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Requirements for the use of E-learning in university education

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Abstract

E-learning is one of the most important modern methods of education, as it helps in solving the problem of the knowledge explosion, the increasing demand for education, expanding opportunities for admission to education, being able to train, educate and rehabilitating workers without and educating housewives, which contributes to raising the percentage of learners and eliminating on illiteracy. To reach scientific results in this research, the researcher was interested in analysing the concept and its definition and then its applications by analysing and synthesising many results from previous studies and writings without resorting to a field study or analysis of the content of textbooks. This study found that there is weak knowledge of the uses of e-learning in university education and the administration's lack of interest in developing teachers' skills in using e-learning in their teaching.

Keywords: Education, E-learning, interactive technology, modern methods;

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1. Introduction

The challenges posed by the information age, which the contemporary world faces, lead to a comprehensive and accurate review of the foundations and systems of education. The goal of education is no longer the acquisition of knowledge for a specific period because knowledge in itself is no longer a goal, but rather the important thing is to employ this knowledge in the formation of the knowledge structure and thinking of the individual (Hammoud, 2008a, 2008b; Supriyatno et al., 2020).

The teacher is no longer the only source of information and his role is no longer limited to delivering information only, but there are many sources of information between traditional and electronic, and the teacher's role has become guidance, direction, design and preparation of learning programmes. With these changes, the traditional concept of the curriculum has also changed and it meets the learner's cognitive and emotional needs so that the learner can access the information he needs in the fastest time and with the least effort. It makes him more in control of the educational process so that he can determine the appropriate times for learning according to his abilities, capabilities and speed of learning and his choice of topics that suit him (Abdel & Abdel 2010a, 2010b; Jawarneh, 2022; Kaleci & Akleman, 2019).

1.1. Conceptual background

This era is characterised by rapid changes resulting from scientific and technological progress and information technology, so it has become necessary to keep pace with the educational process of these changes to face the problems that may result from them, such as the abundance of information, the increase in the number of students, the lack of teachers and the distances (Keser & Semerci, 2019; Pascu et al., 2018). These changes have led to the emergence of many patterns and methods of education, especially in the field of individual or self-learning – in which the student proceeds according to his energy, ability, speed of learning and his previous experiences and skills – as solutions in the face of these changes, the concept of programmed education appeared, and the concept of education with the help of the computer and the concept of distance education, in which the student learns anywhere without the need for the permanent presence of the teacher.

With the emergence of the technological revolution in information technology, which made the world a small village, the need for exchanging experiences with others increased, and the student's need for rich multi-source environments for self-research and development, so the concept of e-learning emerged, which is a method of education in delivering information to the learner, based on modern computer technologies, the World Wide Web and its multimedia (CDs, educational software, e-mail, discussion and discussion forums and virtual classes) (Chilke & Khinchi, 2022; Tezer, 2020).

However, the observer of the reality of educational systems in the field of using e-learning finds that most institutions have started in this type of education according to certain jurisprudence without considering that this type of education needs special requirements, whether in the field of infrastructure or in building special programmes, determining standards and building electronic curricula, creating a scientific environment, training teachers for this type of education and preparing students (Danaci & Koc, 2021; Suteyeva & Sarsembayeva, 2021).

1.2. Related studies

The study of Al Mahaya (2002) aimed to determine the availability of computer and Internet technology competencies among students of the Teachers College in Abha. Its results confirm that there is a decrease in the level of availability of computer and Internet technology competencies among the study members, as well as in the level of training that the study members received on computer and Internet technology skills while studying in the college.

Al-Khawaldeh's (2004) study aimed to identify the images of e-learning that appear in the practices of teachers in private schools, the impact of each of the teacher's specialisations and the stage of study in which the teacher teaches in these images. Among its most important results is that the most prominent forms of e-learning that fell within the high use were communication with electronic schools, electronic search through search engines, e-mail, exploitation of software Office, preparing computerised student projects and displaying computerised information. As for the use of educational CDs, it fell within the medium usage range, while two forms came out: the question of specialists in international scientific centres and the educational discourse in the range of low usage.

As for Maxwell's (1997) study, the aim was to obtain teachers' opinions on the appropriateness of a training programme in technology and the extent to which they integrate the Internet into the curriculum. One of its most important results was that most teachers did not receive any training on the use of the Internet, and even for those who received training, it was not sufficient. Also, the teachers lacked experience in using the Internet. Finally, insufficient time for online training.

In the field of infrastructure, Bassiouni (2001) conducted a study that aimed at identifying the various physical, software and human obstacles to using the computer and its accessories in secondary education in Damietta Governorate. The results of the study revealed that the laboratories in schools are not equipped to maintain the equipment in them and are not qualified to accommodate large numbers of students. The devices currently used are outdated and do not match the presentation of educational and application programmes necessary for the era present. There is a problem with the high material costs concerning the provision of devices and equipment, the purchase of educational and applied programmes that are constantly renewed and the high cost of training teachers. Finally, the maintenance operations for the devices are not carried out through a periodic or non-periodic plan, but rather take place when needed with a few specialists (Uzunboylu et al., 2021).

