewable balance of scientific content and a huge abundance of curricula and information resources such as electronic books and databases that are available on the internet.

10. Increasing the possibility of communication among students themselves, on the one hand, and with their teachers and the educational institution on the other.

11. Overcoming all obstacles that prevent students from accessing scientific materials whether in remote places or even in times of wars, political crises and environmental disasters so that it exceeds the borders of countries and calamities.

12. A sense of equality and giving the student the opportunity to choose what he wants to study at the time and the place he wants.

Therefore, the advantages that characterize e-learning have increased the importance of this technology till it becomes one of the modern methods in the field of education and training. Accordingly, many countries and governmental and private institutions have paid great attention to this technology for its economic feasibility, effectiveness and efficiency in providing educational and teaching materials to the individuals in these institutions at appropriate time and place. Accordingly, many large companies and institutions such as Saudi Aramco, IBM and Cisco have adopted this technology and provide high funding to establish this new learning environment [11].

E-Learning Objectives:

The UNESCO has set certain goals for e-learning process which are as follows [15]:

1- It contributes to the establishment of an infrastructure and a base of information technology based on cultural foundations in order to prepare the new generation society as

they are the requirements of the twenty-first century.

2- Developing positive attitudes towards information technology through interaction in the use of the network by parents and local communities which leads to the creation of an advanced information connected and adhesive society.

3- Simulating real life problems and situations within the school environment and using network resources to deal with and solve them.

4- Giving young people independence in self-reliance to search for the knowledge and information they need in their research and studies as well as giving them the opportunity to criticize the information and question credibility which helps to enhance their research skills and prepare rational, conscious and promising personalities.

5- Encouraging parents and local communities to integrate and interact with the modern education system in general, and with the growth of their sons' behavior and learning in particular, by reviewing their performance and academic achievements, plus receiving notifications and reports issued by educational institutions on this, which indirectly develops IT services at homes and communities and thus leads to the network growth of the community and culture.

While another resource believes that the objectives of e-learning lie in the following [1]:

6- Providing educational environment with multiple and rich resources that serve the educational process in all its aspects.

7- Re-formulating the roles of teaching and learning processes to make them go in line with the developments in the educational thoughts.

8- Exemplary education and presenting it in a standard form; viz. lessons are presented in an exemplary form, and distinguished educational practices can be repeated. Examples of this are model of question banks, lesson plans and optimal use of audio and video technologies and related multimedia.

9- Transmission and exchanging of educational experiences by creating communication platforms and forums that enable teachers, trainers, supervisors and all those interested in educational affairs to discuss and exchange opinions and experiences through the previous medias that brings them all together in a virtual room, despite the distances.

10- Preparing a generation of teachers and students capable of dealing with the tremendous developments in technology the

world is witnessing.

11- Helping to spread technology in societies and making them educated societies that keep in touch with what is going on in the far corners of the glob and giving a broader concept of continuing education.

Therefore, from the objectives mentioned above, it is clear that the role of e-learning can greatly improve the progress and level of education in all educational stages and in all disciplines.

E-Learning Tools:

The e-learning environment consists of several different tools and equipment that work together to ensure that the student has accessed this technology to benefit from. These tools can be classified as follows [12], [13]:

1. Hardware: it consists of a computer equipped with the following equipment: (a speed processor, an internal memory, a random memory, a video card, a screen, a sound card, a microphone, a modem, a keyboard, a mouse, a camera, and ports).

2. Tools for providing e-learning like LMS and LCMS Server.

3. A server: the server is one of the basic tools in e-learning, and is like a program that dispatches web pages to the browser. The selection of the server computer must take into account a number of e-learning requirements required for teaching tasks, including the following: Content size, hosted files, text, audio, graphics, video, band width server penetration rate; viz. the extent of the development of the user's content and programs that must be executed by the server, such as: Active Server Program, Java Server Pages and Perl Script.

4. Networks: they are interactions among a number of independent and separated units that work through coordination to achieve general and common goals with high efficiency, more than if each of the cooperating units tries to work to achieve these goals independently. There are three types of networks in e-learning which are as follows:

● Local Area Network (LAN) is a group of computers in an organization that are connected to each other in several ways. The connection is done by the Ethernet network card, which in turn is a way to connect networks with each other in a circular or starburst fashion.

