

The difficulty of implementing the digital education model in Algerian universities in light of the Corona pandemic and beyond

- Model of education through the Moodle platform-

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Abstract:

This study explores the challenges encountered in implementing the digital education model at Algerian universities during the COVID-19 pandemic, which, like the rest of the world, affected Algeria significantly. The pandemic forced higher education institutions to adopt alternative strategies as a necessary response to the changing circumstances. Due to the preventive measures enforced by the government to curb the virus's spread, all activities, including education, were required to adhere to social distancing guidelines and transition to digital education as a new model. This transition aimed to ensure the continuity of the educational process within Algerian universities. Consequently, the adoption of modern technological tools for remote communication became a major priority for Algeria's higher education sector, aiming to enhance university education while also addressing the challenges brought about by the pandemic. The need to shift from traditional face-to-face education to virtual learning through digital communication platforms, integrated into university websites, became urgent. However, the reality on the ground revealed several challenges that impeded the effective implementation of digital education. This new experience in Algerian universities was accompanied by a range of obstacles that hindered the achievement of the intended educational outcomes envisioned by virtual education policies.

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1. Problem Statement

The recent wave of globalization has brought about a significant advancement in digital and informational technologies. The adoption of such technologies has become essential across various sectors and institutions, including higher education. Although Algeria had been progressing slowly in aligning with these technological developments due to social, economic, and resource limitations, the health crisis during the COVID-19 pandemic forced the country to accelerate its digital and electronic advancements across multiple sectors, including educational institutions.

As the pandemic spread, Algeria quickly declared a national health emergency and implemented necessary precautionary measures to limit the disease's transmission within society. These measures involved suspending various economic, cultural, and sporting activities, including educational activities at schools, institutes, and universities. A complete lockdown was imposed on the entire population, which led universities to transition from traditional in-person education to remote learning, utilizing digital models.

This shift had long been debated regarding its integration into university education systems. The transition occurred amid the direct impact of technologies such as artificial intelligence and the Internet of Things, coupled with the expansion of the digital world and the technological revolution in information, which had permeated most facets of human life, becoming an essential component of it.

The use of digital technologies in education is not a recent phenomenon. Many universities in developed countries already implement distance learning systems. However, the COVID-19 crisis accelerated the adoption of such technological solutions within the academic sphere. As a result, most universities turned to online

education, also known as virtual education, as the most suitable alternative to ensure the continuity of educational activities.

This transition was made possible through various applications, platforms, and digital tools, such as internet-based distance learning programs and the Moodle platform, which ensured that students could continue their university education. Thus, it can be stated that the new era of digital education in Algeria's higher education sector coincided with the onset of the pandemic. Remote education became the only viable alternative, offering cost-effectiveness in terms of effort and capital, while also addressing the need to enhance the digital competencies of university students, irrespective of their academic fields.

Studying the state of university education in Algeria after its transition from the traditional model to the digital education model necessitates recognizing the need for a concerted effort to achieve positive outcomes within the available technological and human resources. To realize this, it is crucial to evaluate various effective strategies for implementing this educational model in Algerian universities. This involves establishing the required infrastructure, including a robust technological foundation with high-speed internet access, and effectively investing in the digital economy by fostering a purposeful digital culture within university institutions.

Moreover, developing qualified human resources capable of activating digital communication systems is essential. The success and advancement of science and technology continue to be measured by digital and technological indicators, particularly in managing the future of Algerian universities and their educational systems.

Simultaneously, the material and human resources necessary for change must be in place to foster the development of the higher education system in Algeria. This underscores the importance of shedding light on the current state of digital education and managing it effectively, focusing on overcoming the challenges and obstacles that

hinder this transition, in order to address the gaps that may impede the success of digital education in Algerian universities.

Based on the analysis provided, the following research questions have been formulated:

_ What is the current status of digital education in Algerian universities following the transition from traditional educational models to virtual platforms in the context of the COVID-19 pandemic?

_ What are the key challenges and barriers hindering the effective implementation of digital education in these institutions?

What are the primary factors preventing educational stakeholders, both faculty and students, from fully adopting the Moodle platform as a model for digital education in Algerian universities?

