

Challenges of Digital Pedagogy in the Algerian University - Analytical Study -



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Abstract

This study aims to highlight and provide a clear picture of the most significant requirements and obstacles facing digital pedagogy in Algeria. Digital pedagogy plays a crucial role in Algerian universities. This research endeavors to demonstrate its effect on Algerian higher education, evaluate the present state and importance of digital pedagogy, and identify issues that impede its effectiveness. Furthermore, it reviewed the importance of digital pedagogy in enhancing university education by facilitating access to diverse knowledge, making the educational process more engaging, and improving accessibility for students and professors. The study concludes that the use of digital pedagogy in university education is still in its early stages in Algeria. Therefore, it is essential to provide the necessary resources and address all obstacles to its adoption within university educational institutions.

Keywords

Digital pedagogy;
Information technology;
University.

الكلمات المفتاحية

البيداغوجيا الرقمية؛
تكنولوجيا المعلومات؛
الجامعة.

تحديات البيداغوجية الرقمية في الجامعة الجزائرية - دراسة تحليلية -

ملخص

تهتم هذه الورقة البحثية إلى إبراز وإعطاء صورة واضحة عن أهم المتطلبات والمعوقات التي تواجه البيداغوجية الرقمية في الجزائر، وتتمحور المشكلة الرئيسة للدراسة حول ماهي أهم التحديات التي تواجه البيداغوجيا الرقمية في الجامعة الجزائرية؟ ودراسة واقعها وآلياتها في قطاع التعليم العالي، وتتمثل فرضية الدراسة في أن البيداغوجيا الرقمية دور كبير في الجامعة الجزائرية، وتهدف هذه الدراسة إلى تبيان أثر البيداغوجيا الرقمية على التعليم الجامعي الجزائري، في محاولة لتقييم واقعها وأهميتها وتشخيص مفاصل الخلل التي تعيقها عن أداء دوره على أكمل وجه، وتستعرض الدراسة إلى أهمية البيداغوجية الرقمية في تحسين أداء التعليم الجامعي، من خلال مساهمتها في تيسير إدراك المعارف المختلفة، وجعل العملية التعليمية التعلمية الجامعية أكثر إثارة وتشويق، وجعلها في متناول جمهور الطلبة والأساتذة، وقد خلصت الدراسة إلى أن استخدامات البيداغوجيا الرقمية في الحقل التعليمي الجامعي لازالت في بداياتها في الجزائر، ولذلك يستوجب توفير كل متطلبات تطبيقها داخل الهيئات التعليمية الجامعية والتصدي لكل العقبات التي تعترض تبنيها.

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Doi:

I- Introduction :

The considerable scientific and economic advancements experienced globally in recent decades, especially the technological revolution, along with the emergence of computer technology, multimedia, the World Wide Web, and the integration and evolution of communication technologies, have played a significant role in the emergence of digital pedagogy. The term 'digital pedagogy' refers to the goals and reasons for development. It includes a set of values, ethics, and principles that organize the use of the digital world, safeguarding the younger generation from its risks by educating them about its ethics and instilling these values through an educational program. This program shifts oversight from external monitoring by the teacher to internal self-regulation, providing continuous protection and supervision.

The use of modern digital technology in education at different levels has become a significant and necessary requirement, particularly following the major health crisis caused by the COVID-19 pandemic. This virus has disrupted internal security and threatened the global economy and vital sectors in many countries. In response to this challenge, like other developing countries, Algeria seeks to support the use of digital technology across all stages of Algerian education through new educational reform policies, especially in higher education. However, these reforms encounter barriers that complicate the integration of digital technology into higher education. The challenge of digital pedagogy in Algeria lies in balancing the motivation to develop and renew educational practices with the tendency to cling to traditional methods among those in the Algerian higher education sector. This forms their administrative philosophy and mindset in university educational management. Functional obstacles in the current Algerian university educational system further complicate the problem of digital pedagogy in Algeria. Based on this discussion, the following problem statement can be formulated: **What are the requirements and obstacles facing digital pedagogy in Algerian universities?**

To address the problem statement, the following sub-questions were formulated:

- What is the role of technological media in university pedagogy?
- What are the requirements of digital pedagogy in Algerian universities?
- What obstacles hinder the implementation of digital pedagogy in Algerian higher education?

I.1. Study methodology:

I.1.1. Study Hypotheses:

This research is based on the following hypotheses:

- Technological media plays a significant and effective role in higher education pedagogy.
- The requirements of digital pedagogy contribute to the quality of Algerian universities.
- Several barriers and obstacles impede the optimal implementation of digital pedagogy in higher education.