● Wide Area Network (WAN): a network that connects a number of computers in separate

locations.

● The internet: it is a vast network that connects all computers over the globe through which people can share information and communicate from anywhere at any time.

5. Accessing e-learning tools: e-learning websites can be accessed through a browser which, in turn, provides a graphical interface to the internet that enables the following: (displaying - running programs - downloading files - sending files - and supporting encryption).

It can also be accessed through the Media Player as the audio, image and text files have a number of shapes and extensions that make each one different from another, and each has a special operating program that the computer must be equipped with to run that required file. Media players includes: QuickTime Player, Windows Media Player, Real One Player, Flash Player, Acrobat Reader, Director, Quest, Tool Book, etc.

6. Auxiliary tools: they are direct communication tools; i.e. synchronous and asynchronous communications.

Elements of E-Learning:

In an attempt to shift from the traditional environment of education to the electronic environment. The following elements must be available [16] which are as follows:

1. Technical elements: these elements are represented by computers, internet, school's internal network, the LAN, in addition to CDs, electronic books and multi-media.

2. Human elements: as for these elements, they are represented by administrators responsible for organizing work, teachers, students, parents, developers of curricula and courses, and developers of educational content in its electronic form.

3. Elements of electronic documents: they are different and advanced means of communication provided by e-learning management systems as alternative means to traditional methods of education which in turn undertake the transfer of information. These means are represented by the e-mail service, network meeting, written and audio chat, video chatting and file download service transfer which includes the processes of uploading and downloading.

E-Learning & Curricula Designing Tools and Services:

As for the design of the e-learning environment, the following tools are considered important means and services for the design of e-learning methodology [17]:

1- Electronic e-mail system.
2- Chat service
3- File Transfer System (FTP).
4- Gopher service.
5- News group service.
6- Search service using (wais).
7- The mailing list service.
8- The web service (www).
9- Online virtual classrooms.
10- Digital libraries.
11- Interactive TV.
12- Virtual universities.
13- Virtual reality applications.
14- Intermediate software.

E-learning Axes:

The most important characteristic that distinguishes e-learning methodology from conventional learning is the axes that can contribute to the planning of e-learning, and these axes include the following [17]:

1. virtual classes
2. Educational seminars (video conferences)
3. Self-learning
4. Educational sites on the internet.
5. Student self-evaluation
6. Management follow-up and preparation of results.
7. Interactive Relationship between the school, the student and the teacher.
8. Mixing education and entertainment
9. The roles of the teacher.
10. The Curriculum.

And the following is a presentation of the most important of these topics:-

1. Virtual Classes:

The use of internet in education has led to a rapid development in the educational process as it affects the way the performance of both the teacher and students in the classroom. Despite the importance of face-to-face meeting between the teacher and students in some scientific aspects, this meeting is not appropriate or good because of the continual instant change in the group formation. Thus, it is possible to find training without direct facial actual communication done through discussion boards, dialogue rooms, platforms where participants meet and express their ideas, opinions, suggestions and comments about goals, obstacles and methods of communication. Accordingly, the virtual class is a class with all of these components and elements and still containing the three main poles; namely, the teacher, the students and the study materials, as well as clarification

media, exams, assessment, systems and the management governing the educational process. However, despite these aforementioned facts and advantages, a virtual class lacks a realistic place since it is a website on the internet or the local network (intranet). It contains pages of information with educational elements that are linked together through the network and are also linked to all other sites which, in turn, contain other virtual or real classes with huge numbers of students. Noteworthy here is that there are some basic steps that must be taken into account when creating any virtual class which are as follows [19]:

● The objectives of the members involved in the education, viz. the group must clearly be defined.

● A distinct site must be created for the group and the roles of its members should be organized, with the need to appoint an effective leader from within that group.

● clarifying the principles and behavior required to join that group.

● Allowing members to solve their disputes.

● Finally allowing and facilitating other subgroups to form or join that group.