2. Study Concepts

2.1 COVID-19 Pandemic:

The term "pandemic" refers to the widespread occurrence of a disease caused by a common, often primary factor, such as air pollution, which facilitates the transmission of infections among individuals. Throughout history, numerous pandemics have impacted populations worldwide, causing significant loss of life.⁽¹⁾ These include diseases such as cholera, the plague, and more recently, the coronavirus, which has been termed the "pandemic of the age." The novel coronavirus (COVID-19) is a member of the newly identified coronavirus family. It is a rapidly transmitted virus, first detected in individuals exhibiting pneumonia-like symptoms in Wuhan, Hubei Province, China, at the close of December 2019.

(1) Sheldon, Watts: *Pandemics and History: Disease, Power, and Imperialism*, 1st ed., Translated by Ahmed Mahmoud Abdel-Gawad, National Center for Translation, Cairo, Egypt, 2010.

According to the World Health Organization (WHO), coronaviruses represent a broad family of viruses that can cause illness in both animals and humans, typically resulting in respiratory ailments. These range from mild conditions, such as the common cold, to more severe diseases like Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). COVID-19, the disease caused by this newly identified virus, was previously unknown before its outbreak in Wuhan, China, and rapidly became a global health crisis.⁽¹⁾

2.2 Traditional Education :

Traditional education refers to the established educational system, characterized by three core components: the educator, the learner, and the content. These elements converge within a physical classroom, where face-to-face interaction takes place. In this paradigm, education is fundamentally dependent on the physical presence of students in the classroom. It is an environment where both students and teachers meet synchronously in the same location, allowing for direct, real-time interaction without the barriers of time or space. This conventional system emphasizes in-person engagement as the primary mode of educational delivery.

2.3 Theoretical Framework of Distance Education :

Distance education refers to the process of acquiring knowledge and skills through a medium that transmits educational content and information, utilizing various technologies and learning methods designed for remote learning. It is important to distinguish between distance education and other forms such as e-learning or virtual learning.

Generally, distance education is defined as a model in which the student receives education based on their available time and from a location of their choice, whether that be at home, at work, or in an

(1) Mohamed Mounir, Ziyoud: *Palestinian Distance Education in the Time of COVID-19*, An-Najah National University, Graduate School, Nablus, 2020, p. 10.

educational center, without direct, face-to-face communication with the instructor. Technology plays a pivotal role in enabling distance education. There are typically considered to be three generations of distance education.⁽¹⁾

The first generation was marked by the use of a single technology, with no direct interaction between students and the institution providing the education (resulting in a lack of feedback). The second generation incorporated multiple media, with communication between students and instructors being facilitated by a third party, namely the teacher (not directly involving the educational content).

In contrast, the third generation is built on two-way communication media, such as the internet and video conferencing, which allows for remote interaction between the student and teacher. Distance education is also defined as a method by which instructors conduct lessons with students via the internet, hence the term "distance", despite physical separation, communication occurs for the purpose of teaching and learning.⁽²⁾

UNESCO defines distance learning as an educational process where there is no direct contact between the student and the instructor; they are separated by both time and space, and communication is facilitated through various educational media, whether electronic or printed⁽³⁾. It is important to note that distance education has become synonymous with terms like e-learning, digital education, or virtual education. These terms refer to the transition from traditional educational methods to more modern approaches that rely on

(1) Tony, Bates: *Technology, E-learning, and Distance Education*, 2nd ed., Translated by Walid Shahatah, Al-Obeikan Research and Development Company, Riyadh, Saudi Arabia, 2007, p. 30.

(2) Tony, Bates, p. 33-35.

(3) Nour Eddine Ben Soula, Mokhtar Khadija: *Distance Education in Algeria: An Exploratory Study on a Sample of University Students*, Journal of Development and Society Studies, Vol. 6, Issue 3, 2021.

information and communication technologies and electronic tools.⁽¹⁾

2.4 Theoretical Framework of Digital (Electronic) Education:

Digital or virtual education refers to a teaching mode that utilizes modern communication technologies, including computers, internet networks, multimedia elements such as sound, images, graphics, search engines, and digital libraries, along with internet gateways, whether for remote education or in the classroom setting. The primary aim is to leverage digital electronic technologies to deliver educational content to the learner in the most efficient manner, minimizing effort while maximizing benefit.