I.1.2. Study Objectives:

This study aimed to address the following components.

- Several requirements are necessary to apply digital pedagogy in Algerian universities.
- Challenges and obstacles to the implementation of digital pedagogy in Algerian higher education.
- Directions for Algerian reforms in educational and university systems to fulfill the objectives of digital pedagogy.

I.1.3. Study Significance:

The importance of this study stems from its role as educational and social research, addressing one of the most important contemporary topics: digital pedagogy. This topic has appeared as a result of the rapid qualitative development of communication and information technology and the widespread adoption of internet applications and the World Wide Web. The significance of this study can be summarized as follows:

- The Algerian government's efforts to develop a strategic plan for applying digital pedagogy across all levels of the education sector.
- The results emphasize the key requirements and obstacles encountered in the application of digital pedagogy in Algerian universities. Furthermore, it may help determine several weaknesses within the Algerian educational and social environment, as it supports digital education.

I.1.4. Study Dimensions:

The study involves the following primary dimensions:

- **Educational Dimension:** This includes the effective use of digital technology in educational institutions to maximize the benefits from available resources.
- **Pedagogical Dimension:** This encompasses assessing the quality of pedagogical tools employed based on existing capabilities.
- **Legal Dimension:** This entails creating a digital legal framework suitable for the Algerian Arab and Islamic context, setting ethical guidelines for digital interactions, and establishing value standards for the use and deployment of technology in educational institutions. These should be integral to the accreditation and quality standards for educational institutions.

I.1.5. Research Methodology:

Given the nature of the study and its objectives, a descriptive analytical methodology was used. This approach is suitable for comprehending the problem statement, starting with the collection of necessary scientific knowledge through library research or web sources regarding the reality, importance, requirements, and challenges of digital pedagogy in Algeria, followed by analysis relied on up-to-date statistics.

I.1.6. Study Sections:

To comprehensively cover the subject and reach relevant conclusions, this study is divided into the following sections:

- ✓ **First Section:** Technological Media and University Pedagogy in Algeria.
- ✓ **Second Section:** Digital Pedagogy and the Requirements of University Teaching.
- ✓ **Third Section:** Obstacles to Digital Pedagogy in Algerian Universities.

I.1.7. Study Terminology:

A) Pedagogy Concept:

- **Linguistic Meaning:** The term "pedagogy" is not found in traditional dictionaries, and some Arabs prefer utilizing the term "education" instead (Nouar, 1989, pp. 23-35). The French Larousse Dictionary defines pedagogy as follows: "Its origin is Greek, coming from the Greek word (Paidagogia), meaning the theory of educating children. The adjective form, pedagogical, refers to methods of teaching, such as employing a new pedagogical approach" (Larousse, 1991, p. 721)

- **Technical Meaning:** Pedagogy is a technique of education that encompasses science and art. It is a science because it should be based on specific data. It is an art application performed by the educator. This art is reflected in the actions the educator performs with the child and in the way data to be acquired (teaching) is assessed (Bengheddab, 1999, p. 17).
- **Operational Meaning:** Pedagogy is a science of education, whether physical, intellectual, or moral. It draws on data from other domains of knowledge associated with children and adolescents, and works on gathering facts about curricula, techniques, and educational phenomena.

B) The concept of Digital Pedagogy: Digital pedagogy includes re-writing educational content into lessons delivered in educational institutions through directed assignments, practical work, semi-school documents, or multimedia-supported educational materials (Nesrine, 2021).

II-First Section: Technological media and pedagogy of university education in Algeria

II-1. Digital Pedagogy in Algerian Higher Education:

Algeria is among the countries affected by the new virus, with some cases arriving from Europe. This situation necessitated Algeria to adopt a range of preventive measures, including executive decrees to prevent the spread of the pandemic and social distancing regulations to avoid physical contact in public places, schools, universities, shopping centers, markets, and workplaces. The necessity of applying social distancing and limiting direct meetings and gatherings made it essential for Algeria to rely on digitization.

Algerian University had to employ a new mode of education, known as e-learning, following the lifting of the lockdown due to the COVID-19 pandemic. Traditional classes have shifted to digital spaces, utilizing specific

applications. However, several challenges confront the digital transformation of academic institutions, which require consideration by authorities. Reality demonstrate that economic effectiveness must be built on digital knowledge.