Therefore, working with these steps enhances and encourages contacts among the members involved in the virtual education group. The virtual classroom has several advantages; namely, (1) it provides the possibility of creating new classrooms for new students, which leads to economic savings, (2) it also provides a lot of diverse educational patterns by taking advantage of the latest developments in technology and communications and employing them to serve the educational process, (3) it also provides huge numbers and types of different information resources, (4) it gives the student a complete freedom to choose the time and place of study; this, in turn, gives him the ability to absorb largest information and save time and efforts spent in attending lectures in real educational institutions, and encourages his ability to focus with the teacher without feeling the presence of other students unless the student wants to, (5) it also leads to the development of higher thinking and perception skills of the student and generates his ability to search and investigate information, (6) it besides ensures the use of dialogue through other means; such as, television, radio, CDs and books to provide the student with an opportunity to dialogue the teacher or other

students, (7) and finally it gives him the chance to communicate with teachers and colleagues at any time and from anywhere.

Despite the advantages of the virtual/virtual class system, there are some weaknesses that must be taken into account and paid attention to through the following:-

● The need for a management and follow-up system for the virtual classroom system.

● The necessity of having the internet or a local information network (Intranet).

● The need for the teacher to be able to use the computer, with the need to have a great deal of knowledge of dealing with imaginary classes and how to deal with students through them.

● The necessity of providing appropriate educational content for publication on the websites in the language that the student understands.

Thus, it becomes clear that the main element in these points is the element of qualifying the teacher on modern technology and on the new developed curricula, training, educating him and increasing his experiences to deal with the virtual class as it is the main element in the educational process, and is one of the most important elements for the success of e-learning.

2. Roles of Teachers in Virtual Classrooms:

The teacher is seen as the owner of a sacred and honorable message throughout ages and generations, and that the teaching profession that the teacher choses and belongs to is a basic profession and an important pillar in the progress of any nation. However, the role of a teacher is no longer as it was seen before as a tutor and the only transmitter of knowledge in the educational process, and students only have to memorize this knowledge and the information they receive from. Many researches have strongly blamed the teacher by beholding him as one of the main reasons that most educational institutions suffer from in most of the global societies at the present time, and as one of the main obstacles in the movement of educational innovation towards development. However, facts have confirmed that a teacher can be a source for solving these problems instead of being one of their main reasons, and that the revolution of educational innovation cannot succeed without making him have an active role in. Information technology, as a matter of fact, does not reduce the importance of a teacher as some imagine, but actually gives him

an active role and responsibilities as he becomes the co-director of his students in their continuous journey of learning and discovery of knowledge in the new environment. Accordingly, it is important to shed lights on some comparisons between the role the teacher in the conventional learning and his role in the newly developed environment [14]:

1. The Role of the Conventional Teacher

The traditional teacher is distinguished in the traditional environment of education as not participating in curriculum planning, not having modern tools for a comprehensive assessment of students' abilities and skills, governed by ideas and beliefs that need to be developed, confined in a triangle with three sides: one of them is a high density of learners in the classrooms, the second is a short time represented in the class time, and the third is a huge amount of educational materials to be delivered and implemented, and thus often not being able to make the appropriate educational decision.

2. The Role of the Modern Teacher in the Electronic Environment

As for the teacher in the new electronic environment, he has the distinction of becoming the organizer and coordinator of the learning class, including the resources and distribution of educational work, mastering communication and self-learning skills, possessing the ability of critical thinking, being able to understand modern sciences and advanced technologies and creating an educational environment for students, trains them to use modern technologies in their learning process, provides them with directions and instructions when it is requested, help them to break their traditional teacher-dependency-based habit and encourages their intellectual independence in developing their imagination and creative skills and enable them to make decisions and have the ability to communicate with their virtual classmates for the aim of facilitating the learning process. The new teacher will inevitably be able to build his students' behavior, and this will only be attained through organizing and coordinating between teachers, the educational management board, the students' parents and other informal education institutions such as society and governments [4]:

3. The Electronic Curriculum:

The electronic curriculum is defined as any syllabus that includes computer-based activities educational materials taken from internet sites. It is one of the important applications for the use of information and communication technology in the educational process. This importance stems from several reasons, the most important of which are as follows [15]:

A. It provides the teacher with statistics of students' achievements and progress, and facilitates the process of evaluating tests and assignments.

