Pegem Journal of Education and Instruction, Vol. 16, No.1, 2026 (pp. 273-287)

RESEARCH ARTICLE WWW.PEGEGOG.NET

Challenges Faced by University Professors in the Context of Implementing Digitalization at the University – A Field Study at the University of Continuing Education, Zerzara Center – Constantine –

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Received: 21/07/2025 ; Accepted: 24/11/2025 ; Published: 04/01/2026

Abstract :

This study investigates the current state of educational digitalization and the challenges faced by university professors at the University of Continuing Education – Zarzara Center, Constantine. As a recent field experience in Algeria's transition toward blended learning, the research was conducted amid the rapid digital transformation of higher education. Adopting a descriptive–analytical approach through an online survey, data were collected from professors across various disciplines to assess the digital infrastructure, training levels, attitudes toward digital education, and barriers to implementation. Findings revealed that the digital infrastructure remains inadequate, especially regarding equipment and internet quality. While most professors acknowledge the importance of digitalization as a necessary step in academic development, the lack of practical training and institutional support hinders its success. The study highlights the need for hands-on training in digital platforms, blended learning, and digital security, viewing them as essential foundations for advancing educational digitalization in Algerian universities.

Keywords : Digitalization, Educational Challenges, University Professor, University of Continuing Education.

Research Problem

Over the past decades, the world has undergone profound transformations that have affected nearly all aspects of human life. Among the most significant of these transformations is digitalization, which has reshaped patterns of thinking, modes of work, forms of communication, as well as teaching and learning practices. Digital transformation has become a defining feature of the

contemporary era and an essential requirement for keeping pace with the rapid developments in knowledge and information societies. Digital technologies now constitute a key driving force of civilizational progress, particularly in higher education, which represents one of the most critical pillars of intellectual and human development in modern societies.

In this context, university education has gradually shifted from traditional models based on direct face-to-face interaction and teacher-centered pedagogical approaches toward more open, flexible, and technology-driven models. These new models rely on the integration of digital tools and platforms to enhance the educational process. Learning is no longer confined to physical classrooms or limited by time and space; instead, it has evolved into open and blended forms of education that allow for continuous interaction and unrestricted access to knowledge resources. However, this transformation is not merely a technical shift from paper to screen or from chalkboards to interactive devices. Rather, it represents a deep structural change that has reshaped the foundations of the educational process and redefined the roles of professors, students, and universities alike.

Within this new educational landscape, university professors are no longer perceived solely as transmitters of knowledge. They have increasingly assumed the roles of facilitators, mentors, and designers of interactive digital learning environments. This transformation requires professors to acquire new competencies related to digital literacy, the management of online learning platforms, and the effective use of modern technologies in teaching, assessment, communication, and academic guidance. Consequently, digital transformation has become a strategic and unavoidable choice for higher education institutions seeking to improve educational quality and expand opportunities for lifelong learning.

In Algeria, most universities have embraced digitalization in recent years, in line with national policies and global trends aimed at digitizing administrative, pedagogical, and academic services. Nevertheless, the practical implementation of digital education continues to face several challenges. These challenges are related to digital infrastructure, the continuous training of university professors, their acceptance of technological change, as well as organizational and material constraints that limit the effectiveness of digital transformation in educational practice.

From this perspective, the university professor emerges as a central actor in the process of implementing digitalization. Professors are directly responsible for integrating digital technologies into pedagogical practices and for reconciling traditional teaching requirements with the

demands of digital education. However, this new role confronts them with multiple challenges, including cognitive challenges related to the acquisition of digital skills, pedagogical challenges linked to adapting teaching strategies, and psychological and professional challenges associated with readiness for change and adaptation to rapid technological developments.

Within the Algerian higher education system, the University of Continuing Education represents a distinctive case due to its specific educational mission. It aims to provide diverse groups of learners—particularly workers and adult students—with access to higher education through flexible training models that combine face-to-face instruction with distance learning.

This specificity makes digitalization a core component of the university's educational philosophy, while simultaneously rendering its practical implementation a complex process that requires institutional readiness and qualified human resources.

The Zarzara Center for Continuing Education in Constantine constitutes a representative field for examining this issue. It brings together university professors from various disciplines within an educational environment characterized by an ongoing tension between traditional practices and modern digital approaches. As such, it offers a suitable context for studying the reality of digital transformation and the challenges associated with its implementation. The success of digitalization at this center largely depends on the ability of university professors to interact effectively with digital educational tools, understand the philosophy of blended learning, and overcome technical, organizational, and pedagogical obstacles.