The Algerian university now faces a real challenge: the imperative to keep up with modernization, particularly digitization, given the considerable advancements in information and communication technologies. Despite the state's significant efforts to promote the university sector, such as offering digital platforms to facilitate digital transformation through Progress, Modem, and E-Learning, there remains a notable delay in the digital adaptation of Algerian universities. (Salmi, 2020). According to some, the COVID-19 pandemic has accelerated the reactivation and speed of digital initiatives in higher education institutions to address delays, ensure continuity, and sustain activities, even remotely. The higher education sector has been among the most directly impacted by this pandemic, especially in Algeria, which has prompted the ministry to encourage faculty members to record and upload online lessons for students.

II-2. Foundations and Principles of Digital Pedagogy:

Outlined the following principles:

A) Accessibility: This principle ensures that educational opportunities at the higher education level are available to everyone, regardless of the temporal, spatial, or objective barriers.

B) Flexibility: This means overcoming barriers imposed by the system or its administrators. This principle is approached with caution in many contemporary distance learning programs.

C) Learning Control: This principle enables students to arrange curriculum topics according to their circumstances and abilities, and to choose their own evaluation methods.

D) Choice of Delivery System: This refers to the learner's individual choice of delivery systems that best suit their needs, such as correspondence, computers, software, broadcasting, and meetings. However, this feature is often approached with caution in most contemporary distance learning programs.

E) Accreditation: This denotes the suitability of educational programs and degrees for their intended purposes compared with others. Furthermore, it includes the recognition of these programs and their mechanisms as well as the acceptability of their content in several institutions (El-Khatib, 1998, p. 12).

II-3. Objectives and Objectives of Digital Pedagogy:

The main objectives of digital pedagogy are as follows

1. Updating the content of university teaching programs and rewrite it using multimedia, addressing the cognitive and scientific needs and desires of learners.
2. Enhancing and developing the retention of acquired knowledge and information, ensuring timely access, rapid updates, and organization according to significance and practical relevance.
3. Encouraging students to engage in collaborative work and interdisciplinary cooperation.
4. Enhancing pedagogical performance through new tools, coherence in educational content within specific domains must be ensured.
5. Fostering and increasing interaction between the professor and student, who are the two primary participants in the educational process (Al-Wasat, 2021).

II-4. Digital Pedagogical Media in Higher Education:

Modern technological tools have significantly impacted the modernization of learning methods in higher education institutions. They play a crucial role in improving and advancing the educational process, enabling university professors to develop innovative methods and utilize diverse media, while offering learners more opportunities for self-directed learning. These benefits can be summarized as follows:

A) Educational Bag: This represents a modern trend in the learning and teaching process, which uses multiple media to introduce educational content. It involves "a collection of extensively programmed materials that can provide each learner with alternatives by following a specific path and guiding them towards fulfilling objectives. Interaction between the educational

Material and the student occurs through answering questions, conducting experiments, watching films, or engaging in other activities.

B) E-learning: This concept is connected to the use of computer networks and modern communication tools, particularly the internet and smartphones. It offers a rich and multi-source learning environment and provides opportunities for learning according to learners' personal needs. It necessitates computer labs linked to the Internet with the necessary speed and qualified support staff.

C) Multimedia: Multimedia systems assist students by offering greater freedom to handle educational materials. It is defined as "a type of software that provides learners with several forms of presentation technology through programs designed to produce written texts, drawings, sound, colors, video clips, and animations" (Al-Muhyi, 2006).

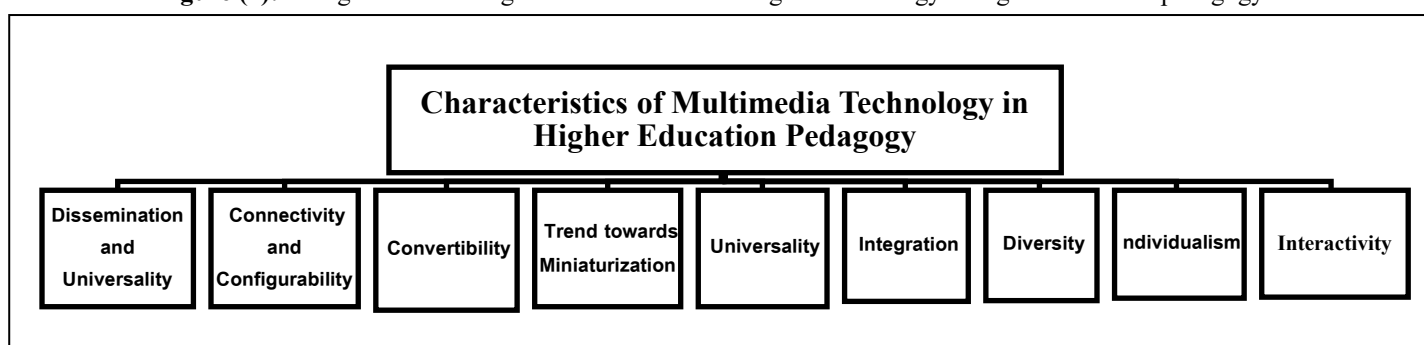
D) Hypermedia: Hypermedia is a modern technology presented in education. It provides learners with a comprehensive educational model that involves shapes, graphs, animated images, colors, sounds, and text, all managed by a computer. It is "an educational strategy employed to deliver and present information linearly while benefiting from the learner's sensory inputs" (Boutalbi, 2014).