B. It allows students' parents to view the scientific material presented in the electronic course and the results of their sons before hands.

C. It is flexible and gives students the opportunity to learn the scientific material in addition to learning computer skills.

D. The student can use syllabus several times and can see and review the scientific material of the lectures constantly.

E. Each student can contribute in the preparation of the scientific material of any syllabus, expresses his opinion and comment on what other students have presented, thus increasing the process of interaction and communication between the teacher and the students and among the students themselves.

F. The student can use it at any time and place he wants, as it does not prevent its use at any time; whether day or night, or any place, as it does not need classrooms since it can be used at home.

When designing the electronic syllabi, there are a number of facts that should be taken into consideration which are as follows [14], [15]:

A. Clearly defining the electronic goals and duties.

B. Using additional technologies for remote communication such as audio, video and telephone when necessary.

In addition, and before uploading any syllabus on the internet, it is important for the teachers to pay attention to the following matters [14], [15]:

1. Making accommodation between education and community strategies, determining the justifications for using education, and determining the needs and duties of both the teachers and the students.

2. Developing teachers' skills in using computers, software applications, network communication and methods of creating electronic courses and websites as well as dealing with them and other tools.

4. Training students and encouraging them to

connect to the internet, access websites and urging them to adhere to the time specially in direct electronic meetings.

5.Holding the first lectures for university students in the traditional classroom to let them know their professors and colleagues face to face at least once.

4. Improving the process of teaching and learning via the internet by setting goals, providing students with feedback, urging students to discuss and participate, and raising their awareness to the need for interaction to achieve the education goals.

5. Determining the students' skill level in using the computer before they start registering them in the electronic course.

6. Continual evaluation of the students' skills and attitudes, diversifying educational components and providing them with technical support for designing their own accounts be enrolled in the electronic classroom.

Transformation Strategies towards E-Learning:

The opportunity the e-learning methodology provides to teachers is greater and more important than the obstacles the latters may face when applying this new system. One of these opportunities is to virtually reaching a large number of students who are unable to attend real classes, meet their needs all and establish a friendly communication with them who come from different social areas and different cultural and economic backgrounds. And in order to transform to e-learning methodology, there are certain strategies that should be taken into accounts which can be as follows [1]:

1. Improving syllabus' planning and the organizing: when a development on a subject is made for transforming to e-learning methodology, the main content of the subject generally remains constant but its presentation requires new plans and additional time for preparation.

2. Relying on results of research and specialized studies in the field of e-learning when starting the process of curriculum planning. It is also necessary to review previous experiences in this field in both developed and third world countries.

3. Understanding and analyzing the strength and weakness of the available communication techniques whether audio, video, data or publications in terms of how they can be reached to through satellites, short radio waves, optical chip link, and in terms of students' needs and curriculum requirements

before choosing the appropriate technology for education .

4. Ensuring that all sites are provided with work and communication equipment, as well as ensuring the availability of a free hot-lines to declare and fix any problem.

5. Training both teachers and students on communication technologies, holding a pre-meeting with them to explain how and which technology will be utilized.

6. Defining the rules, standards, and baselines that should be initiated before the beginning of the e-learning courses starting with an appropriate number of sites in order to facilitate its management for both teachers and students.

7. Enhancing students' awareness regarding the new teaching systems, preparing them to become accustomed to this technology and enabling them to solve technical problems which they may face while searching for and obtaining the needed information.

8. Studying and understanding the students' social and cultural backgrounds and trying to know their experiences with this system.

10. Regarding the need for students to have an active role in the distance classes in order to prepare them to learn independently.

12. Using technical skills represented in effectively dealing with an increasing number of students in various stages of education, developing ways and means for providing knowledge in a way that enables the processing and management of information before losing control of and contributing to change the teacher's role in the educational process to a designer.

11.Motivating teachers to use knowledge and information to solve students' problems inside and outside the classroom instead of being just a transmitter and tutor for them, and to contribute effectively to the application of modern methods of teaching and learning such as individual, self and cooperative learning, open education, distance education and the use of effective teaching skills.