These and other studies confirm to us the importance of knowing the basic requirements for the use of e-learning in the educational process, and the value of the teacher and his role in the era of computers and information networks, which is reflected in his ability to prepare a qualified learner and trained in self-learning, research and investigation skills and how to deal with available information, selecting and organising it, which contributes to the personal development of the learner in an integrated manner and develops his self-confidence and makes him active in society and able to face the problems in his society.

1.3. Purpose of study

The role of the teacher in traditional systems is similar to the role of the lecturer, the trainer and the teacher. The roles that he must play in e-learning have changed, as the dependence shifts from the teacher to the learner, who bears the responsibility of self-learning, and the teacher has begun to become, under this system, a guide, a trainer, a learning guide or a supervisor. Therefore, the researcher noted that the teacher faces several obstacles and problems in employing e-learning in education. This research aims to: determine the basic elements needed to start e-learning in the educational process; determine the equipment, tools and basic programmes necessary to start applying e-learning in the educational process; know the specifications, requirements and method of building courses computerised; know the roles and training requirements that the teacher must perform in e-learning; determine the characteristics of the educational environment necessary for e-learning.

1.4. Research questions

The problem considered in this research can be formulated in the following question: What are the requirements for using e-learning in the university educational process? Several sub-questions are derived from the main question:

1. What is the concept of e-learning?
2. What are e-learning requirements in the field of tools, equipment and programmes?
3. What are the course specifications and requirements for computerisation in e-learning?
4. What are the roles, specifications and requirements of the teacher in e-learning?
5. What are the educational environment requirements for e-learning?
6. What are the obstacles related to employing the use of e-learning?
7. What are the obstacles to training and qualifying e-learning teachers?
8. What are the obstacles to providing the infrastructure for the employment of e-learning?
9. What are the obstacles to e-learning related to the role of the university as an educational institution?
10. What are the solutions and suggestions for employing e-learning in universities?

2. Materials and methods

This research follows an investigative analysis of many research results and studies related to the use of computers in education in general, and in the field of e-learning in particular, to reach answers to research questions. The follower of educational research finds that its curricula either focus on distributing questionnaires and converting them into numbers and statistics so that they become quantitative, or the researcher sets hypotheses and controls and compares between the control groups. The researcher analyses the content of the courses, so the research becomes qualitative. As for the other methods, they are of little use, on the one hand, it is difficult, and on the other hand, the lack of interest in it by educators. To reach scientific results in this research, the researcher was interested in analysing the concept and its definition and then its applications by analysing and

synthesising many results from previous studies and writings without resorting to a field study or analysis of the content of textbooks. This is what is known as the method of investigation. It is a scientific method that can be used in educational research.

2.1. Border of search

Since the research topic is very long, the research was limited to the following topics:

1. The search was limited to what was written in the literature from previous studies and research results without conducting any survey to determine the needs.
2. The search was limited to topics related to tools, infrastructure, equipment, courses and the teacher only.

2.2. Search terms

The search terms used for the research include the following:

• Electronic education: is the education that takes place through the computer and any other computer-based sources that help in the teaching and learning process (Abdel-Wakeel, 2002). It is also a way of learning using modern communication mechanisms such as computers, networks, multimedia, search mechanisms, radio, television and telephone to provide an interactive learning environment with multiple resources (Ali et al., 2009).

• Requirements for the use of e-learning: Means the tools, equipment and educational environment necessary to be used in e-learning and the computerised courses that are required to be available in e-learning, and the role of the teacher in e-learning.

• The environment educational: It is meant in this research the physical equipment of computers and their various accessories, educational software and infrastructure of communications and networks, necessary for the use of e-learning.

3. Results

3.1. Concept e-learning

E-learning is an integrated system based on the effective employment of information technology and communication. In the teaching and learning process, creating an environment rich in computer and Internet applications enables the learner to access learning resources at any time and any place in a manner that achieves mutual interaction between the elements of the system.

E-learning is the most commonly used term, and we also use other terms such as Electronic Education/Online Learning/Virtual Learning. E-learning refers to learning using Internet technology as content is published over the Internet and this method allows the creation of links with sources outside the classroom (Malhas & Musa, 2008a, 2008b). Mahsoun (2003) defines it as a type of

learning that depends on the use of electronic media in communication between teachers and learners and between learners and the educational institution as a whole.

E-learning is also known as education using computers and their various software, whether on closed networks or shared networks (Internet networks) (Abdel, 2003). Al Mousa (2002) refers to it as the method of education using modern communication mechanisms from a computer and its networks and its media a variety of images, graphics, electronic libraries, as well as Internet portals, whether remotely or in the classroom. That is, the use of technology of all kinds to deliver information to the learner in the shortest time, with less effort and more useful.

The researcher believes that e-learning is a broad term that includes a wide range of educational materials that can be provided through local, regional or global networks. It includes computer-based education and training with all the services it provides, including computer accessories such as printers and CDs and network. The Internet, thus supports online education and distance education.