E) Learning via email: Email is a communication tool that enables the exchange of messages and documents over the Internet. It is distinguished by its speed, reliability, low cost, and ease of use, with no administrative barriers between sender and receiver. It is utilized in education to update classroom instruction and to facilitate its use by students.

F) Learning through the Internet, Information Networks, and Social Networking Sites: This introduces one of the most complex technologies of the 20th century. This includes a network of interconnected computer equipment and systems, locally and globally, forming the World Wide Web. It offers diverse information, such as e-books, journals, databases, and educational websites, as well as free and direct communication with individuals and organizations through video conferences and text messages.

G) Learning by Video Tutorial (Learning by Video Tutorial): This method combines computers and video to provide high-quality audio-visual presentations, enabling learners to interact and acquire information and skills according to their needs and abilities. Unlike multimedia, it presents segmented video clips on a receiving screen and offers interactive opportunities that enable learners to independently control their education (Abdelhamid, 2005, p. 32).

Figure (1): Adiaqram illustrating the characteristics of digital technology in higher education pedagogy.



* **Source:** Prepared by the researcher.

III– Second Section: Digital Pedagogy and Requirements of University Teaching Professions

Applying a digital pedagogy project at Algerian universities necessitates the provision and preparation of various prerequisites to bring the project to fruition. Digital pedagogy represents a comprehensive transition in the concepts, theories, methods, practices, structures, and regulations that underlie traditional pedagogy. Thus, it is a complex process and an integrated system consisting of human, technical, informational, financial, legislative, environmental, and other elements. Its application requires a set of interrelated prerequisites to enable its effective practical application and fulfillment of desired objectives. These prerequisites include the following:

III-1. Administrative Requirements:

The management of digital pedagogy necessitates informed electronic leadership and administrative staff who support and stimulate development and change and who handle information technology skillfully. They should be capable of promoting innovation, re-engineering organizational culture, and creating knowledge.

Administrators in the educational and pedagogical domains should eliminate bureaucratic procedures that impede development and innovate the methods and approaches employed to manage institutions. "The postmodern perspective believes that fulfilling these goals requires outstanding educational and school management, emphasizing the significance of developing administrative capacities and benefiting from information technology in this domain" (Postman, 1992, p. 172).

Digital pedagogy also necessitates the development and simplification of procedures and workflows, which reduces administrative burden and facilitates integration among several services. This ensures ease and flexibility in interactions between educational institutions of all types and the community as well as higher administrative authorities.

Digital pedagogy requires a modern and flexible organizational structure, along with a networked infrastructure relied on advanced technical and informational foundations and an organizational culture focused on innovation and precise planning. This involves creating a detailed phased plan for application, gradually expanding it, and adjusting plans based on the findings of each (Azmi, 2008, p. 22).

III-2. Technical Requirements:

This axis is fundamental to digital pedagogy as it includes the necessary infrastructure, equipment, modern digital devices, communication networks, and software required for the effective application of e-learning. These components are significant to the success of digital pedagogical applications. Digital technology evolves rapidly and

diversifies, which requires administrative leaders to align their activities with information technology services and modern electronic network technologies, such as the Internet, intranets, and extranets (Khamis, 2003, p. 245).

To fulfill this goal, the following considerations are necessary:

- **Availability of Necessary Electronic Infrastructure:** Transitioning to digital pedagogy necessitates a high level of infrastructure, encompassing modern communications and data networks, as well as advanced wired and wireless communication systems capable of ensuring communication and information transfer between educational institutions and between institutions and citizens.

- **Provision of Necessary Electronic Tools:** To take full advantage of the services offered by digital pedagogy, institutions need personal and portable computers, network phones, scanners, printers, and other devices that enable connectivity to global or internal networks and maximize the use of these services.

