

E-Learning as a Model for Utilizing Digitalization in The Higher Education Sector

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Abstract:

Elevating universities to the ranks of world-class institutions depends on the effective implementation of higher education quality systems. This can only be achieved by keeping pace with the global knowledge revolution and digitizing the educational process through the integration of modern information and communication technologies (ICT) into all aspects of education. Such integration is crucial for enhancing university outcomes, achieving sustainable development, and advancing toward a knowledge-based society.

Keywords: Digitization, Higher Education, E-learning, University Student.

Introduction:

The international landscape has witnessed rapid changes driven by a knowledge revolution it self the product of significant technological advancement. This shift compels universities to modernize their educational systems, moving from traditional to contemporary models by integrating Information and Communication Technology (ICT) into the educational process.

This evolution aligns with the technological boom that has transformed traditional concepts, paving the way for a new mode of learning: e-learning.

Algerian universities have a pressing need for this type of education, particularly given the challenges they face such as the rising number of incoming students and the institutional obligation to provide adequate academic placements, educational resources, and social services. Furthermore, there is a necessity to keep pace with the times by updating curricula to meet the demands of both local and global labor markets. Like universities worldwide, Algerian institutions also faced a formidable challenge with the onset of the COVID-19 pandemic; the imposition of a months-long lockdown rendered in-person instruction impossible, necessitating a shift to remote learning via digital applications to complete the 2019–2020 academic year.

Against this backdrop, we address the central research question:

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To what extent is remote learning effective in ensuring comprehensive and practical academic achievement for university students?

Section One: The Concept of E-Learning

To precisely define the concept of virtual education, we begin by defining it and outlining its types (Requirement One), followed by an examination of its benefits and the practical obstacles it faces (Requirement Two).

Requirement One: Definition and Types of E-Learning

In this context, we address the definition of e-learning (Subsection One) and then discuss its types (Subsection Two).

Subsection One: Definition of E-Learning

Researchers have differed in establishing a specific, unified concept for the term "e-learning" as is the case with many other terms. These differing perspectives are outlined below:

First: E-Learning as a Method

Some scholars (including author Abdullah Mousa) have considered e-learning to be a teaching method that utilizes modern communication mechanisms such as computers, networks, and multimedia (audio, video, graphics, search tools, electronic libraries, and internet portals) whether conducted remotely or within a traditional classroom setting¹.

Second: E-Learning as a System

Other scholars (including author Mansour Ghalem) have viewed e-learning as an electronic system that employs information technologies and computer networks to support and expand the scope of the educational process. This is achieved through various means, including computers, the internet, and software applications developed either by ministry specialists or by private companies.

Third: E-Learning as a General Concept

In essence, e-learning is an educational method that utilizes modern communication tools—such as computers, networks, and multimedia (audio, video, and graphics) alongside search mechanisms², electronic libraries, and internet portals. Whether conducted remotely or within a physical classroom, the core objective is to leverage technology in all its forms to deliver information to the learner efficiently, minimizing time and effort while maximizing educational benefit.

Section Two: Types of E-Learning

The types of e-learning vary according to the perspectives of those involved in the field, and definitions differ based on the implementation environment whether virtual or real-world. The classification is as follows:

First: Synchronous E-Learning

This refers to direct e-learning that requires the simultaneous presence of both the learner and the instructor to facilitate direct interaction. It utilizes internet technologies to deliver and exchange lessons and research topics

Such as through real-time dialogue or virtual classrooms. A key advantage of this type of learning is that the student receives immediate feedback from the instructor. Conversely, a potential

¹ - Mohamed Mahmoud Zein El-Din, "Developing Teacher Competencies for Network-Based Education within the Network-Based Education System", 1st ed., Cairo, Alam Al-Kutub, 2005, p. 287.

² - Abdullah Al-Mousa, "E-Learning (Concept, Characteristics, Benefits, and Obstacles)", working paper presented at the First E-Learning Symposium (April 21–23, 2004), King Faisal Schools, Riyadh, p. 7.

drawback is the learner's inability to attend at the same time as the instructor, which is necessary to ensure the conditions for interaction and the provision of feedback.

