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Distance education: concept and Requirements

ABSTRACT

Over the past two decades, the world has experienced rapid technological advancement, enabling institutions to transition from traditional services to electronic modalities, significantly impacting the education sector. This transformation intensified following the COVID-19 pandemic, which forced the temporary closure of universities and institutes, limiting in-person access to education for millions of students worldwide. In this context, distance learning emerged as a crucial alternative to ensure educational continuity. The objective of this study was to analyze the concept of distance learning and its main associated modalities, such as e-learning and virtual education, as well as to identify its needs and the challenges it faces in the current educational context. The methodology employed was qualitative, based on a systematic and analytical review of relevant scientific literature, including academic articles, institutional reports, and specialized documents published in recognized databases. The results showed that distance learning offers significant advantages, such as flexibility, expanded access to educational resources, and the possibility of personalizing teaching and learning processes. It is concluded that, while distance learning is a viable and necessary strategy in contexts of emergency and educational transformation, its effective implementation requires sound institutional policies, adequate technological infrastructure, and ongoing training programs that guarantee the quality of the educational process.

Keywords: Distance education, e-learning, virtual education.

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Educación a distancia: concepto y requisitos

RESUMEN

En las últimas dos décadas, el mundo ha experimentado un acelerado avance tecnológico que ha permitido a las instituciones transitar de los servicios tradicionales hacia modalidades electrónicas, impactando de manera significativa al sector educativo. Esta transformación se intensificó a raíz de la pandemia de COVID-19, la cual obligó al cierre temporal de universidades e institutos, limitando el acceso presencial a la educación para millones de estudiantes a nivel mundial. Ante este escenario, el aprendizaje a distancia emergió como una alternativa fundamental para garantizar la continuidad educativa. El objetivo de este estudio fue analizar el concepto de aprendizaje a distancia y sus principales modalidades asociadas, tales como el aprendizaje electrónico y la educación virtual, así como identificar sus necesidades y los desafíos que enfrenta en el contexto educativo actual. La metodología empleada fue de tipo cualitativa, basada en una revisión sistemática y analítica de literatura

científica relevante, incluyendo artículos académicos, informes institucionales y documentos especializados publicados en bases de datos reconocidas. Los resultados evidenciaron que el aprendizaje a distancia ofrece ventajas significativas, como la flexibilidad, el acceso ampliado a recursos educativos y la posibilidad de personalizar los procesos de enseñanza-aprendizaje. Se concluye que, si bien el aprendizaje a distancia constituye una estrategia viable y necesaria en contextos de emergencia y transformación educativa, su implementación efectiva requiere políticas institucionales sólidas, infraestructura tecnológica adecuada y programas de capacitación continua que garanticen la calidad del proceso educativo.

Palabras clave: Educación a distancia, aprendizaje electrónico, educación virtual

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Educação a distância: conceito e requisitos

RESUMO

Nas últimas duas décadas, o mundo conheceu um rápido avanço tecnológico, permitindo às instituições transitarem dos serviços tradicionais para as modalidades eletrônicas, impactando significativamente o setor da educação. Esta transformação intensificou-se após a pandemia de COVID-19, que obrigou ao encerramento temporário de universidades e institutos, limitando o acesso presencial à educação a milhões de estudantes em todo o mundo. Neste contexto, a educação a distância surgiu como uma alternativa crucial para garantir a continuidade educativa. O objetivo deste estudo foi analisar o conceito de educação a distância e as suas principais modalidades associadas, como o e-learning e a educação virtual, bem como identificar as suas necessidades e os desafios que enfrenta no contexto educativo atual. A metodologia empregue foi qualitativa, baseada numa revisão sistemática e analítica da literatura científica relevante, incluindo artigos académicos, relatórios institucionais e documentos especializados publicados em bases de dados reconhecidas. Os resultados mostraram que a educação a distância oferece vantagens significativas, como a flexibilidade, o acesso alargado aos recursos educativos e a possibilidade de personalização dos processos de ensino e aprendizagem. Conclui-se que, embora o ensino a distância seja uma estratégia viável e necessária em contextos de emergência e transformação educativa, a sua implementação eficaz exige políticas institucionais sólidas, infraestruturas tecnológicas adequadas e programas de formação contínua que garantam a qualidade do processo educativo.