3.2. Genesis of e-learning and its development

The term e-learning appeared and developed through three generations that started from the beginning of the eighties until it reached its current form (Abdel & Abdel, 2010a, 2010b).

3.2.1. First generation

It started in the early eighties when electronic content was on CDs and was through interaction. It is one-on-one between the student and the teacher, focusing on the role of the student.

3.2.2. Second generation

It started with the use of the Internet, where the method of delivering content developed into a network method, and the content developed with it to a certain extent and the process of interaction and communication developed from being individual to being collective, in which several students participated with a specific teacher.

3.2.3. Third generation

It began with the emergence of the concept of e-commerce and electronic security in the late nineties of the last century and this coincided with a rapid development in multimedia technologies, virtual reality technology and satellite communication technology, which allowed the development of the third-generation in the use of electronic media in the delivery and reception of information and gain skills and interaction between student and teacher, between student and school and between school and teacher. This great progress was not born today, but rather it dates back to the past decade since former US President (Bill Clinton) requested in his initiative known as Basim Updating technological knowledge in 1996, in which he called for intensified efforts to connect all American public schools network by the Internet by the year (2000 AD) and in reaction to the initiative, the Federation of Federal Schools (1996 AD) introduced the Academic Internet Project,

which is the first school to teach online courses in Washington State, as well as some calls for the establishment of an electronic university in England, which have already taken place. This university is expected to offer online courses in continuing education and community development.

3.3. Goals of e-learning

E-learning seeks to achieve the following objectives as mentioned by Salem (2004):

1. Creating an interactive learning environment through new electronic technologies and diversity in sources of information and experience.
2. Strengthening the relationship between the local community and the university, and between the university and the external environment.
3. Supporting the interaction process between students, teachers and administrators through the exchange of educational experiences and discussions and purposeful conversations with the help of different communication channels.
4. Providing teachers with the technical skills necessary to use modern educational technologies.
5. Providing students with the skills or competencies necessary to use communication and information technologies.
6. Developing the role of the teacher in the educational process to keep pace with continuous and successive scientific and technological developments.
7. Providing education that suits different age groups, taking into account individual differences.

3.4. Objectives of e-learning

Also, Ali et al. (2009) highlighted some objectives of e-learning. This includes the following:

1. Contribute to the creation of infrastructure and a base of information technology based on cultural foundations to prepare a new society for the requirements of the 21st century.

2. Developing the positive attitudes of learners, those in charge of the education process, parents and society as a whole towards information technologies, especially e-learning, so that a developed information society can be created.

3. Providing teachers with the necessary skills to use educational technologies and rely on themselves to access the knowledge and information they need in their research and study them and allow them to ask their opinions and exchange them on various issues, as well as critique the information and question its credibility, which helps in enhancing their research skills and preparing their personalities.

4. Providing an interactive environment full of diverse resources that helps achieve educational goals.

5. Expanding the learner's circle of interaction to include the teacher, multiple sources of knowledge and his colleagues to enhance his acquisition of dialogue, cooperation and competition skills on a larger scale to prepare him for the future.

6. Overcoming the shortage of academic staff in some different disciplines utilising virtual classes.

7. Changing the role of the teacher in this type of education from that of the prompter, the guide and facilitator, in the light of the possibilities offered by e-learning and providing him with a set of skills that enable him to deal with technological innovations.

8. Providing educational content in new and diverse forms and developing them continuously according to the changes taking place through the employment of technological innovations.
9. Encouraging parents and the community to interact with the education system and follow up on their children's learning by informing parents about the reports provided by the educational institution.

3.5. Types of e-learning

Types of e-learning as mentioned by Shehri (2012) include:

Education synchronous electronic: It is education that requires the presence of the learners and the teacher at the same time so that there is a process of direct interaction between them, such as exchanging dialogue through chatting or receiving lessons through classes.

Education asynchronous electronic: This type is represented in the lack of importance. In the presence of the teacher and the learner at the same time of learning, the learner can interact with the educational content, and interact through e-mail, such as by sending a message to the runways. He inquires about something, and then the teacher answers it at a later time.

Education built: It is the education in which the means are used Contact Connected to learn a specific subject. These methods may include a combination of live lectures in the lecture hall, online communication and self-learning.

3.6. Importance of e-learning

Male Malhas and Moses (2008) pointed out the importance and advantages of e-learning as the following:

1. E-learning helps provide educational opportunities for different groups of society, women, workers and employees without regard to gender and colour, and to enrol in some groups that were unable to continue their education for social, political or economic reasons.
2. Provides education at anytime and anywhere according to the learner's ability to achieve and comprehend.
3. E-learning contributes to the development of thinking, enriching the learning process and modifying and updating information and topics presented in it. It is also characterised by the rapid transfer of this information to students by credit on the Internet.
4. Increases the possibility of communication to exchange opinions, experiences and points of view between students and their teachers and between students and each other, and in large numbers such as through e-mail, discussion rooms and interactive video.
5. It gives the student freedom and boldness to express themselves in comparison to traditional education, where the student can ask at any time and without fear, embarrassment or shame as if he was present with the rest of his colleagues in one hall.
6. E-learning overcomes the problem of the increasing number of learners with the narrowness of the halls and the lack of available capabilities, especially in colleges and theoretical disciplines.