Secondly: Asynchronous E-Learning

This is a form of indirect e-learning characterized by the fact that the instructor and the learner do not need to be present at the same time. The learner can interact with the educational content and communicate via email for instance¹, by sending a query to the instructor and receiving a response later. Its advantages include allowing the learner to study at a time and place that suit them, as well as the ability to review and revisit the material whenever necessary.

Its drawbacks include the learner's inability to receive immediate feedback from the instructor; furthermore, it may foster introversion, as the process takes place in isolation.

Third: Blended Learning

This is an educational approach that integrates various communication methods to teach a specific subject. These methods may combine direct classroom lectures, online communication, and self-study. Consequently, it serves as a complement to traditional, location-based education. It utilizes the Internet—along with necessary software and supplementary presentations—and partially employs e-learning tools to support, facilitate, and enhance the efficiency of traditional face-to-face instruction. Examples of the blended learning model include²:

- Before teaching a specific topic, the instructor directs students to review a particular lesson online or on a CD-ROM.
- The instructor assigns students the task of researching specific information on the Internet.
- After the lesson, the instructor directs students to visit a website and answer questions related to the material covered.

Section Two: Benefits and Obstacles of E-Learning

E-learning offers a range of benefits to the educational process (Subsection One); however, it also faces several obstacles, which we will address here (Subsection Two).

Subsection One: Benefits of E-Learning

E-learning relies fundamentally on the learner's self-reliance effectively transforming the process from "teaching" to "learning," wherein the student depends heavily on themselves³. On this basis, e-learning offers significant benefits that highlight the advantages this method holds over traditional learning.

1- Benefits for the learner:

- Learners can study what they wish, at a time of their choosing, and at a pace that suits them.
- Learners can study and make mistakes in an environment of privacy.

Learners can skip stages they find easy or unnecessary.

¹ - Mansour Ghalem, "E-Learning in Ministry of Education Schools in the State of Kuwait", working paper presented at the E-Learning Symposium (April 21–23, 2003), Riyadh, King Faisal Schools, p. 9.

² -Gheraf Nasr El-Din, "E-Learning: The Future of the Algerian University – A Study of Concepts and Models", doctoral thesis in Library Science, Faculty of Humanities and Social Sciences, Mentouri University of Constantine, 2011, p. 122.

³ - Faris Hassan Shukr Al-Mahdawi, "The Impact of Providing Synchronous and Asynchronous Internet-Based Instruction on Developing the Skills of Field-Dependent and Field-Independent Students Regarding a Computer Systems Unit—A Study of Computer Teacher-Training Students at the Faculty of Specific Education", Master's Thesis, Educational Technology, Cairo, 2005, pp. 19–21

- They can review material and delve deeper as much as needed.
- It places a vast amount of information at their fingertips.
- 2- Benefits for the instructor:**
- The instructor is not required to repeat the same explanation multiple times.
- It frees up time for the instructor to develop additional programs.
- The instructor can focus on the specific skills the learner or trainee actually needs.
- E-learning places greater emphasis on providing feedback to the learner.

- Learners have greater opportunities to develop a variety of skills.

Section Two: Obstacles to E-Learning

Despite the advantages e-learning offers in advancing the education sector, it is not without drawbacks and limitations that hinder its effectiveness and impede its adoption.

First: Financial Obstacles

The initial financial cost of establishing this service is a primary reason for the limited use of the internet in education; setting up such a network requires specific technical standards¹, and the constant evolution of software and hardware imposes an additional financial burden on universities.

Second: Technical Issues

Frequent service interruptions affecting web browsing, email, and other functions pose challenges for universities today.

These disruptions force users to reconnect to the network, often resulting in the loss of data being entered and making it difficult to return to previously visited websites.