Palavras-chave: Educação a distância, e-learning, educação virtual

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INTRODUCTION

The world has witnessed significant advancements in the use of information and communication technologies (ICTs), revolutionizing all fields and ushering humanity into a new era. Information has become a fundamental force of production. ICTs now symbolize an age based on information and knowledge (García Aretio, 2021; Muhaimin et al., 2023; Koh, & Daniel, 2022).

Keeping pace with this rapid development has become crucial, particularly in education, and leveraging technological innovations to enhance the efficiency of the educational process. ICTs have provided new methods and tools for education, including the use of computers, satellite channels, and the internet, enabling learning anytime, anywhere through diverse methods of delivering educational content (Espina-Romero, 2022).

E-learning is a method of learning that utilizes modern communication tools such as computers, networks, and various media including audio, video, graphics, search engines, electronic libraries, and internet portals, whether remotely or in the classroom. (Tariq Abdul

Raouf, 2014). It allows learners to interact with the material with minimal effort, achieving greater learning outcomes and benefit, while enjoying flexibility in terms of time and location (Li et al., 2022).

Some consider e-learning to be an interactive system of distance education that relies on an integrated digital environment. This environment is designed to develop and deliver courses via electronic networks, provide guidance and instruction, organize assessments, manage resources and processes, and evaluate learning (Sánchez Díaz & Dávila Rojas, 2024).

E-learning has spread rapidly due to its advantages and benefits, allowing it to overcome many obstacles and solve numerous problems, such as the information explosion and the increasing demand for education. It significantly enhances the effectiveness of learning. In some countries, distance learning has helped alleviate the problem of overcrowded lecture halls (Snoussi & Radwan, 2020; Aretio, 2022).

Technological tools have also transformed the educational system and its constituent elements, shifting the role of the teacher to that of the learner. We now speak of the teacher as a facilitator and guide, and the learner as a researcher and explorer. This transformation extends to scientific programs and content. E-learning has provided an interactive learning environment for exchanging opinions and experiences, leading to increased learner engagement and motivation, and developing thinking, writing, language, and communication skills (Sari & Nayır, 2020; Paiva et al., 2021).

Furthermore, e-learning helps remove learning obstacles, promotes self-directed learning, expands learner options, and improves the quality of education. This latter aspect involves ensuring that the educational system meets specific standards and requirements, including the objectives of educational programs, the teaching methods employed, and other relevant factors. Thus, e-learning is a significant and influential factor in the educational process, and indeed, it represents an effective response to the technological and information revolution worldwide, particularly the internet, benefiting from its high capacity for dissemination and coverage, and the multimedia it offers.

It is also important to note that the emergence of e-learning and the interest in it date back to the 1980s. Allan Ornstein's 1982 study is considered one of the first studies to address e-learning, highlighting some of the significant differences between this type of education and traditional education. It also revealed the changes that must accompany the technological revolution, both in terms of established principles about teaching and learning and in learning theories (Tariq Abdul Raouf, 2014).

However, it has witnessed significant development and expanded its reach with the advent of the internet and its four generations. Many countries around the world have focused on e-learning and expanding its applications, and numerous universities have established e-learning centers. This new educational trend has spread and taken on various forms, including the virtual university system and distance learning (Morán, 2022; Masalimova et al., 2022).

Algeria is no exception among the countries that have sought to keep pace with technological advancements and adopt an e-strategy across various sectors. In the higher education sector, a starting point is the European Commission's Avicenne project, which aims to support the Virtual University initiative and elevate the standards of Mediterranean universities by creating network links between them, leading to the development of educational systems (Abane Abdelkader, 2016).

The National Distance Education Project was also launched to achieve a set of objectives in phases. This began with the use of technology and video lectures, followed by the adoption

of modern internet-based pedagogical technologies such as online learning or e-learning. The final phase involves the validation and dissemination of the distance education system.

Distance education is based on a network of video lecture and e-learning platforms distributed across most educational institutions and accessed through the National Research Network (ARN).

The internet has also been utilized in numerous other processes, including the provision of university portals, virtual library services, and the digital platform for scientific journals.

With the global health crisis caused by the COVID-19 pandemic, millions of students worldwide were unable to access education due to the closure of colleges and institutes, leading to the adoption of distance learning strategies. Like other countries, Algeria adopted this option by activating online platforms (such as Moodle and ASJP CERIST) that enabled professors and students to utilize them in the distance learning process.