Accordingly, this study seeks to explore the nature of the challenges faced by university professors in implementing digitalization at the Zarzara Center for Continuing Education in Constantine, and to examine the impact of these challenges on their pedagogical and educational performance within a digital learning environment.

Research Questions

This main research question gives rise to the following sub-questions:

To what extent are university professors prepared in terms of training and digital competencies required for digital education?

What are the main technical and administrative obstacles that hinder the effective implementation of digitalization in teaching practices?

How has digitalization contributed to the development of teaching methods and the enhancement of interaction between professors and students?

What mechanisms and support strategies can enhance university professors' effective integration into the digital learning environment?

Third: Objectives of the Study

This study aims to achieve several objectives, most notably:

- Diagnosing the current state of digital transformation implementation at the University of Continuing Education - Zarzara Center.

- Identifying the most significant challenges faced by university professors in implementing digital teaching methods.

- Analyzing the extent to which professors are prepared to adapt to digital transformation in terms of skills and training.

- Exploring the impact of digital transformation on the educational process from the perspective of pedagogical interaction and performance quality.

- Proposing practical mechanisms to support teachers in adapting to the demands of digital education.

Fourth: Methodology:

Methodology is defined as the set of rules and procedures established by specialists in research methodology that a researcher follows to arrive at or uncover the truth, or that lead to sound research results. Given the nature of the topic and its objectives[1], this study adopted the descriptive-analytical method, as it is a systematic effort that allows for the interpretation of a phenomenon in its current state after collecting the necessary data about it and its components through a set of organized procedures that define the type of data, its source, and the methods of obtaining it[2]. This method is the most suitable for studying social and educational phenomena as they exist in reality, through collecting and descriptively analyzing data to draw conclusions.

An electronic questionnaire was administered to a sample of professors working at the University of Continuing Education – Zarzara Center in Constantine, with the aim of gathering their opinions and perceptions about the reality of digitalization and the challenges associated with it. The questionnaire was distributed to professors from various disciplines (Media and Communication, Psychology, English, and Law).

Fifth: Clarifying Concepts:

1- **Defining Challenges**: Linguistically, the word "challenge" (tahadda) comes from the verb "hadda," meaning to challenge or contend

[1] Al-Rubaie, Mahmoud Dawood. Foundations of Scientific Research. Amman: Dar Al-Safaa for Publishing and Distribution, 1st ed., 2018, p. 22.

[2] Abdel Hamid, Mohamed. Journalism Research. Cairo: Alam Al-Kutub, n.d., 1992, p. 93.

with someone. It is said, "So-and-so challenges so-and-so," meaning he competes with him and contends for victory. He might say, "I am challenging you in this matter," meaning, "Come out to me and challenge me." "Challenge" (tahadda) also means confrontation or exposure[3]. It is said, "So-and-so challenged so-and-so," meaning he exposed himself to harm[4].

In its technical sense, the term "challenge" (tahadda) is closely related to its linguistic meaning. It is a demand for a similar outcome in a contest or competition, and the specific outcome is determined by what is being challenged[5].

2- The Concept of Digitalization: Definitions of digitalization vary depending on the context in which the term is used. Some of these definitions include:

Digitalization is defined as the process of converting the physical aspects of business processes and workflows into digital formats. Representing non-digital or physical things in a digital format means that a computer system can use this information. For example, paper forms filled out by customers are converted into digital forms that they complete online. This digital data can then be used for business analytics[6].

Digitalization is also defined as a broad range of information and communication technologies that enable automation, robotics, and technologies related to processing and analyzing digital data, including big data such as artificial intelligence, machine learning, and computing.

Furthermore, digitalization is defined as the process of converting data, information, and processes into formats that can be stored and processed by computers and other communication technologies[7].

3- The concept of digital education: This is a modern educational approach that utilizes contemporary communication technologies, including computers, networks, multimedia (audio, video, graphics), search engines, electronic libraries, and internet portals, whether for distance learning or in the classroom. In short, digital education means using various modern electronic technologies to deliver information to the learner in the

[3] Al-Farahidi, Al-Khalil ibn Ahmad. Kitāb al-ʿAyn. Edited by Mehdi Al-Makhzumi and Ibrahim Al-Samarrai. Lebanon: Dar wa Maktabat Al-Hilal, n.d., vol. 3, p. 279.
[4] Ibn Duraid. Jamhara al-Lugha. Edited by Ramzi Mounir Baalbaki. Beirut: Dar Al-'Ilm Lilmalayin, 1st ed., 1987, vol. 3, p. 1272.
[5] Arafa, Ibn Tantawi. Al-Shafʿa between the Uthmanic Compilation and the Seven Qira'at. Cairo: Center for the Authentication of the Sciences of Revelation for Scientific Research, 1st ed., p. 42