7. The student gets continuous self-feeding during the learning process. Through this, he knows the extent of his superiority and provides him with the process of formative evaluation and final evaluation.

As for Crow (2003), e-learning is characterised by taking place at the right time, for the right person, in the right place, in the right form and content and at the right speed.

3.7. Factors that lead to the success of e-learning

To ensure the success of e-learning, as mentioned by Abdel Hamid (2010), the following must be present:

1. Social preparation of the members of society to accept this type of education.
2. The need for educators to contribute to the design and preparation of this type of education.
3. Providing the infrastructure for this type of education, such as preparing trained human cadres, as well as providing the required communication steps that help transfer education from one place to another.
4. Develop programmes to train students, teachers and administrators to make maximum use of educational technology and e-learning.

On the other hand, Hassani (2008) sees the success of e-learning depending on the following:

1. Determining the type of software used in authoring the software.
2. Determine the appropriate learning strategy for students.
3. Define a strategy for blending e-learning and traditional education.
4. Taking into account the nature of the curriculum and the scientific material.
5. Taking into account the needs of the learners.
6. Preparing achievable software projects.
7. Preparing the first software and application.

3.8. Constraints of e-learning

Several obstacles prevent the use of e-learning technology in the educational process (Hassani, 2008) including the following:

1. Lack of clarity about the method and objectives of this type of education for those responsible for educational operations.
2. Technical illiteracy, which requires a great effort to train and qualify the teacher and student in preparation for this experience.
3. The material cost of purchasing the necessary equipment and other auxiliary devices and maintenance.
4. Weakening the role of the teacher as an educational supervisor and its direct association with his students and thus its ability to directly influence.
5. Highlight the role of the university as an important educational system in society that has an important role in the upbringing of successive generations.

6. The emergence of many commercial companies whose goal is profit only and which supervise the qualification and preparation of teachers, and they are not qualified to do so.
7. The large number of scientific devices used in educational learning may cause the learner to become lukewarm in their use.

As mentioned by Hassani (2008), some of the obstacles to e-learning are:

1. Developing Standards: E-Learning is facing difficulties extinguishing its lustre and its rapid spread, and one of the most important of these obstacles is the issue of approved standards, and the first language-based e-learning standard was recently launched in the United States (XML) and SCORM (Standard Sharable) (Content Object).
2. Compensatory systems and incentives are among the requirements that motivate and encourage students to e-learning.
3. Methodology and mythology technical decisions are often made by designers or technicians based on their encouraging uses and experiences.
4. Privacy, confidentiality and content difference and exams are one of the main obstacles to e-learning.
5. The extent to which students respond to and interact with the new style.
6. Awareness of community members for this type of education and not to stand negatively about it.
7. The need to train learners and how to teach using the Internet.

3.9. Characteristics of e-learning

Abdel-Ati and Abu Khatwa (2012) mentioned that the characteristics of e-learning are as follows:
1. It depends on the use of electronic media and the Internet to obtain information.
2. Education occurs as a result of communication between the teacher and the learner, and the interaction between the learner and other electronic educational means such as electronic lessons, electronic libraries, e-books and others.
3. It depends on the interaction between the students and the teacher and between the students themselves.
4. Online e-learning is based on creating a website that serves the educational sector network. The Internet, in which information is built in the form of an educational page.
5. Connect all administrative departments' networks Internal and external serving employees and providing the information needed by administrators, teachers and students.

He mentioned Malhas and Musa (2008a, 2008b) purport the characteristics of e-learning are as follows:

1. It provides an interactive learning environment between the learner and the teacher in both directions and between the learner and his colleagues' joy in learning.
2. E-learning depends on the learner's effort to teach himself (self-learning), as well as he can learn from his friends in small groups (cooperative learning), or inside the class in large groups.

3. E-learning features flexibly. In place and time, the learner can obtain it anywhere in the world and at any time, 24 hours a day, 7 days a week.
4. E-learning provides an educational learning environment in which educational experiences are available that are far from the risks that the learner may face when going through these experiences in real life, such as conducting dangerous experiments in a chemistry lab or getting close to the site Explosion A volcano in Japan, for example.
5. The learner can learn without commitment at a specific age, which encourages lifelong learning.
6. E-learning coincides with the existence of an electronic department responsible for registering students, paying fees, following up on students and awarding certificates.
7. In this type of education, the learner needs to provide certain technologies such as the computer and its accessories, the Internet and local networks.
8. Low cost of e-learning compared to traditional education.
9. Ease of updating software and websites via the network global information.