Third: Reluctance to Adopt Technology

Reluctance among some faculty members stems from three factors: first, a lack of awareness regarding the technology's importance; second, an inability to use it; and third, limited computer usage.

Fourth: The Language Barrier

Global studies on scientific internet content indicate that Arabic accounts for no more than 1% of all online content, whereas English represents 68.6%. This is a negligible figure for the Arab world; consequently, those who have mastered English are best positioned to fully benefit from the network.

Fifth: Access to Prohibited Sites

Intellectual, ethical, social, and political security are among the core principles emphasized and indeed the objectives pursued by educational institutions at all levels.

Since internet access is not restricted to a specific, educated, or discerning demographic, a significant challenge arises regarding access to websites that promote the rejection of values and ethics, as well as rebellion and disobedience. To mitigate this, some educational institutions have implemented specialized programs often referred to as "protective barriers" to block access to such sites.

¹ - Iman Mohammed Tursan Hashim Mohammed Niazi Al-Bukhari, "Speaking Skills: Perspectives of Secondary School Teachers and Supervisors in Jeddah", Doctoral Dissertation, Curriculum and Instruction, Jeddah, 2009, p. 64.

Sixth: Accuracy and Critical Assessment

Scientific studies suggest that most researchers place their trust in online information, accepting it as accurate and correct. This approach is flawed in the context of scientific research, as the internet contains unknown or, at the very least, dubious websites¹.

Therefore, researchers and network users must exercise accuracy and critical judgment, evaluating the available information before incorporating it into their research.

Section Two: An Overview of Selected International Experiences in E-Learning

Many advanced nations have sought to leverage e-learning and distance education applications to enhance university education. They have undertaken notable initiatives in this field experiences that merit study and analysis to derive insights and build upon them in developing an optimal e-learning and distance education system.

In this context, we will focus on the experiences of the United States and Tunisia (Subsection One), before turning to the current state of e-learning within Algerian universities (Subsection Two).

Requirement One: The Experiences of the United States and Tunisia

Here, we address the United States' experience with education in a digital environment (Part One), followed by the experience of Tunisia (Part Two).

Subsection One: The United States Experience

A 1993 study revealed that 98% of primary and secondary schools in the United States had one computer for every nine students; today, computers are available in all American schools 100% without exception.

Information technology is considered by US policymakers to be one of the six most critical issues in American education, and by 1995, the US had finalized its plans for computer applications in the educational sector.

States raced against time to implement and utilize distance learning methodologies in their schools².

They prioritized teacher training enabling teachers to assist both their colleagues and their students and focused on establishing the necessary infrastructure, ranging from computers and inter-school networks to effective educational software integrated into the curriculum.

It can be said that the introduction of computers and their applications in education has evolved beyond a mere national initiative to become a fundamental component of all educational curricula.

Subsection Two : The Tunisian Experience

The Virtual University of Tunisia was established through a government initiative in January 2002. As the country's tenth public university, it operates under the supervision of the official Tunisian higher education authority. The virtual education initiative launched in 2003, aiming to accommodate the rising number of higher education students a figure that has grown significantly in recent years.

¹ - Iman Mohammed Tursan Hashim Mohammed Niazi Al-Bukhari, op.c, 2009, p. 66.

²- Daifallah Nassim, "Improving the Quality of the Educational Process: A Study of a Sample of Algerian Universities", Doctoral Dissertation in Management Sciences, Faculty of Economic, Commercial, and Management Sciences, Hadj Lakhdar University (Batna 1), 2016–2017, pp. 194–195.

The university serves a diverse audience, particularly those outside the traditional university student demographic.

The Tunisian Virtual University is a non-profit public institution operating independently meaning it is not a branch of a traditional university. It aims to award academic degrees through collaboration and partnerships with other Tunisian and foreign universities. To this end, it established a scientific and technical cooperation program with international institutions, culminating in 2002 agreements with the University of Picardie Jules Verne (France) and Georgia State University (USA), as well as a partnership with the Open University of Catalonia (Spain). The university utilizes the Internet, providing a website that enables users to communicate via email and participate in discussion forums with tutors and fellow students, while also facilitating online registration and coursework¹.