Distance education is heavily reliant on electronic learning, where the learner receives information from a remote location. Moreover, electronic learning extends beyond synchronous (online) learning; it also includes asynchronous learning, often referred to as virtual education. This model involves learning from distant locations, both in time and space, via the internet and technologies through virtual platforms that utilize electronic communication tools. This system facilitates the delivery of educational content through various media without requiring the student to be physically present in a classroom. In this approach, the student assumes greater responsibility for their own learning.⁽²⁾

3. Transitioning from Traditional Education to Digital Education: A Necessary Step

The information revolution that unfolded in the Western world in the late 1990s marked a pivotal advancement, particularly with the development of computer systems. These technological breakthroughs

(1) Nour Eddine Ben Soula, Mokhtar Khadija: *Methods and Approaches to Using Modern Technologies in the Educational Process: Reality and Challenges*, International Conference: The Use of Multimedia in Education, University of Adrar, 2021.

(2) Abdellah Aziz, Al-Mousa: *E-Learning: Its Concept, Characteristics, Benefits, and Barriers*, Paper Presented at the School of the Future Conference, College of Education, King Saud University, Saudi Arabia, 2002.

permeated all sectors, including education. Consequently, schools, universities, and educational centers began incorporating the internet and digital tools into the learning process. The use of computers and technology extended to individuals with special needs and those facing learning difficulties. Furthermore, the scope of digital education skills expanded to include listening, reading, and visual communication, exemplified by live interactions between students and instructors.

However, the reality in developing countries, especially in Algeria, reflects a more gradual adaptation to these teaching methods. Before the global health crisis, Algerian universities, institutes, and academic centers were still predominantly reliant on traditional, in-person education for all forms of academic activity, such as lectures, lessons, conferences, and seminars. This system was anchored in face-to-face interactions within classrooms and lecture halls, with the teacher as the central figure in the educational process, serving as the primary source of information. Traditional teaching materials, such as books, printed resources, and blackboards, remained the standard.

The COVID-19 pandemic, however, compelled Algerian universities to confront a new reality. The integration of technology into university education became not just a possibility, but an inevitability. Without this shift, education would have ground to a halt, as was witnessed during the total lockdown period. As a result, several adjustments had to be made to the educational policy. A major restructuring of the curriculum was necessary, with technology being embedded as a core tool in the teaching process. This transition required the formation of specialized committees within universities tasked with developing, innovating, and reprogramming educational content to align with digital platforms.

It was also critical to assess the current status of digital education in terms of available physical and human resources and evaluate its effectiveness in achieving educational objectives. In parallel, substantial financial investment was required to establish the necessary technological infrastructure. This included funding for platforms, training educators, and preparing staff to access educational tools, upload lessons, and deliver multimedia content. Additionally,

expertise was needed to ensure that these processes were executed effectively.

Creating dedicated centers for the design and development of software for technology-based curricula was also essential. These centers, staffed by specialized teams of engineers, would be responsible for preparing multimedia e-curricula across various disciplines. Their tasks would also include testing the effectiveness of these digital tools, troubleshooting technical issues, and making necessary adjustments. Moreover, ensuring reliable internet connectivity and seamless access to educational platforms was paramount to preventing any disruptions that could impede the learning process.⁽¹⁾

4. The Digitization of Higher Education: A Necessity to Confront the Crisis

The COVID-19 pandemic had profound effects on many strategic sectors in Algeria, as it did globally, prompting sweeping measures to curb the virus's transmission across social groups. These measures included the widespread closure of sectors and the enforcement of social distancing policies that affected all areas of life, regardless of professional sector. In particular, the education and higher education sectors were significantly impacted by the consequences of these precautionary measures.

However, the educational system was ill-prepared to address the specific challenges posed by these unprecedented conditions. The complete suspension of higher education activities and the paralysis of pedagogical operations led to a multifaceted crisis, which severely disrupted the academic trajectory of university students in Algeria. This crisis resulted in considerable delays and interruptions to

(1) Rima Saad, Al-Jarif: *Requirements for Transitioning from Traditional Education to E-learning*, 13th Conference of the Egyptian Association for Curriculum and Teaching Methods: Curriculum and the Great Knowledge and Technological Revolution, pp. 157-170, Ain Shams University, Cairo, Egypt, 2001.

students' academic years.⁽¹⁾

Studies indicate that the pandemic caused a disruption in education for over 1.6 billion students globally, nearly 80% of the world's student population. This came at a time when many countries were already grappling with significant educational challenges. The crisis manifested in various forms, such as school dropouts, weakened education systems, fragile educational infrastructures, geographic disparities in access to education, particularly between rural and urban regions, and a decline in both educational quality and curriculum standards.