And in order for e-learning to be effective, attention should be paid to the following matters[14], [15]:

1- Providing specific content remotely usually requires more time than the same content provided in traditional classrooms; therefore, a realistic study must be carried out on the amount of material that can effectively be delivered during the virtual class through the provision of special electronic devices and

equipment, and the place and preparation of the classrooms, etc.

2- Making the lectures of a gradual nature and avoiding lengthy passive lectures and varying the activities in the class.

3- Diversifying the way the content is presented in forms of discussions and exercises that focus on students rather than on the teacher.

4- Focusing on the students and not on the communication system and how to present the information in an attempt to give the lessons a human character.

5- Paying attention and taking into account the difference in the teaching methods and the students' intellectual differences; i.e. some can easily learn through cooperative education that organizes students on the basis of groups, while others are creative when they work independently and learn through self-learning.

6- Developing plans to strengthen students in terms of assessment and communication.

7- Thinking of using printed materials as an integral part of non-print materials and using case studies as much as possible.

8- Using brief and short sentences and direct questions when clarifying meaning.

9- Improving mutual interaction and feedbacks by ensuring participations of all students through brainstorming questions at the beginning of the lesson to encourage them think critically exchange electronic messages among themselves to reach rightful answers. This method makes students feel comfortable about the new educational process and integrate a variety of media and communication.

Requirements for the Transformation to E-Learning:

The transformation process for e-learning requires several steps that can be summarized as follows [15]:

1. Studying the reality of using technology in universities and making technology an essential tool in the educational process at all educational levels and in all institutions. This requires making adjustments in the education policy at the level of universities.

2. Forming a committee at the university level that includes a group of specialists in different fields whose duties are to undertake developing of the e-learning process.

3. Supporting university administrations and encouraging them to integrate technology in education and directing teachers to use it.

4. Developing a long-term plan to integrate technologies into education at the level of courses, classes and stages.

5. Determining the time period needed to implement the integration plan in the teaching courses and classes but in few steps.

6. Allocating a budget for integrating technologies in education ensuring purchasing hardware and software, hiring trainers and training teachers and students.

7. Establishing centers and forming working team of specialists who prepare electronic multimedia curricula based on inclusion of technologies in universities and educational institutions in various disciplines.

8. Continual conducting research in the field of e-learning in order to inform teachers and officials of the need to use technology to advance the teaching and learning process.

9. Establishing a technological infrastructure by equipping universities with devices and their accessories, providing laboratories with computers and multimedia devices that keep tracking the massive revolution in communications and providing internet service to universities.

11. Providing technical support and maintenance for the devices and networks on a permanent basis while teachers use technology in education.

Obstacles of Transformation

However, despite the benefits and advantages of e-learning, it may face many obstacles and problems that could impede the completion of the transformation.

One of which are the technical and material problems. They could notably be related to the availability of computer equipment and communication networks which constitute the main nerve in the e-learning process. Most of the studies conducted in this realm show shortages at universities and institutes levels equipped with computers and communication networks, or at individual level having teachers and students prepared for the e-learning methodology. The technical problems could also be represented in the difficulty of providing maintenance for devices in some areas, the high costs of constructing the infrastructure and the inability of the financial capabilities to start a huge project such as e-learning methodology [13].

Secondly, there are human problems represented in the lack of awareness and knowledge in a large percentage of teachers and students of how to deal with computers, internet and applications. In addition, there is a

lack in experts at the management level of e-learning methodology which results in a teaching staff unable to use the new system in the required effectiveness and the difficulty of changing their ideas to switch from the conventional learning system to e-learning methodology because they are accustomed to the traditional methods of education. This represents a severe obstacle on the way to transform to e-learning. Besides, what increases the matter is that some official authorities in some countries do not recognize the certificates granted through e-learning due to the different cultures at the level of societies, institutions and individuals. This issue is one of the most important actual problems facing e-learning transformation [14], [15]:

There are also problems related to the production of educational materials represented in the high cost of preparing good programs in an e-learning style, and the scarcity of specialists in designing educational materials in the style of self-supported education using multiple technological media that can be taught electronically. There are security problems related to the difficulty of securing educational websites from penetration as there is no known security on the internet for a simple reason which is anything that is closed can be opened in one way or another. Accordingly, the issue of security is a fundamental and sensitive issue, not only at the educational level, but also at all levels. Noteworthy, there are additional problems related to limiting the application of e-learning to theoretical studies in general and to human studies in particular, and excluding its application to practical studies such as medicine and pharmacy, and that the rate of achievement decreases because there is no good system for following up and evaluating students and trainees [14], [15]. These are, in general, some of the obstacles facing the application of e-learning methodology.