3.10. Role of a teacher in e-learning

The teacher is the leader and supervisor, the mentors and the student are the focus of the educational process and thus the relationship between the student and the teacher took a new image. It differs from the traditional method, where they were the coaches. It is the main focus of the process of education, therefore, we have to change the perception of tradition based on the new image (Akkad, 2010).

If the teacher in traditional educational systems resembles the role of the lecturer, the trainer and the router, the roles that the teacher should play in e-learning are: Neighbourhood Accreditation is transferred to the teacher. The learner bears the responsibility for his learning, and the teacher becomes, under this system, a guide, a trainer, a learning guide or a supervisor (Hammoud, 2008a, 2008b).

As Maddah (2019) mentioned, the role that the teacher plays in education, in general, is very important because it is one of the pillars of the educational process, and it is the key to knowledge and science for the student and to the extent that he possesses scientific and educational experiences and effective teaching methods, he can produce outstanding and creative students, and in e-learning, the importance of e-learning is becoming increasingly important. Maximising the teacher's role, contrary to what some think, e-learning will eventually lead to release about the teacher. For the teacher to become an electronic teacher, he first needs an intellectual reformulation through which he is convinced that traditional teaching methods must be changed to be commensurate with the huge amount of knowledge that is teeming with all areas of life, and he must be convinced that he will not create alone the men of the future on whom society and the nation depend. Achievement and leadership. He must learn modern methods of teaching and effective strategies and deepen his understanding of his philosophy or master its application so that he can transfer this thought to his students and practice it through e-learning tools.

We need a change that isn't just about the way we deliver information to the student but includes two other aspects, namely: the material presented in the curriculum and the

appropriateness of the method used in teaching. It is not enough to submit the educational material electronically only. Regardless of its content, level and importance, the basis for success in education is the curriculum and then the method. Is it traditional or electronic? (Akkad, 2010).

Here comes the role of the teacher as a supervisor of education. He is aware of the teaching method and the method used, whether it is successful or not. And strive to find the appropriate alternative. Then he works on using the available technological means to present the lesson. This is to achieve the educational return of e-learning for learners and teachers. As can be seen in Table 1:

Table 1. Return educational e-learning for learners and teachers

Teachers	Learners
Ease of providing the material with what is new. Diversity of views (3D graphics, slides, etc.) Shifting from the lecturer to other electronic methods may attract the attention of students. Graduation in education moves from one stage of gain to another.	Advancement according to one's own abilities. Learning in a suitable environment for the learner. Learning without taking into account individual differences. The possibility of discussion and interaction electronically or orally (cooperative education)

4. Analysis of previous studies

Ahmed's (2014) study was titled 'The Availability of E-Learning Competencies for Faculty Members in Faculties of Education in Sudanese Universities'. The study dealt with the field of education and the subject of this study is the availability of e-learning competencies among faculty members in the faculties of education in Sudanese universities in the state of Khartoum for the academic year 2013/2014. The problem of the study is summarised in the academic limitation of the faculty members in the faculties of education in Sudanese universities to the traditional methods, means and strategies, which in turn led to the neglect of modern methods, methods and strategies represented in e-learning. The importance of this study in revealing the multiple roles that a faculty member should play, as the needs of learners and the educational situations that they go through and keep pace with change. Recent developments in the era of Sharia transformations. The study aimed to identify the level of availability of e-learning competencies, and the extent to which faculty members in the faculties of education in Sudanese universities in the state of Khartoum practice e-learning competencies and include them in resolution. It consists of 88 phrases as a tool. Interviewing with several educational technology experts to complete. This study found that, through which study reached results, the competencies of using the computer and the Internet among the faculty members in the faculties of education in the Sudanese universities in the state of Khartoum are available to a moderate degree, and the competencies of planning and evaluation are available to the faculty members in the faculties of education in the Sudanese universities in the state of Khartoum to a large extent.

The study by Abu Swar (2013) was titled 'The Effectiveness of Using the E-Book in the Academic Achievement of Computer for the Secondary Stage'. The study aimed to identify the effectiveness of using the electronic book in the academic achievement of computer subjects for the secondary stage. The problem of the study was the lack of maximum benefit from the properties of the computer in the educational process, in addition to the failure to use lessons and practical experiences for computer lessons that need to conduct laboratory experiments. We raise the importance of this study from its use of the computer as an educational tool modern available in it all multimedia, which is difficult to be available in others. The study aims to know the effect of using the electronic book on raising the level of learners' achievement compared to using the traditional book. This was done by designing an educational programme in the computer book for the first grade of secondary school, in addition to knowing the extent of significant differences indicating a statistical reduction in the variance in learners' achievement between the control and experimental groups, as well as the knowledge of the extent to which there are statistically significant differences in excellence in learners' achievement between the control and experimental groups. The study sends the experimental method. Among the most important findings of the study is that: It proved the effectiveness of the use of the electronic book in the education of female students. It also has a positive relationship with raising the level of achievement among students. And it leads to reducing the degrees of variance among the female students and homogeneously distributing them, as well as the presence of statistically significant differences at the level (α = 0.05) between the average (average) of the scores of the female students in the experimental group and the students of the control group in the post-test, which confirms the positive impact of computer use in teaching computer subject. The study also demonstrated the distinction between female students who studied using the electronic book compared to those who studied using the traditional method.