- **Enhancement of Communication Speed and Efficiency:** Internet speed impacts the cost of network use. Given that the digital pedagogy project in Algeria relies on the development of high-speed internet, it is essential to gradually replace 5 million telephone lines and acquire new devices to establish 4 million new lines in areas lacking this service. By the end of 2022, the goal is to fulfill 9 million high-speed Internet lines and increase the density of fixed telephone lines to 25%, which is double the current density.

Table (01): Internet speed in some Arab countries (mobile phone) as of December 2019.

Countries	UAE	Qatar	Saudi Arabia	Lebanon	Kuwait	Oman	Libya	Somalia	Iraq	Sudan	Algeria	Palestine
Download speed	86.77	79.21	55.58	46.69	46.52	42.97	12.10	11.41	9.81	8.60	7.88	6.17
Global ranking	02	03	13	26	28	33	126	129	133	136	138	140

- Top country in the world: South Korea (103.18 Mbps), - Bottom country in the world: Palestine (6.17 Mbps).

* **Source:** Speedtest Global, specializing in measuring internet speeds worldwide.

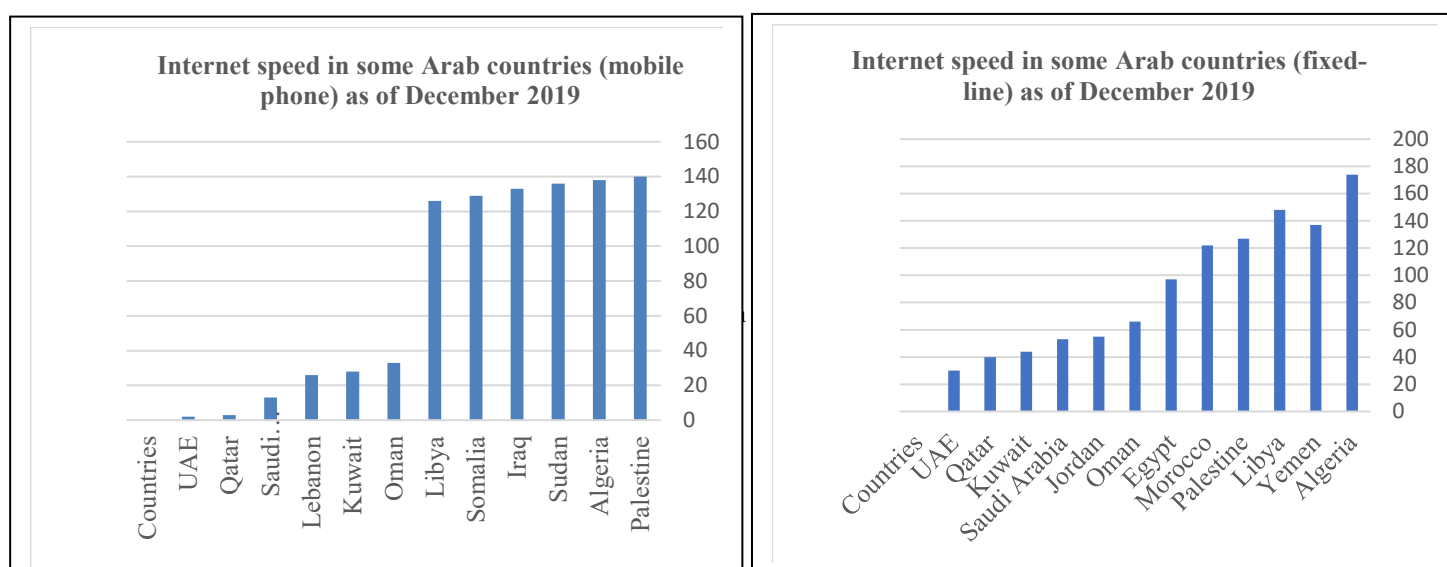
Table (02): Internet speed in some Arab countries (fixed-line) as of December 2019.

Countries	UAE	Qatar	Kuwait	Saudi Arabia	Jordan	Oman	Egypt	Morocco	Palestine	Libya	Yemen	Algeria
Download speed	90.71	73.94	65.92	52.93	50.43	42.22	26.52	18.52	16.38	12.07	4.39	3.92
Global ranking	30	40	44	53	55	66	97	122	127	148	137	174

- Top country in the world: Singapore (200.12 Mbps), - Bottom country in the world: Turkmenistan (1.71 Mbps).

* **Source:** Speedtest Global, specializing in measuring internet speeds worldwide.