Experiences of Applying E-Learning in the Arab & the Global World:

The shift from traditional system in the various areas of life to digital system is one of the most important features characterizing civilized societies and nations and is an evidence of the latter development and advancement. Therefore, the use of this technology in education has become not a luxury but an inevitable necessity which has positive effects on the teaching and learning processes. A number of advanced and third-world countries have carried out pioneering experiences in the field of applying different systems of e-learning, which has started using auxiliary means such as computers and the internet in countries such as the United States and television networks broadcasting study materials by videotapes in Japan and ended with the application of advanced systems for distance education.

And in order to understand some of these pioneering experiences, it is necessary to shed lights on some of the leading international and Arab experiences in this field, highlighting in an extensive descriptive and analytical manner the e-learning experience in Saudi Arabia.

First-The Global Experiences:

There are several pioneering experiences of e-learning in advanced global countries. The most important of which can be seen as follows:

1- The Experience of Japan:

Japan's experience in the field of e-learning has precisely begun from 1994 when a first step for e-learning has been adopted. This e-experience has initially begun with a television broadcast network project, video tapes recording and through cable educational study materials supplied to schools. In 1995, Japan began a project known as the "100 Schools Project" where it equipped schools with the internet cables for the purpose of experimenting and developing educational activities and educational software that take place through the information network. In the same year, the Working Committee on Educational Policy in Japan prepared a report that was submitted to the Ministry of Education suggesting that the Ministry should provide a regional information system to serve lifelong education in every Japanese province, providing a center for educational software in addition to establishing a national information center. Furthermore, and in order to prepare and train teachers and members of the educational staff on this new computer-based technology, the committee has developed special and appropriate plans for this project [1]. A new stage of advanced and modern education has begun in Japan when the Japanese government has approved- through the budget of the 1996/1997- to support the preparation of educational library software centers for each province to provoke research and development in the field of educational software, and to support the employment of internet networks in educational institutes and

colleges. Thus, Japan is now one of the successful countries that officially has been implementing modern e-learning methodology in most of its schools, institutions and universities.

2- The Experience of the United States of America:

It is another experience of e-learning methodology in advanced countries where information technology is considered by decision-makers in the American administration as one of the six most important issues in American education. In 1995, in a race against time, all the United States in America completed the application of the e-learning methodology and its employment in their schools, and were concerned with the process of training teachers to help their colleagues and help students in applying this educational technology. During 1993, 98% of primary and secondary schools have a computer for every 9 students. At the present time, computers are available 100% in all the USA schools without exception and communication networks are provided to connect all schools together beside providing effective teaching software programs to become an integral part of the curriculum. It can be said that the introduction of computers in education and its applications is no longer a national plan, but has become a fundamental basis in all educational curricula at all educational levels [16].

Second- Arab Experiences:

The Arab experiences in the present study are represented by the experiences of both the United Arab Emirates (UAE) and Saudi Arabia, that can be seen as follows:

1. The Experience of the UAE:

The Ministry of Education, E-Education and Youth have adopted a project to develop computer education at the secondary level for the studying year 1989/1990. At the beginning, the project included preparing a curriculum for the first secondary grade and testing it by selecting two schools; one for boys and the other for girls. A year after the implementation of this project, the experiment was generalized to include all secondary schools in the country. In light of this experience, teaching computer as a subject has been adopted in the preparatory stage, and the book "Computer Skills" was presented within the 'life-skills' subject for both the first and second grades. This experience was highly welcomed by all the parties involved in the educational process in the UAE and has resulted in the following [14]:

• It has encouraged computer teachers and those of other subjects to learn how to deal with computers and lately network applications, and made them believe in the necessity of using computers and networks as educational media for their teaching and developing their subjects.

• It has provoked school administrations to use computers in the fields of school administration, which has prompted the Ministry to move towards introducing computers in the fields of school administration.