The crisis also revealed disparities in educational systems worldwide and the various challenges that hindered those responsible for the educational process, particularly in countries with weak infrastructure and limited resources for distance learning.

All of this prompted us to examine the concept of distance learning, related concepts such as e-learning and virtual education, and the requirements necessary for managing the distance learning process.

I. The Concept of E-Learning:

With the emergence, rapid spread, and continuous development of e-learning, researchers and specialists have attempted to define it from their own perspectives, making it difficult to agree on a single definition. Therefore, we can list several definitions, including the following:

E-learning is defined as a process of teaching and learning using electronic media, including computers and their various software programs, networks, the internet, electronic libraries, and other tools. These are all used in the process of transferring and delivering information between the teacher and the learner, and are designed for specific and clear educational objectives (Tariq Abdul Raouf, 2014).

UNESCO (2006) defined e-learning as the process of acquiring knowledge and skills through the use of information and communication technologies (ICT) (Tariq Abdul Raouf, 2014).

Basyouni (2007) defined e-learning as the design of educational curricula and training courses using various electronic media, including different types of discs and the internet with its tools, in a synchronous or asynchronous manner, and based on the principle of self-learning or teacher-assisted learning (Tariq Abdul Raouf, 2014).

Essayed Ali (2009) defined e-learning as a set of methods and strategies through which information, skills, and attitudes are developed in an individual or a group of individuals, whether intentionally or unintentionally, using the internet, computers, and their peripherals, synchronously or asynchronously (Tariq Abdul Raouf, 2014).

Among the definitions that paved the way for e-learning in its modern sense is that of Hiltz (1997), who defined it as teaching and learning defined within a computer environment, using communication technologies and information networks to change learners' behaviors anytime and anywhere (Tariq Abdul Raouf, 2014).

George Elerning (2004) defined it as the use of information networks to enhance learning and experience within a traditional or virtual online classroom as a more flexible learning environment (Tariq Abdul Raouf, 2014).

This type of education focuses on the third element of the educational triangle concerning scientific knowledge. It employs educational tools, visual aids, and production tools to deliver information to all learners, regardless of their differences.

E-learning has several objectives, including: (Tariq Abdul Raouf, 2014).

- Providing a rich, interactive, and multi-sourced learning environment. Overcoming the shortage of teaching staff through in-person and virtual classrooms.
- Enhancing teachers' abilities to utilize information technology in all educational activities.
- Transforming the teaching and learning process and developing the teacher's role to keep pace with ongoing scientific and technological advancements.
- Creating incentives and encouraging communication within the educational system, such as between home and school, and between the school and its surrounding environment.
- Developing students' skills and preparing them effectively for future demands by utilizing and leveraging information technology in education.
- Expanding students' networks through global and local communication channels, moving beyond reliance on the teacher as the sole source of knowledge, and broadening the options available to learners.
- Removing obstacles to academic achievement by providing innovative methods that stimulate student motivation.

II. The concept of distance learning:

This term is closely linked to the concept of e-learning and refers to:

The process of transferring knowledge to the learner at their place of residence or work, instead of the learner traveling to the educational institution. It is based on delivering knowledge, skills, and educational materials to the learner through various technological media and methods, where the learner is physically separated from the teacher or administrator. Technology is used to bridge the gap between the two parties, mimicking face-to-face interaction (UNESCO, 2020).

This is education that utilizes information and communication technologies, such as computers, websites, interactive video, chat programs, telephone communications, and educational television, to create interaction between the teaching environment and the student. Their physical presence in the same location is not required; it is characterized by spatial and temporal separation, enabling students to complete their education anytime and anywhere they choose (Tariq Abdul Raouf, 2014).

It is any educational model, form, or system in which students are physically separated from their universities for most of their studies (Zayed Mohamed, 2020).

It is also defined as an innovative method for delivering accessible learning environments, characterized by their well-designed, interactive, and learner-centered approach, to anyone, anywhere, at any time. This is achieved by leveraging the features and resources available in various digital technologies, along with other forms of educational materials suitable for open and flexible learning environments (Abdulmajid bin Al-Ruqi Al-Otaibi, 2019).

Distance learning is an educational model that utilizes information and communication technologies to deliver online lessons and lectures within a structured framework. Its aim is to provide a high-quality educational service that is efficient, effective, and free from traditional, formulaic learning methods. Modern technologies have contributed to the spread and development of new teaching methods and approaches (Faiza Abu Bakr Falatah, 2014).