In response to these challenges, many developed countries adopted digital policies and embraced the digital economy as a means to address the disruption caused by the pandemic across various sectors, including education and higher education, which are critical to national development and economic growth. Consequently, the global trend toward enhancing digitization and accelerating the integration of digital media and technology in education found resonance in Algeria. The country responded by adopting virtual education, primarily through remote learning using digital platforms and electronic systems. This shift served as a timely and effective solution to the university lockdowns enforced during the pandemic.

E-learning (or "Learning-E") emerged as the most viable and effective strategy for ensuring the continuity of education during the COVID-19 crisis. This approach represented an essential step towards the broader dissemination and improvement of educational services, providing access to students from various social and geographic backgrounds, thereby enabling Algeria to overcome the crisis with minimized costs, reduced losses, and a stronger developmental trajectory.⁽²⁾

5. Digital Education During the COVID-19 Pandemic: Purpose and Objectives

The Ministry of Higher Education and Scientific Research in

(1) Salma, Bachari: *Developing Algeria's Digitization as a Mechanism for the Post-COVID-19 Phase*, *Les Cahiers du Cread* - Vol. 36 - Issue 03, 2020.

(2) Ibid.

Algeria swiftly implemented a digital education policy aimed at addressing the challenges brought about by the COVID-19 pandemic and enhancing the overall effectiveness of the university education system. This initiative was implemented through a series of technical, material, and human resources measures, which included the establishment of internet networks and the development of various websites and platforms tailored for distance learning.

These platforms were specifically designed to deliver educational content in a format that was accessible, clear, and beneficial, without requiring excessive physical effort or time investment from students and educators. This precautionary approach was not only instrumental in curbing the spread of the COVID-19 virus but also facilitated the continuation of the educational process in a way that adapted to the challenges of the pandemic.

The primary objective of this critical measure is to:⁽¹⁾

- Establish an educational environment that caters to students' need for uninterrupted learning, ensuring the continuity of their academic journey.
- Offer a diverse range of educational resources, including videos, downloadable PDF lessons, and content on social media platforms, YouTube channels, and digital platforms such as Moodle.
- Facilitate the maintenance of the educational process, optimizing time and effort, while fostering the academic, cultural, and social development of students. This approach allows students the flexibility to engage with learning materials at times and locations that best suit their individual circumstances.
- Mitigate disparities between students by providing equal access to educational resources, such as lectures and guided activities within

(1) Bousakra Omar, Abdessalam Selima: *The Reality of University Education in Algeria Amid the COVID-19 Pandemic*, *Al-Rased Journal for Social Sciences Studies*, Vol. 1, Issue 1, Mohamed Boudiaf University, M'sila, Algeria, 2021.

the virtual learning environment.

Furthermore, additional goals include:

- Minimizing the need for commuting, thereby saving time, effort, and financial resources. This flexible approach empowers individuals to surmount the challenges posed by the COVID-19 pandemic.
- Ensuring the preservation of a productive educational environment during the pandemic, thus preventing the deterioration of the quality of education at Algerian universities while enhancing students' academic, cultural, and social experiences.
- Fostering the development of individual learning skills, encouraging self-reliance and initiative.
- Enabling students to effectively navigate various technological tools and platforms, enhancing their digital literacy and proficiency in utilizing diverse media and resources.

6. Digital Education in Algerian Universities After the Pandemic

In the aftermath of the pandemic, Algerian universities were compelled to adopt distance learning due to the urgency and unprecedented circumstances. The abrupt closure of educational institutions necessitated an immediate shift to online learning to maintain academic continuity. Consequently, the entire university community, including professors, students, and administrative personnel, was forced to adapt to digital learning platforms as the only viable option to continue the academic year and ensure its successful completion.

Given the urgency of the situation, there was no time for stakeholders to evaluate or reconsider the transition from traditional to digital education. As a result, professors simply transferred their

lessons to the university's distance learning platforms, primarily in the form of PDF documents. These lessons, although functional, largely adhered to traditional formats, offering mostly theoretical content and lacking diversity and interactivity. This limited the opportunities for engagement between students and instructors, resulting in a somewhat static and traditional online learning experience.