• It has made the students' parents realize the importance of computers in contemporary life.

In light of the latest educational concepts presented to employ educational challenges in the education process, the objectives and areas of using educational technologies in education in the UAE were identified and developed. This is evident in the Ministry's educational policy and future plans regarding the vision of the education horizon until 2022 in light of the developed curricula. These objectives are as follows; (1) Improving and developing the teaching and learning processes, especially in the field of education curricula, (2) developing an information communication network between the ministry, educational districts and schools to help centers quickly access various types of information related to students, teachers, supervisory and administrative bodies, etc. to make decisions.

2. The Experience of the Saudi Arabia:

Among the most important pillars of the general objectives of education policies in Saudi Arabia as an Arab country is adopting the modern latest educational technology in the world. In order to consolidate this concept and in line with the rapid development in the field of information technology, computer subject was introduced as an important subject among other important subjects within the advanced secondary education program. In addition, e-learning program has been divided into an electronic community, curricula, and roles of teachers just as follows [15]:

First- The E-Learning Community:

It is a scientific forum via the internet that brings together the students, the teacher and the students' parents as complementary elements in the educational process so as to increase the quality of educational outcomes. In most cases, this community consists of the following: (1) *a dialogue* where the teacher and his students can have a dialogue about multiple

topics in the scientific material they are dealing with, and the student, in turn, can directly inquire some related topics and effectively participate in designing the lesson; (2) *forums* which are an indirect means of communication to find moral, disciplined and educational solutions that serve the community, and a modern way to search for answers and solutions from multiple parties. These forums can also be general to a specific learning community or can be specific to certain part of the community; (3) *user's page or favorites* where the favorites contain the user's messages, his address, his personal information, his settings, his notepad, and other matters determined by the educational institution. The teacher needs them all to access some links that serve the process of obtaining information to enrich the study material assigned to him, and the student, in turn, needs them to collect lessons and solutions or links or forums related to his studying materials, as well as the parents in following up their son through special messages with which he communicates the school's administration; (4) *note-books* through which- whether private or public- a student can see the time-table of classes, and through which he can organize his appointments and duties, which leads to planting admiration of order in the minds of students; (5) *E-mail:* the educational community is characterized by its constant communication by sending e-mails at different times and including with them different attachments; (6) *surveys* through which it is possible to obtain collective opinions to make decisions about certain issues raised by the school administration or a group of site users.

Second- E-Curricula:

It is a supportive educational means through which the student can- via the internet- recall his lessons and communicate with his teachers- as a scientific and educational monitor in the educational process- in order to complete them in a proper manner. However, there are certain elements that should be available in the e-studying materials consisting of the following matters [14]:

1. Introduction: it contains a brief overview of the contents of the article, how to deal with it and its most important scientific and practical aspects.
2. Objectives: each subject has general and specific objectives that must be beforehand defined in order to clarify the educational and behavioral aspects which address different issues.
3. Contents: they are an index of the main topics in the article through which it is possible to smoothly and directly move to the lesson.
4. General Agenda: it is an organizer of the dates of the subject or checking exams time.
5. Private Notebook: it is the student's private notebook through which he can access main pages of any subject.
6. Subject Forum: it is a special forum for each by the means of which students can exchange topics related to the subject they are studying with their relative teachers.
7. Subject Dialogue: each subject is concerned with an arena of life, direct discussion between students of the same subject and their teachers.
8. Article links: each article has links which each user can add links to or preview links that have been added by others. These links help to understand the material and its topics.
9. Terminology: it provides a full explanation of the most important words of the subject that the teacher deems important to explain.
10. Auxiliary tools: they are divided into two parts as follows: (1) *part one* relating to the services that can be provided to students; such as, the student's need for some tools like a calculator or a ruler; (2) *part two* relating to the teacher's assistant services from a specific reference or program that assists the student in completing the study of a particular subject.
11. A Question Bank: the question bank provides a list of questions and their detailed answers related to the subject for both the student and the teacher.
12. An E-Book: Saudi curricula books are available on the internet so that any user can browse and use their parts.
13. A Curriculum and the Use of Multimedia: the process of curriculum development contributes to providing a high quality and quantity of information that is easily accessible and thus reduces individual differences among students since each subject has rich contents of files in the form of animation, audio, image and interactive texts.