Figures (02) and (03): Internet speed in some Arab countries (mobile and fixed-line) as of December 2019.



***Source:** Speedtest Global, specializing in measuring internet speeds worldwide.

➤ **Comment:** Several international reports have emphasized Algeria's low ranking in global internet speed. According to the Broadband Speed Association's study on Internet download speeds in Africa between June 2017 and May

2019, Algeria ranked 31st and 175th globally, respectively. The same report indicated that Algeria fell into six places continuously and 14 places globally. This raises a significant obstacle for the application of digital pedagogy in Algeria.

III-3. Human Requirements:

The availability of human resources capable of managing electronic administration within university educational institutions is significant for the shift to digital pedagogy. These individuals represent digital leaders, managers, knowledge resource analysts, and intellectual capital. They are responsible for strategic planning, application, and problem solving associated with digital pedagogy. Human resource requirements include the following.

- Proficiency in handling computers, data entry, retrieval, storage, transmission, and archiving is necessary. This encompasses familiarity with data-protection programs, monitoring methods, and electronic control systems. Trained personnel are required to manage and process information employing electronic management systems and applications.
- Continuous training and development of qualified personnel in digital pedagogy applications at universities are essential.
- Preparing senior leaders responsible for higher education to apply strategies for digital pedagogy and promote the technical culture among both new and existing staff is vital. This facilitates the acceptance of changes and reduces the resistance. Without skilled personnel, universities will struggle to fulfill their goals regardless of the equipment and technology they possess.

III-4. Financial Requirements:

Implementing digital pedagogy in universities is a large-scale project that necessitates substantial financial resources to ensure the sustainability, success, and fulfillment of desired goals. The costs encompass infrastructure setup, acquisition of necessary equipment and software, regular updates, and training programs. Sufficient financing is necessary for a successful transition to e-learning and for fulfilling objectives efficiently.

III-5. Legal and Regulatory Requirements:

Laws and regulations must be adapted to accommodate the rapidly evolving educational environment and ensure a smooth shift to an electronic learning system within universities. Laws should offer necessary protection for freedom of thought, knowledge acquisition, and generation. This may require amending the existing laws that impede electronic interactions (Abdelhamid, 2005, p. 32).

This supports the presence of educational institutions within the broader educational and training system, ensuring that their policies, plans, and goals are fulfilled for both public and commercial benefit (Cushman, 2014, p. 132).

IV- Third Section: Obstacles to Implementing Digital Pedagogy at Algerian Universities

The application of digital pedagogy in Algerian universities faces several obstacles that must be considered when shifting to its implementation in the academic field. The main obstacles include the lack of digital culture among educational and teaching staff, lack of trust in digital tools, language barriers due to the predominance of English in most digital software, a shortage of programmers and technicians, and resistance from some officials and managers with limited capabilities to transition to digital pedagogy. Other obstacles are also present. The obstacles encountered by university administrations in applying digital pedagogy can be classified into the following categories based on the research results:

IV-1. Administrative and Organizational Obstacles :

1. Weak political will and reluctance from senior administrative leaders to adopt digital pedagogical policies.
2. Lack of interest from officials and administrators in higher education concerning digital pedagogy applications and a lack of enthusiasm for this type of education due to the absence of awareness and information campaigns (Ben Ali, 2011, p. 212)
3. The absence of legislation and regulations governing digital pedagogy programs to address computer crimes and security breaches.
4. Resistance to change from managers and decision makers, who believe that the transition to digital pedagogy poses a threat to higher education in Algeria.
5. Insufficient administrative systems and regulations for managing electronic transactions between universities and universities and central higher education administration.

IV-2. Human Obstacles:

1. Ambiguity surrounding the concept of digital pedagogy among some administrative leaders at the university level requires clarifying the concept and offering the necessary intellectual foundation for its application.
2. Shortage of qualified human resources to handle the digital age with its applications and electronic transactions within universities. As Abdelhafidh Salama demonstrated, "Educational technology does not only mean the use of modern machines and devices but also includes a broader scope, taking into account all human resources, educational materials, the level of learners, their needs, and educational objectives" (Salama, 2007, p. 16).
3. Lack of specialists in computer software, encompassing maintenance engineers and programmers.
4. Limited experience of university staff in basic skills for employing computers and internet networks.
5. Insufficient training programs and development for educational staff and lack of skill enhancement in advanced technology.
6. Weak English language skills among most educational staff.
7. Concerns among many government employees about electronic transactions arise due to fear of personal information leakage or loss.