Hussein's (2012) study was titled 'The Impact of E-Learning Using the Educational Wave on Students' Achievement in Physics for the Tenth Grade in the Basic Stage – An Applied Study on the Basic Schools of the Directorate of Education in Jaras Governorate (2010–2012)'. The study aimed to know the impact of e-learning through the educational wave system on students' achievement in physics for the 10th grade in public schools affiliated with the Jordanian Directorate of Education in Jerash Governorate with a comparison between using the e-learning strategy and traditional education and measuring the effectiveness of education electronic in teaching during the years 2010–2012 AD. The problem of the study was represented in the difficulties facing the process of teaching physics with the lack of financial capabilities to conduct it. Scientific experiments that help enrich students' understanding, and highlight the importance of the study in highlighting the use of e-learning as an aid in teaching in the field of physics to know the impact of this method on students' achievement, positively or negatively and the feasibility of electronic image and sound design. The study aimed to compare and measure the method of e-learning and traditional education and to identify the effectiveness of electronic image and sound design in teaching. And motivate teachers to use modern technologies in teaching methods by presenting the concepts of electronic design and educational software used in this field. The study used the experimental research method to control one of the independent factors mentioned in the study, which is the teaching strategy used. The sample of the study consisted of 100 male and female students in the 10th grade from government schools affiliated with the Directorate of Education in Jerash Governorate.

The study reached the following results: strategy e-learning on the traditional method at the level of achievement of 10th-grade students in physics. Females outperform males in educational attainment when teaching by e-learning method and to effect. The interaction between the e-learning strategy and gender in the educational attainment of the 10th-grade students in the study. It is necessary to teach physics using the wave system educationally. Training students on e-learning strategy and design in schools. Or for educational supervisors and curriculum developers only, the study recommended adopting the e-learning strategy and introducing it more broadly into school curricula to increase scientific understanding and manage physics. For researchers and those interested in the field of scientific research, the study recommended conducting other studies comparing e-learning and other teaching methods and their impact on achievement, and comparing the impact of e-learning prepared by the teacher and those prepared by students themselves and the impact of this on achievement and other variables. The study suggests conducting more studies such as a comparative study of education. The electronic and traditional methods of education in terms of the impact of each on the educational achievement of students and the acquisition of scientific processes.

Kmtor and Hayati's (2011) study was titled 'The Importance of Employing E-Learning in Developing Public Education Programs in Sudan'. The study aimed to shed more light on the importance of effective employment of information and communication technology in developing public education programmes in Sudan and improving its outcomes. The study also addressed the obstacles to employing e-learning in public education programmes in Sudan. And the ways that can be taken to overcome these obstacles to reach the best solutions, which contribute to the promotion and development of public education programmes. The study also indicated the importance of adapting information and communication technology to facilitate the educational process, enabling the student to learn according to his abilities and preparations. The study also showed that e-learning based on the effective use of information and communication technologies is one of the best ways to develop education and raise its quality. It also called for the need to change the look of e-learning from mere tools and means for the teacher to being a teaching system within an educational system that requires good planning and the right environment. Finally, the study suggested the establishment of a national centre to produce. The development of educational software devolves its dependence on the Sudanese presidency.

Hassan's (2010) study was titled 'design an electronic book in the plant classification course at the University of Khartoum according to Gagnier and Briggs template and its impact on academic achievement and trends'. The study aimed to design and test an electronic book in the plant classification course, Department of Biology, Faculty of Education, University of Khartoum and to know the students' attitudes towards the e-book. The researcher used descriptive-analytical and experimental methods. The study tools are a questionnaire, achievement tests and an electronic guide provided to students. Among the most important results that have been reached: The e-book in the plant classification course leads to an increase in students' academic achievement. There are statistically significant differences in students' attitudes towards using e-books in teaching due to students' enrolment in training courses in the field of computers.

Al-Ghamdi's (2010) study was titled 'The Role of School Administration in Activating Blended E-Learning'. The study aimed to identify the reality of the school administration's role in activating blended e-learning in the Royal Commission schools in Jubail and to identify the requirements for

activating the school administration for blended e-learning in the Royal Commission schools in Jubail. The researcher used the descriptive method and used personal interviews as tools for collecting study data. The study concluded that there are shortcomings in the reality of the role of school administration in activating integrated e-learning in the schools of the Royal Commission in Jubail Industrial through administrative processes (planning, organising, directing, controlling and evaluating). And the existence of obstacles to activating the school administration for the integrated e-learning that it included resolution and the approval of the corresponding personnel on the requirements of activating the school administration for integrated e-learning in the schools of the Authority in Jubail Industrial.