It is crucial to emphasize that the potential of e-learning platforms like Moodle goes far beyond simply uploading instructional materials. Distance education, at its core, is designed to foster ongoing interaction and communication between instructors and students. This interaction allows for timely feedback and clarification of course content. To fully leverage the capabilities of platforms such as Moodle, it is essential for instructors to create interactive spaces, such as discussion forums and chat rooms, where students can engage in dialogue about course materials and seek assistance when they encounter difficulties in understanding the content.

The Moodle platform was developed with a broader pedagogical vision, enabling the incorporation of varied and dynamic learning materials, such as images, videos, and audio recordings, to enhance the delivery of content. Professors can also integrate multimedia resources, such as live YouTube videos or self-produced instructional videos, which provide a more engaging learning experience. Additionally, the use of visual aids, such as mind maps or concept maps, allows instructors to simplify complex concepts, making them more accessible and easier to comprehend.

Moreover, Moodle facilitates the implementation of continuous assessment strategies, which are integral to fostering an effective learning process. Through this platform, instructors can assess students' prior knowledge at the beginning of a lesson, conduct formative assessments after each stage of learning, and perform final evaluations to measure students' achievements and overall learning outcomes.

These activities could be effectively integrated into the Moodle platform in various interactive formats, such as short quizzes, multiple-choice questions (MCQs), gap-fill exercises, and written assignments. However, during the pandemic and even in the post-pandemic period, this more interactive and diverse pedagogical approach was not fully implemented. Instead, many professors continued with the traditional method of simply uploading PDF lessons and sending them to students via Moodle. This practice falls short of being a true form of digital education, as it lacks the utilization of digital media that fosters continuous interaction and communication between students and instructors.

The failure to adopt a more advanced and interactive form of digital education can be attributed to several underlying challenges. One major issue is the lack of adequate training for professors, combined with their limited proficiency in navigating advanced digital platforms. Additionally, many faculty members, particularly those with long-standing experience in traditional teaching methods, were reluctant to invest the time and effort required to familiarize themselves with and implement modern pedagogical approaches. There were also numerous technical and material obstacles that hindered the transition from traditional to modern digital education.

7. Digitizing higher education is an imperative necessity to face the crisis

Many strategic sectors in Algeria were affected by the aftermath of the Corona crisis and the strict measures that accompanied it to limit the spread of infection among social circles, such as lockdown policies for almost all sectors and the necessity of social distancing. The education and higher education sector, in particular, was also impacted by the repercussions of these precautionary measures. However, these measures were not prepared to receive and implement these strategies, and they were not adequately equipped to face these circumstances. The complete closure of the higher education sector and the paralysis of all

pedagogical activities will create a multifaceted crisis on various levels, significantly affecting the level of education in Algeria in general and the academic performance of university students in particular, leaving them to struggle with multiple conflicts regarding delays and the disruption of academic years...

Studies indicate that the pandemic caused the interruption of education for more than 1.6 billion students, nearly 80 percent of students, at a time when many countries are suffering from a severe educational crisis, evident through various indicators such as school dropout rates, poor education quality, and the fragility of educational structures, in addition to the geographical imbalance in educational opportunities between rural and urban areas and the low quality of education and educational programs⁽¹⁾.

In order to address these problems, various developed countries resorted to adopting digital policies and relying on the digital economy to face the challenges of the pandemic in all sectors, such as the education and higher education sectors, which are very sensitive and will positively or negatively affect the development and economy of countries. The global trend towards enhancing digitization and accelerating the use of digital and technological media in education has led Algeria to keep pace with the wave of digital development and also adopt a virtual education policy based on remote learning using digital platforms and dedicated electronic platforms as a positive response to the period of lockdown and closure of universities and institutes. And e-learning emerged as the only solution and the best strategy to continue the educational process during the Corona pandemic, and as an important step towards generalizing and improving educational services for various groups and geographical areas, and to emerge from the crisis stronger, with lower costs and

(1) Salma, Bachari: Developing Digitalization in Algeria as a Mechanism for the Post-Corona (COVID-19) Pandemic Phase, Les Cahiers du Cread, Vol. 36, n°03, 2020.

fewer losses, and on the best developmental path.⁽¹⁾

8. Challenges of Digital Education in Algerian Universities

A field study conducted across Algerian universities revealed significant barriers to the effective implementation of digital education. The study, which surveyed 150 students from various academic levels through an online questionnaire, highlighted several material, technical, and human challenges that hinder the success of digital learning in the country. These challenges contribute to differing opinions regarding the efficacy of digital education within Algerian higher education institutions.