IV-3. Technical Obstacles:

1. Weak infrastructure in many universities and insufficient readiness to accommodate the technology required for the transition to digital pedagogy.
2. The weak technological capability of communication networks in some areas is due to vast distances, particularly in rural and remote areas.
3. Poor Internet quality, such as high-speed data transfer, is essential, which Algeria currently lacks. According to recent statistics, the Internet speed in Algeria is among the lowest in the world.
4. Dependence of most electronic programs and information on communication networks in English.
5. Weak integrated infrastructure at the national level impedes the application of electronic education across institutions.
6. Variability in the specifications of the electronic devices employed in schools complicates the connectivity between them.

Table (03): Includes the quality of education in some Arab countries for the year 2019 (according to the Davos Index)⁽¹⁾.

Countries	Qatar	UAE	Lebanon	Bahreïn	Jordan	Saudi Arabia	Tunisia	Kuwait	Morocco	Algeria	Mauritania	Egypt
Arabic Ranking	01	02	03	04	05	06	07	08	09	10	11	12
Global ranking	04	10	25	33	45	84	94	101	107	119	134	139

- Top country in the world: Singapore, ranked 1st globally.
- Bottom country in the world: Guinea, ranked 140 th globally.
- Not ranked: Iraq, Syria, Libya, Sudan, Somalia, Yemen.

* **Source:** World Economic Forum, Davos Index.

IV-4. Financial Obstacles:

- High financial costs are associated with utilizing the global Internet network.
- Insufficient financial resources are allocated to the infrastructure required to apply digital education, especially for network establishment, site connectivity and software provision.
- Misallocation of funds within the higher education system in Algeria.
- Limited financial capacity of some beneficiaries, such as parents, to purchase electronic devices.
- Insufficient financial allocation is required for the training and development of the human resources required for applying digital education in schools.
- Low salaries and inadequate material and moral incentives are necessary to motivate staff to work in educational information systems.
- Scarcity of appropriate financial resources for continuously updating devices, particularly given the rapid evolution of information technology, makes keeping up with updates challenging.

IV-5. Social Obstacles:

The Internet is a source of contemporary knowledge; however, it neglects the transfer of accumulated heritage and traditions across generations, potentially leading to social instability. Some social, religious, cultural, and economic

ideas that conflict with local values and beliefs might affect students and reflect on their behavior within the community. The use of the Internet undermines the role of the university in education, shifting towards self-directed learning, which could result in confusion and anxiety for learners who find it less effective and beneficial without specialized educational guidance. "Education does not operate in a vacuum or from a vacuum; it derives its elements, orientations, philosophy, goals, subjects, mechanisms, and methods from the surrounding conditions, changes, developments, and trends" (Sakran, 2006, p. 15) .

IV-6. Educational Obstacles:

- Lack of involvement of educators in developing this type of education.
- Negative attitudes of some teachers towards educational technology

Dr. Mohamed Abdel Hamid states, "Electronic education through networks is an interactive distance learning system offered to learners on demand, depending on a comprehensive digital electronic environment sought at creating and delivering curricula via electronic networks, as well as guidance, orientation, managing choices, resources, processes, and evaluations" (Abdelhamid, 2005, p. 32). However, some teachers view it as peripheral to the educational process, indicating that the core of teaching lies in traditional activities, such as explaining, interpreting, and reading, and that utilizing educational technology is a waste of time.

- Reluctance of some teachers to employ educational technologies in teaching without comprehending the significance of technology in education.

IV-7. Information Security Obstacles:

Information security and the risk of breach are important obstacles to applying digital education in educational institutions. Key information security challenges encompass the following.

- Fear of not being able to safeguard databases from breaches or damage within university administration and educational institutions.
- Concerns about the potential for information disclosure by employees or staff in the educational field.
- Fear of data loss or inaccuracies during updates to the electronic administrative system.

Lack of trust in security and protection programs when conducting electronic educational transactions has affected professors and educators about the future impact of these issues on electronic education. Therefore, content and exam breaches are among the major obstacles in electronic education.