Third- The Roles of Teachers with E-Learning Methodology:

Training teachers and developing their skills are the cornerstone in the success of any method or application of a new educational method, as well as the development of any training plan by any specialized team.

Therefore, there are three main training pillars that must be available to form a strong start for ensuring a successful application of any new educational project; namely, the trainer, the trainee, and the training material. The teacher sees e-learning methodology as a new educational style that supports his role in creating a conscious and educated generation that keeps tracking the technological developments and digital transformation that the world is witnessing through the following:

1. Switching to use websites, if available, that are devoted for teaching his subject via the internet but still keeping his ideal experienced style he and his students accustomed to in communicating explaining the information to them.

2. Organizing his appointments and his timetable with his students through the website he uses.

3. Using appropriate scientific forums and platforms designed as a virtual classroom for the subject he is teaching and urging students to use them, recording and adding notes, making direct contact with the person responsible for managing the site in order to enrich the scientific content of the site on one hand, and to correct errors when taking place.

4. Preparing model lessons using multimedia or presentation programs such as the Power-point application and adding them to the subject site or channel so that student could review and benefit from after the direct presentation.

5. Encouraging students to activate the site through their participations in order to show the distinctive image of the student who uses e-learning education from those who do not or careless of .

Results:

In sum, and from all that have so far been mentioned, this present study concludes the following:

1. E-learning is an advanced and a very helpful method that should be adopted in the teaching and learning process.

2. It improves the ability of the teachers, syllabus designers and students by developing their skills in several fields; i.e. the technical, the scientific or the research areas.

3. This type of education shortens several factors such as place, time and efforts for the educational process, since teachers, students and the education administration all can mutually communicate and access each other, and can access the studying syllabus at any time and at any place.

4. It eliminates the continual disputed issue of classroom crowded with students.

5. It has several advantages and benefits that distinguish it from the conventional learning.

6. There are certain patterns, models and requirements that should be taken into accounts to make the transformation to the e-learning environment more possible, applicable and, furthermore, more successful .

7. There are some obstacles that can impede the success of the transformation to the e-learning methodology and they should be taken into accounts and should carefully be studied by the educational administrations and the top management .

8. There are pioneering global and Arab experiences in this field that should carefully be studied and analyzed so as to ensure a successful transformation process toward the e-learning.

Recommendations:

Finally, the present study recommends the following:

1. Adopting of e-learning project is a must in schools, institutes and universities for all global countries in general, and the Arab world and Iraq in particular.

2. There are global and Arab important and successful leading e-learning experiences that should be carefully studied and benefit from to at least start from where they reach to avoid as much as one can problems they faced.

3. The Ministry of Higher Education and the Ministry of Education should adopt this new educational project and put it as their main plan to implement; thus, they should provide all its requirements by allocating part of their short term and long term plan and budget to provide computers and the communication equipment required to their universities and schools in the country.

4. The necessity of providing the infrastructure for this advanced educational project represented by providing the required computers and communication networks, and preparing the human resources directly or indirectly involved in this new environment; namely, teachers, students, syllabus designers, the education administrations, the government as well as the parents and the society to interact with this type of education and to take actions in succeeding it.

5. Providing training courses to raise the skills of both the teachers and the students having in mind the necessity of training during the on-going studying years to ensure a bit qualified

teachers and students.

6. Developing a time plan for the rehabilitation of elder teaching staff in schools, institutions and universities at all levels who might definitely reject this new methodology in order to enable them getting accustomed to using and controlling the electronic classes as well as designing their subjects e-syllabus and materials.

7. Benefitting from faculties of computer science and information, as well as education to prepare a teaching staff in all field of sciences to enable them to use the electronic courses and increase the effectiveness and skills of computer ability to use and design courses.

8. Continual measuring of the extent to which students and teachers respond to this modern technology and getting developed by experimentally teaching scientific materials via the internet to a small group and choosing certain subjects.

9. Establishing a fixed mechanism for evaluating the performance of teachers in universities, institutes and schools and evaluating the curricula in their electronic form and supervising the virtual classes through regular following up to ensure successful transformation and e-leaning educational processes.

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