The discussion of digital education in this context necessitates the establishment of a robust educational framework. This framework must incorporate a range of conditions and requirements essential for the effective execution of educational functions within universities, beyond the basic material, technical, and human resources. Additionally, it calls for the adaptation of educational content and available resources to align with digital education methodologies through the integration of modern technological tools.

- Lack of a robust technology-based educational system, the technological infrastructure, which is foundational to modern education, has not been sufficiently developed to meet the demands of distance learning. For instance, in some remote and mountainous regions, weak internet connectivity and slow speeds have hindered students' ability to access university websites and retrieve lessons and lectures uploaded by professors. This issue is equally problematic for professors, who struggle to upload their materials to online platforms due to inconsistent internet access.

- Certain faculty members, especially older professors who have not adapted to the digital learning wave, are unable to effectively

(1) IBID.

provide digital content such as lessons and lectures through electronic platforms. A number of professors are not proficient in using modern technological tools, which has led to complaints from students who report that their instructors fail to upload scheduled lessons and materials to the university's digital platforms. This issue underscores the urgent need for targeted training programs for faculty members, equipping them with the skills required to manage technological tools and platforms effectively, ensuring timely production and upload of digital lessons.

- Another significant challenge is the frequent occurrence of weak internet connections and website downtimes, which stem from the absence of an effective digital management system designed to oversee and maintain digital platforms. This issue is crucial, as it highlights the necessity of employing qualified human resources, including engineers and technicians, to ensure that websites and platforms are continuously updated, monitored, maintained, and repaired when necessary. Such measures are vital to ensuring the smooth functioning of digital education systems.

- The digital content presented in educational settings should be diverse, integrating various media, such as printed texts, audio, and visual lectures, and complemented with 3D images, animations, videos, or a combination of these elements, tailored to the nature of the subject matter (whether scientific or technical) and the specific characteristics of the learners. However, it is evident that a significant portion of the digital lessons currently provided to students consists solely of downloadable written electronic texts. This format is limiting, as it fails to account for the diverse learning needs of students, particularly those with disabilities. For instance, students with visual impairments require audio lessons, while those with hearing impairments need video content with subtitles or sign language interpretation. Regrettably, such considerations are virtually nonexistent in the current virtual education system at Algerian universities. Additionally, Algerian universities have yet to

fully implement virtual education on a large scale, especially for learners with special needs. This shortcoming can largely be attributed to the insufficient training of professors on educational programs and software, particularly in regard to integrating video and audio components, and the lack of qualified educators to teach students with disabilities. Consequently, a thorough reevaluation of the virtual education system is essential to ensure inclusivity and accessibility for all students.

- A considerable portion of the student population in the study sample relies on smartphones as their primary tool for distance learning. However, many students have expressed concerns over the high cost of smart electronic devices, which has created a barrier for students from lower socioeconomic backgrounds, preventing them from accessing the technology necessary for their education. The financial burden of smartphones, in particular, remains a substantial challenge, especially for economically disadvantaged students. This issue underscores a critical barrier to the effectiveness of digital education in Algerian universities.

- Weak internet connectivity in remote areas, another significant challenge is the lack of reliable high-speed internet connectivity in some remote and rural regions, which is rooted in the underdeveloped state of the information and communication technology (ICT) sector in Algeria. Despite the government's efforts, including public investment and incentives to mobile operators to improve the telecommunications infrastructure, connectivity issues and slow internet speeds persist in certain rural and desert areas. As a result, students residing in these regions face significant difficulties in accessing virtual education, further exacerbating the digital divide.

9. Recommendations and Suggestions for Enhancing Digital Education in Algerian Universities

Based on the analysis of the current challenges, it is evident that creating an effective digital education environment within Algerian

universities requires addressing key shortcomings related to digital infrastructure, geographical disparities in internet connectivity, and insufficient faculty training. The results of this study underscore the urgent need for reforms and improvements to facilitate the successful implementation of virtual education in Algerian universities.