Osman's (2009) study was titled 'Electronic Classes and their Role in Achieving the Concept of Distance Education'. The study aimed to address the concept of electronic classes and the role of these classes in facilitating the task of receiving academic information and academic curricula in a way that does not require the presence of students and scholars in one place, especially in the programmes of affiliated students and distance education. The study also aimed to find out the concept talking about distance education and its connection with electronic classes that are closely related. The importance of these students and teachers who use electronic classroom technology to receive courses in the field of computers and the Internet to facilitate communication and correct performance between each other. Use the descriptive analytical method, as a tool for resolution. The interview is with the student community of distance learning centres with a random sample of 212 male and female students. Among the most important results that were reached is that the technology of electronic classrooms did not start effectively in distance education centres. And that knowledge of computer and Internet technologies is the backbone of dealing with electronic classroom technology.

Al-Ahmadi's (2008) study was titled: 'The Effectiveness of E-Learning in the Achievement and Retention of Female Students of Social Sciences at the College of Arts and Humanities in Madinah'. The study aimed at the effectiveness of the use of the electronic course on the Internet and the effectiveness of the use of educational software in the achievement of female students and keep the mat the College of Arts and Humanities for Girls, and to determine the effectiveness of both the online e-course and the educational software in achievement and retention. The study used an achievement test and educational programming. The study reached the following results: There are no significant differences in indication statistics at level (α = 0.05) between the control group that studies (in the usual way) and the first experimental group (which studies using 'educational software') in the application dimensional achievement test. There are no statistically significant differences at the level of (α = 0.05) between the control group that studies (in the usual way) and the second experimental group (which studies using the global network 'Internet' course) in achievement.

Al-Masry (2008) was titled 'Analysis of Postgraduate Students' Attitudes at the Hashemite University towards E-Learning Applications'. The study aimed to analyse the attitudes of postgraduate students in the Faculty of Educational Sciences at Hashemite University towards e-learning applications and know the impact of both the cumulative average and experience in the electronic courses. The study sample consisted of 70 male and female students from the master's

program in the College of Educational Sciences, who were chosen by the simple random method. The study used the descriptive survey method and used the resolution constituent. Out of 44 items developed to assess students' attitudes. The study reached the following results: There are positive attitudes among students of postgraduate studies in the College of Educational Sciences towards e-learning applications. There are no statistically significant differences in the attitudes of graduate students towards e-learning applications due to the cumulative average and experience in the electronic courses. Based on the results, the study recommended the following: Expand further the use of e-learning applications at Hashemite University and with postgraduate students in particular, as they are future e-learning leaders, as this type of learning is constantly renewed, which makes students connected to everything new in the world of education mail. Conducting more studies in the field of e-learning and addressing other topics such as blended learning, and other variables such as academic level and student gender.

Abdel-Atiy's (2010) study was titled 'The Impact of E-Learning and Blended Learning on Skills Development and Design for Educational Web Sites for Professional Diploma Students towards Learning Technology'. The study aimed to know the effect of e-learning and blended learning in developing skills and designing educational websites for professional diploma students towards e-learning technology. The study sample consisted of 36 male and female students divided into 3 equal groups. The study tools that were used are achievement tests, the scale of task performance and design and production skills for websites and the scale of students' attitudes towards e-learning technology. The study reached the following results: There are statistically significant differences between the average achievement in the cognitive aspect of design and production skills for educational websites for the three groups. There are statistically significant differences between the averages of achievement on the cognitive side of the group of students who studied through traditional education and the averages of achievement on the cognitive side of the group of students who studied through e-learning in favour of traditional education. There are statistically significant differences between the achievement averages on the cognitive side of the group of students who studied by blended learning methods, and the average degrees of achievement in the cognitive aspect, for the group of students who studied through e-learning, in favour of blended learning.

The study of The Light (2007) was titled 'The Role of Electronic Libraries in Supporting Distance Education'. The study aimed to identify the role of the electronic library in the service of distance education, as it touched on its definition, objectives and justifications, as well as the use of modern technology in libraries in addition to the role that libraries play in providing distance education services. He dealt in detail with the forms of distance education services provided by libraries, including the virtual classroom, electronic publishing in its various forms, including books and electronic periodicals, the Internet and e-mail services that help the distance education study in responding to their inquiries, and reads embedded and video conferencing and the role of librarians in the distance education process.

Zein El Din's (2006) study was titled: 'The Impact of E-Learning Experience in Egyptian Preparatory Schools on Students' Academic Achievement and Their Attitudes Towards'. The study aimed to investigate the impact of e-learning in Egyptian preparatory schools on students' academic achievement and to build a scale to measure students' attitudes towards it. The study was applied to

the third preparatory grade students in three schools in Port Said Governorate, Qena Preparatory School for Boys, IbnSina Preparatory School for Boys and the Rightly-Guided Caliphs School boys in general (2005/2006 AD), numbering 112 students, divided into 3 groups, two experimental groups. One of them studied utilising e-learning via networks and the other about computer-based e-learning, and the third was the control group by the method traditional. The study method is descriptive, analytical and empirical, and the use of achievement tests and attitude measurement as tools for the study. The most important findings of the study are: There are no statistically significant differences between the students of the two experimental groups and the students of the control group in their achievement in mathematics, but the results indicate that the average scores of the two experimental groups are better than the average scores of the control group that studied through computer education, outperforming those who studied via e-learning via networks and the researcher attributed this to the forms of the latter group on the Internet, non-educational sites and listening on the Internet.