V- Results and discussion:

V- 1. General Analysis:

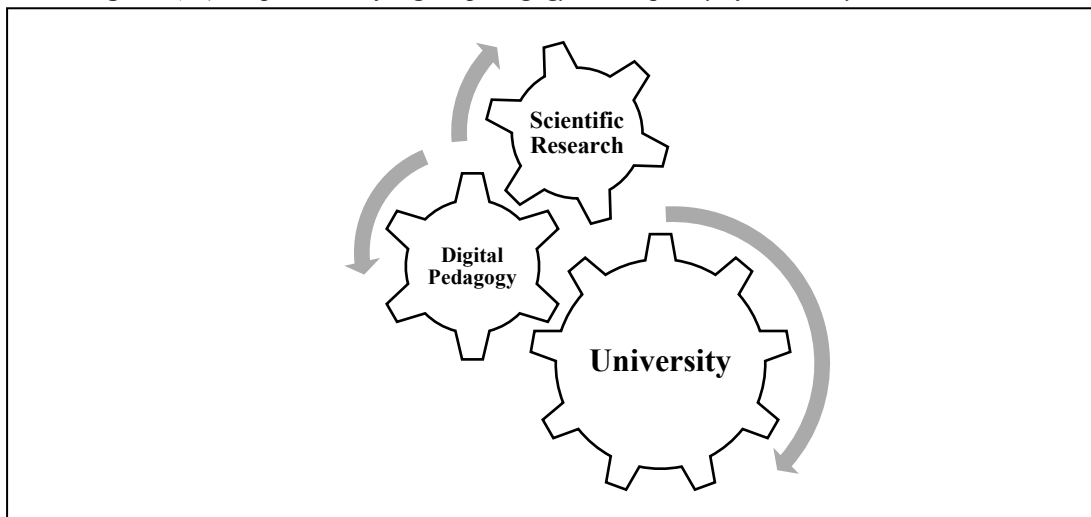
Modernizing higher education in Algeria requires coordinated efforts between the government, educational institutions, and private sector. This necessitates the adoption of comprehensive strategies for applying digitalization in higher education and effectively employing digital technology. These efforts must be flexible and adaptive to rapid technological advancements to satisfy the evolving needs of students and society. Digitalization is a fundamental axis for the future of higher education in Algeria. Continuous investments in technical infrastructure, training personnel, and the adoption of a digital educational culture can promote educational quality and academic excellence. Fulfilling these goals requires comprehensive cooperation and ongoing efforts by all stakeholders. The potential benefits of digitalization in higher education justify effort and investment.

V- 2. Recommendations and Suggestions:

- The necessity of providing computers in all university educational institutions to be used in educational work instead of manual work.
- Involvement of educational specialists in creating this type of education, which necessitates innovative web platforms and integrated, renewable, and continuous web content.
- Training university educational staff, encompassing professors and researchers, on employing computers to perform their work.
- Allocating a budget for training and preparing staff on electronic programs.
- Consulting engineers and experts in computer science and information security to develop internal communication programs and networks for each university institution, as well as creating a protected database specific to the educational domain.

- Government support for citizens, particularly students, in acquiring computers and subscribing to the Internet by reducing prices and making them accessible to everyone. This will create electronic awareness among citizens and form electronic society.
- The collaboration of Arab countries, including Algeria, to create a purely Arab digital pedagogy that encompasses unified educational curricula and programs to face the dangers of globalization. "Education in the Arab world suffers from a real crisis and faces the challenges of globalization, foreign cultural invasion, and the rapid developments in the world of communications and information. Thus, it must confront these challenges with modern tools. Hence, efforts must be united on a national level to formulate a comprehensive unified Arab strategy" (Ramzi, 2005, p. 227).

Figures (04): Importance of digital pedagogy in the quality of university education.



* **Source:** Prepared by the researcher.

VI- Conclusion:

Although the use of digital pedagogy in higher education is still in its early phases in Algeria and most Arab countries, compared to Western nations, which have been pioneers in employing digital pedagogy to develop and enhance educational services, there are several obstacles and challenges. These encompass technical issues due to excessive bureaucracy or stringent internal systems and a lack of adequate expertise and production mechanisms to build digital information infrastructure, especially in educational and pedagogical domains. These challenges originate from economic weaknesses, poor education, and general instability.

Given the above, addressing these requirements is significant to ensuring the successful application of digital pedagogy in higher education. It is necessary to provide informed and wise administrative leadership that understands the significance of adopting modern technologies, addresses the challenges of implementing them in educational institutions, and promotes awareness among students, parents, faculty, and administrators about the benefits of information technology in universities. Moreover, developing adequate infrastructure for operational networks is necessary to fulfill the effective implementation of digital pedagogy.

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Note:

The "Davos" index, in evaluating the development of education quality to establish a global ranking of countries, relies on 12 criteria concerning institutions and innovation, macroeconomic environment, higher education, training, health, basic education, efficiency of goods market, efficiency of labor market, financial market development, technological readiness, market size, as well as business development and innovation.