Furthermore, the courses are developed in-house by the faculty; the university won the Arab e-Content Award, overseen by the World Summit Award (WSA) office.

The university focuses on three types of education: university degree programs, continuing education, and lifelong learning. It began its experience in the field of business administration, and its academic program also encompasses communication, management, and project planning. Looking ahead, the university plans to offer Bachelor's and Master's degree programs.

Requirement Two: The Reality of E-Learning in Algerian Universities

To achieve the Ministry's objective of implementing distance learning, an agenda covering short, medium, and long-term horizons was established. This agenda reflects immediate and future priorities, aiming to alleviate staffing and supervision shortages while improving the quality of training in line with quality assurance standards. It also seeks to introduce new training and teaching methods—incorporating innovative pedagogical procedures—throughout the educational process. Consequently, a national distance learning project was launched, aiming to achieve goals distributed across three phases²:

- **Phase One:** The technology utilization phase, specifically focusing on video lectures to accommodate large numbers of learners while tangibly improving the standard of education and training (short-term context).
- **Phase Two:** This phase involves the adoption of modern pedagogical technologies, particularly web-based solutions (online learning or e-learning), with the aim of ensuring quality (medium-term context).
- **Phase Three:** This is the integration phase, during which the distance learning system is officially approved and rolled out across universities. Its scope of application and utility extends far beyond the university setting, targeting a broad audience of learners including individuals seeking to expand their knowledge, those requiring specialized training, people in their thirties, hospital patients, and those in recovery, among others.

Distance learning currently relies on a network of video lecture and e-learning platforms distributed across the majority of training institutions, with access available via the national research network. In Algeria, for instance, distance learning models are implemented in—though not limited to the following areas:

-Video-Lecture Network:

¹ - Daifallah Nassim,opc , Page 196.

² - Mohamed Mahmoud Zein El-Din,opc , p. 300.

In the short term, the priority is to rationalize the use of human and material resources by establishing a video-lecture network that integrates all university institutions—comprising 13 transmitting sites and 46 receiving sites. Although the network supports the recording and delayed broadcasting of lessons, it is primarily used for synchronous sessions requiring the simultaneous presence of the professor, the facilitator, and the student.

-E-learning System Based on a Client-Server Distance Learning Platform:

This e-learning model enables the preparation of and access to online resources in an asynchronous (time-shifted) manner. Learners can access the platform anytime and anywhere, with or without a facilitator present. The platform allows professors to employ various online methods such as lectures, exercises, practical sessions, activities, and training while providing the learner with a rich, diverse, and persistent pedagogical environment.

Conclusion:

In conclusion, e-learning represents a significant opportunity for students who face difficulties enrolling in traditional universities, as it allows them to learn from any location, using their preferred methods and schedules.

This fosters the principle that the student rather than the professor, as is customary in traditional universities drives the educational process according to their own needs.

The Algerian university system is in urgent need of this educational model, particularly given the challenges it faces, such as the growing number of prospective students and the resulting obligation to provide adequate academic placements, educational resources, and social services.

Furthermore, there is a need to keep pace with the times by updating curricula to align with the demands of both local and global labor markets.

Integrating digitalization to support the educational process is also highly regarded by academic staff; numerous studies confirm that using digital tools in the classroom positively impacts both teaching and learning. Consequently, digitalization has become essential to the educational process, owing to its significant influence and its status as a modern necessity.

We therefore propose the following Recommendations:

- Prioritize the implementation of information and communication technology (ICT) in libraries, given their pivotal role in the educational process.
- Ensure the provision of necessary classroom technology and improve network bandwidth and connectivity.

It is essential to intensify studies and research regarding the use of information and communication technology (ICT) and its impact on scientific research and its quality.

- There is a need to activate faculty training units by emphasizing specialized training courses for administrators and professors on the use of digitalization, without excluding students from this process.

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