Ghanem's (2005) study was titled 'Necessary Standards to produce. The use of computer multimedia programmes and its impact on achievement in middle school'. The study aimed to measure the effectiveness of teaching by the computer-based base analyser system and the effect of the student's gender on the achievement of some Arabic grammar (constructive and Arabic verbs). The researcher used a sample of 60 students, half of whom were female students in the second grade of a literary secondary school in the city of Homs. After conducting the post-test, the researcher concluded that the achievement level of the experimental group that used the computer base analyser system was higher than the achievement level of the students of the control group.

Amer's (2004) study was titled 'Teaching Chemistry Using Multimedia Computers and the Internet'. When using multimedia in teaching chemistry, we can achieve the following goals: To develop the ability to imagine and visualise, and this leads to the development ability to think of the student. Raising the efficiency of teaching by introducing new teaching methods for learning in chemistry. Make chemistry a subject of interest and attraction for students through moving images, sound and three-dimensional shapes that help in visualising the molecular structures of matter. Develop the ability to analyse and synthesise concepts together in integrated systems. Creating a generation capable of dealing with modern technology such as computers and the Internet. Develop students' ability to search and browse using the Internet. Developing chemistry teaching methods using these distinguished media creates a new dimension in chemistry teaching.

The study sample was 120 students from the second-year level of Riyadh Teachers College in the Department of Chemistry. As for the first section of the tools used in preparing the research, they were as follows: bourbon. Adding to it some programs to add three dimensions for display, a program that prepares animated images, a flash program to display the material with sound and animation, video clips to display previously short films for laboratory experiments, a two- and three-dimensional image using programs provided by the Internet service, interactive chemical programs and program default for a general chemistry lab. These tools are prepared in advance to help introduce the curriculum to students and are available on a CD.

The second section consists of the syllabus material, which is stored on the cylinder Integrated and prepared in advance, taking into account this systematic approach in the interdependence of the scientific subject, which includes each of the following approaches: General Chemistry, Organic Chemistry – Methods of Instrumental Analysis – Chemistry of Organic Industries. Among the results of the study are the following: The use of the computer as an educational tool led to better results than teaching by way traditional and saved Some time in teaching compared to the normal time spent in class for the same amount of material educational and develop more positive attitudes towards computers, computers and raising the level of achievement students and help students in training and rehearsing in the conduct of mathematical operations and provides special attention to each student according to his abilities, preparations and scientific level, which helps the student to control the learning process and to rely on himself in the achievement of academic subjects.

Feedback on previous studies is similar to this study dealing with e-learning, most of which dealt with its main themes. And the survey evaluation study to determine the availability of this type of education.

The researcher has benefited from previous studies in the theoretical aspect of the study by examining literature and books related to the topic. On the other hand, this study differed from previous studies in addressing the requirements of e-learning in the university educational process. While previous studies dealing with various aspects of e-learning such as electronic classes, electronic libraries and e-books, such as the Abu Sowar study, which dealt with the effectiveness of using the e-book in the academic achievement of computer subjects for the secondary stage, and Hassan's (2010) study in dealing with the design of the e-book in the plant classification course.

5. Conclusion

This research aimed to know the requirements for the use of e-learning in university education. The research dealt with some of the basic elements necessary to start e-learning, and analysed educational literature and previous studies. Some of the most important results are as follows:

1. Weak knowledge of the uses of e-learning in university education.
2. The administration's lack of interest in developing teachers' skills in using e-learning in their teaching.
3. Lack of an interactive teaching environment full of educational technology resources.
4. Lack of academic cadres specialised in e-learning.
5. Educational content does not help with the use of technology in teaching.
6. Weak teachers' electronic research skills.
7. Difficulty accepting training in the field of employing technology in education.
8. Weak financial support for teacher training programmes on e-learning.
9. Lack of materials and equipment for training in the field of e-learning.
10. Lack of technical and technical supervision of electronic devices and equipment.
11. There are no e-learning buildings inside the university.
12. The additional burden on the teacher in light of e-learning.

Based on the research findings, the researcher proposes several recommendations to activate the use of e-learning in university education, which are:

1. One of the goals of e-learning is to teach teachers according to their needs and capabilities.
2. Establish clear and specific e-learning goals for teachers.
3. Taking the opinion of experts and specialists in the field of e-learning and employing it in teaching.
4. Develop e-learning plans according to the possibilities available at the university.
5. Online preparation and continuous training for teachers.

Based on the research findings and recommendations, the researcher proposes several research studies for future studies, namely:

1. The role of e-learning in improving the university educational process.
2. The development of e-learning at the university education stage in light of contemporary global trends.
3. An evaluation study on the role of the teacher in university e-learning.

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