There are two main types of distance learning:

Synchronous Learning: This is learning where the teacher and learner meet simultaneously in a real-world learning environment through a live online session. Both parties can discuss, debate, ask questions, and interact using virtual whiteboards,

interactive walls, and comment on shared media. This can be done through chat rooms or by receiving lessons via virtual classrooms, in addition to other tools (UNESCO, 2020).

Forms of synchronous learning include:

- Live audio conversations.
- Video conferencing.
- Virtual classroom.

Asynchronous learning: This term refers to the use of the internet and modern technology to deliver educational responses and practices for any subject matter to students in a non-real-time manner, while maintaining spatial and temporal separation between the teacher and the learner. This type of learning does not require the student and teacher to be physically present in the same classroom (Tariq Abdul Raouf, 2014).

Some of the most important forms of asynchronous learning include:

- Email
- Forums
- Blogs
- YouTube channels
- Wikis

Distance learning offers several advantages: (UNESCO, 2020)

- Learning opportunities: Providing educational opportunities for all learners.
- It has become a challenge in light of rapid advancements and the continuous explosion of knowledge and technology.
- Enhancing life skills and focusing on 21st-century skills.
- Flexibility: It allows learning according to suitable educational conditions that meet the needs, circumstances, and schedules of learners, ensuring the continuity of the learning process.
- Effectiveness: Research has shown that this system has an impact equal to or greater than the traditional education system, especially when distance learning technologies and multimedia are used efficiently, and this positive impact is reflected in the educational content.
- Innovation: Presenting curricula to learners in innovative and interactive ways.
- Learner Autonomy: Organizing curriculum topics and assessment methods according to learners' abilities.

III. The Concept of Virtual Education:

In its simplest definition, virtual education is defined as: employing communication technology to deliver and interact with information electronically.

Al-Ani (2003) defines virtual education as a style of education that is closer to face-to-face learning as it takes place in a classroom, except that this classroom is virtual and imaginary, existing only in computer programs on the internet and the web. It aims for mastery and quality with the least amount of effort, cost, and time (Tariq Abdul Raouf, 2014).

Virtual learning is considered a type of distance education, a learning model that delivers its services via the internet. The core idea of virtual learning is to use information and communication technologies and the internet to help learners access any education they wish to acquire, at any time and through any means they prefer. They may obtain their education from a single source or from multiple sources, and with the multitude of opportunities and fields available to them, the whole world literally becomes at their fingertips (Hadj Henni Mohamed and Roukab Jamila, 2017).

Virtual learning is also defined as: the type of education that relies on the use of electronic media for communication, receiving information, acquiring skills, and interaction between the student and the teacher, and between the student and the institution. This type of education does not require university buildings or classrooms; rather, it eliminates all the physical components of education. Learning in this method is achieved through communication and interaction between the teacher and the learner, and through the learner's interaction with other electronic learning resources such as virtual lessons, virtual libraries, e-books, and so on (Tariq Abdul Raouf, 2014).

Virtual universities are applications of virtual learning environments that offer distance learning programs via the internet. These programs are designed with the participation of professors and system administrators who contribute to supporting distance learning. Many virtual universities offer online programs for various qualifications and degrees.

Definition of a Virtual University: A virtual university is defined as an online distance learning university that caters to the needs of students who wish to continue their education without attending traditional, inflexible universities. It also meets the needs of working students and businesspeople who move from place to place, as it provides convenient access to education through fast electronic methods without requiring physical attendance. Students can access their chosen virtual university from their workplace or home using a computer and pursue their studies in a way that suits them (Tariq Abdul Raouf, 2014).

The spread of virtual universities has increased in many Arab and foreign countries as a result of the tremendous advancements in information and communication technologies. Examples include the Virtual University of Kentucky in the United States, Athabasca Virtual University in Canada, and Queensland Virtual University in Australia, in addition to some Arab virtual universities, such as the Syrian Virtual University and the Tunisian Virtual University.