The following recommendations are proposed:

- To overcome the digital divide, particularly in remote areas, it is crucial to enhance the quality and availability of high-speed internet, particularly fourth-generation (4G) networks. Additionally, mobile internet stations should be established in public spaces such as parks, cafes, and transport stations to ensure broader accessibility. Government funding should also be directed toward providing digital devices, including smartphones, computers, tablets, and screens, to ensure that students have the tools required to engage with digital learning platforms.
- It is essential to give special attention to disadvantaged groups who lack access to digital devices, especially students with special needs.
- The digital competencies of all stakeholders in the educational process should be enhanced through comprehensive training programs. These programs should target university professors, students, administrative staff, and technical personnel, ensuring that all participants are equipped with the necessary skills to navigate and utilize digital platforms effectively. Training should be delivered through a variety of formats, including specialized courses, television programs, and in-person lectures, while adhering to social distancing measures and safety protocols.
- It is essential to establish continuous and meaningful feedback between students and professors to facilitate effective communication and ensure accurate comprehension of lessons and lectures. This can be achieved through interactive online lectures that promote student participation in discussions and enable them

to ask questions, enriching the virtual learning process and making it more engaging and impactful.

- The current teaching schedule is inadequate in terms of allotted hours, which hampers students' ability to fully grasp course material, leading to superficial learning. This negatively affects both the depth of understanding and the overall quality of education at Algerian universities.

10. CONCLUSION

The implementation of digital virtual education at Algerian universities, leveraging modern media and technologies, is a relatively recent development. The shift toward virtual learning was driven by the need to maintain educational continuity during the global COVID-19 pandemic. This initiative reflected Algeria's efforts to align with global trends in higher education, underscoring the importance of science, research, and community development as well as sustainable progress.

In response to the pandemic, the Ministry of Higher Education established digital platforms and websites through which university courses continued online, mitigating the risk of virus transmission while ensuring uninterrupted education.

Despite these efforts, the experience with virtual education remains constrained due to material, human, and cultural challenges. These limitations hindered the full success of digital education, arising from a lack of awareness of these teaching methods, inadequate infrastructure for digital education, and insufficient training for staff on utilizing technological tools and digital platforms. Additionally, other obstacles have impeded the establishment of a robust digital education system, negatively affecting the overall quality of higher education.

To address these issues, it is imperative to bridge existing gaps and implement necessary reforms. Special attention must be devoted

to equipping all stakeholders in the educational process with the appropriate digital skills and tools, ensuring that Algerian universities can fully leverage the potential of digital education.

11. Bibliography List:

- Watts, Sheldon: Epidemics and History, Disease, Power, and Imperialism, 1st ed., translated by Ahmed Mahmoud Abdel Jawad, National Center for Translation, Cairo, Egypt, 2010.
- Mohammad Mounir, Ziyoud: Palestinian Distance Education in the Time of Corona, An-Najah National University, Graduate Studies College, Nablus, 2020.
- Tony, Bates: Technology, E-Learning, and Distance Learning, 2nd ed., trans. Walid Shehata, Al-Obeikan Research and Development Company, Riyadh, Saudi Arabia, 2007.
- Nour Eddine Ben Soula, Mokhtar Khadija: Distance Education in Algeria: A Survey Study on a Sample of University Students, Journal of Development and Society Studies, Volume 6, Issue 3, 2021.
- Nour Eddine Ben Soula, Mokhtar Khadija: Methods and Techniques for Using Modern Technologies in the Educational Process: Reality and Challenges, International Conference: The Use of Multimedia in the Educational Process, University of Adrar, 2021.
- Abdullah Al-Aziz, Al-Mousa: E-learning, its concept, characteristics, benefits, and obstacles, a paper presented at the Future School Symposium, College of Education, King Saud University, Saudi Arabia, 2002.
- Rima Saad, Al-Jurf: Requirements for Transitioning from Traditional Education to E-Learning, The Thirteenth Conference of the Egyptian Society for Curriculum and Instruction: Educational Curricula and the Great Cognitive and Technological Revolution, pp. 157-170, Ain Shams University, Cairo, Egypt, 2001.
- Salma, Bachari: Developing Digitalization in Algeria as a Mechanism for the Post-Corona (COVID-19) Pandemic Phase, Les Cahiers du Cread - Vol. 36 - n° 03, 2020.
- Bouskra Omar, Abde Salam Salima: The Reality of University Education in Algeria in Light of the Corona Pandemic, Al-Rased Journal of Social Sciences, Volume 1, Issue 1, Mohamed Boudiaf University, M'sila, Algeria, 2021.