The virtual university is considered a modern form of distance education, and therefore its objectives stem from those of distance learning in general. These objectives can be summarized as follows:

- Integrating technology into the educational system by using it effectively in the learning process.
- Ensuring quality, which is a vital element for supporting the virtual university and sustaining its programs so that it can compete with other virtual universities.
- Achieving educational democratization by opening educational opportunities to those who have not had access due to economic, social, age-related, or geographical circumstances.
- Fostering self-directed learning through a learning environment that empowers students to research and learn independently, and by training them in many self-directed learning skills needed in the job market.
- The virtual university strives to provide education that meets the demands of society and the needs of the job market by continuously innovating and developing its programs to keep pace with evolving circumstances.
- Achieving lifelong learning and continuing education.
- Providing learning opportunities through the internet and access to interactive content and features.
- Providing technological training opportunities in its various aspects.
- Reducing the pressures faced by traditional higher education and eliminating the constraints of time and place.
- Developing students' creative abilities and their capacity to achieve goals and formulate the necessary plans to address emerging challenges.

IV. E-Learning Requirements:

To manage the distance learning process and achieve its objectives and benefit from its advantages, a number of elements must be available, which constitute the requirements for achieving distance learning:

- **Pedagogical Component:** This relates to the content of e-learning, its objectives, the teaching strategies used in delivering the content, the media used, and other pedagogical aspects.
- **Technological Component:** This pertains to the infrastructure of e-learning, including computers, peripherals, and networks. It also includes the design of programs, courses, online platforms, browsers, and other related elements. Furthermore, it involves the availability of specialists in digital content creation and educational materials.
- **Administrative Component:** This relates to the management of e-learning, including providing administrative services to e-learning users such as registration, exam administration, and other related tasks.
- **Providing guidance and support,** both educational and technical, and establishing a team to monitor and address any problems that arise in the educational process.
- **Establishing ethical guidelines** for the interaction of teachers, learners, and others with software, exams, and other online content.
- **Enacting laws and regulations** governing the e-learning process and the required standards.
- **Conducting continuous and realistic evaluations** of the distance learning process and developing strategies to improve educational outcomes and results.

CONCLUSION

There is no doubt that distance learning has become a global emergency measure as a result of the unprecedented circumstances imposed by the COVID-19 pandemic. The sudden closure of educational institutions revealed both the potential and the limitations of educational systems worldwide, positioning distance learning as a strategic alternative to ensure the continuity of teaching and learning processes. Beyond its role in times of crisis, distance learning has demonstrated its relevance as a flexible and accessible educational model capable of responding to contemporary societal and technological demands.

However, distance learning should not be conceived as a complete substitute for traditional face-to-face education. Instead, it must be understood as a complementary approach that enriches conventional teaching practices. In this regard, blended learning emerges as the most promising educational model for the future, as it combines the strengths of in-person instruction with the advantages offered by digital technologies, fostering more inclusive, dynamic, and learner-centered educational environments.

The effective implementation of distance learning requires the availability of significant material, technological, and human resources. This includes adequate digital infrastructure, reliable internet connectivity, and access to appropriate technological tools. Equally important is the continuous training of educators and students in digital competencies, as well as the development of pedagogical strategies that promote interaction, engagement, and meaningful learning in virtual environments.

Finally, the success and sustainability of distance learning depend largely on institutional commitment and supportive public policies. Educational institutions and governments must establish clear regulations, quality standards, and ethical guidelines that govern distance education practices. Moreover, long-term planning, ongoing evaluation, and investment in digital resources are essential to legitimize and consolidate distance learning as an integral component of modern educational systems.

LIMITATIONS OF THE STUDY

This study has some limitations that should be considered when interpreting its results. First, it was a qualitative study based exclusively on a review and analysis of scientific literature, and therefore did not include fieldwork or the application of empirical instruments to teachers or students. Furthermore, the analysis relied on secondary sources available in academic databases, which may have limited the inclusion of recent practical experiences in specific educational contexts. Finally, although different international realities were addressed, the study did not delve into the particularities of each educational system in a comparative manner, which restricts the generalizability of the findings to specific local contexts.

FUTURE STUDIES

Based on the results obtained, it is considered pertinent that future research adopt quantitative or mixed methodological approaches that allow for an empirical analysis of the impact of distance learning on academic performance, student motivation, and educational quality. Similarly, it is recommended to develop comparative studies between face-to-face, online, and blended learning modalities, as well as research focused on specific contexts, especially in developing countries. It is also relevant to delve deeper into the analysis of the digital divide, teacher training in technological skills, and the effectiveness of online platforms used in higher education.

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