[6] Karim, Mabrouka Mohamed. "The Conceptual Framework of the Term Digital Transformation. Journal of Research in Human and Cognitive Sciences, no. 7, vol. 1, October 2024, p. 241.
[7] Guyllaume Faucher and stephanieHoule,Digitalization:Definition and Measurement,Canadian Economic Analysis Department, Bank of Canda,2023,p2.

shortest time, with the least effort and cost, thus maximizing benefit[8].

3- The Concept of the University of Continuing Education:

This is a public institution of an administrative nature, possessing legal personality and financial autonomy, under the supervision of the Ministry of Higher Education and Scientific Research. It was established by Executive Decree No. 90-149 dated May 26, 1990. As a model of e-learning, the University of Continuing Education has been and continues to be a pioneer in implementing various scientific, academic, and pedagogical methods in the educational and training process it oversees, benefiting society and the nation. The University of Continuing Education is a university institution responsible for continuing education through evening classes and distance learning, enabling students wishing to continue their studies and improve their academic level. It has 56 centers distributed throughout the country, providing nationwide coverage[9].

4- The Operational Concept of Challenges: In this study, challenges refer to the set of technical, pedagogical, and psychological obstacles faced by university professors at the University of Continuing Education in the Zarzara Center of Constantine, which hinder their implementation of digitalization in education[10].

Theoretical Framework of the Study:

1- The Emergence and Development of Digitalization in Higher Education

The higher education and scientific research system in Algeria has witnessed profound structural developments, characterized by rapid quantitative expansion in structures and the number of students. Amidst current global transformations, the Algerian university found itself facing the imperative of qualitative review and moving from the stage of traditional training to adopting more flexible and effective educational models. This reform path was embodied particularly in the re-engineering of pedagogical paths and the acceleration of digitalization to meet new challenges, such

[8] El-Desouki, Mohamed Ibrahim. "Digitalization and Education." Journal of Educational Administration, Helwan University, no. 43, July 2024, p. 68.

[9] Ghiat, Sherif & Mehri, Abdelmalek. "E-Learning in Algeria: Challenges and Obstacles with Insights from Leading Countries." International Journal of Economic Studies, Arab Democratic Center, Berlin, Germany, no. 7, vol. 2, August 2019, p. 84.

[10] Karthioukamal. "E-Learning at the University of Continuing Education: Between Reality and Expectations." Journal of Economics and Sustainable Development, no. 2, vol. 5, 2022, p. 81.

that; Distance learning and blended learning have become strategic choices, particularly in the context of health crises that have accelerated technological adaptation. Furthermore, integrating artificial intelligence into curricula and university governance mechanisms is a crucial step in enhancing competitiveness, improving the quality of scientific research, and ensuring that university graduates meet the demands of the knowledge-based job market. Assessing the current state of education requires an in-depth study of these transformations and determining the extent to which universities have successfully leveraged modern technologies to achieve national and academic aspirations. Algerian universities have recently witnessed a qualitative leap in digital transformation and the modernization of the higher education sector, keeping pace with technological advancements. This digitalization has encompassed numerous services, including student registration, online classes, the pedagogical evaluation system, university accreditation, research project registration, scientific publishing, and other services[11].

The beginnings of the digitization of higher education in Algeria can be traced back to 2011, coinciding with the Algerian state's move to implement an e-government system across all its sectors, including the Ministry of Higher Education and Scientific Research. At that time, the Ministry worked to establish a digital environment for various higher education and scientific research institutions throughout Algeria. In 2019, coinciding with the emergence of the COVID-19 pandemic in most countries worldwide, the Ministry emphasized the necessity of using digital tools in university management. This included implementing measures such as discontinuing the use of fax machines and replacing them with email, as well as converting journals and publications into digital formats to reduce printing costs. Similarly, the preliminary draft of the 2020 Higher Education Orientation Law outlined mechanisms to enable various higher education institutions to keep pace with the digital age, both in terms of administrative and pedagogical functions. Education is now delivered through digital platforms as a pedagogical tool to support students, and efforts have been made to expand the use of digital technology in management, training, and research. Algeria has developed a strategy for adopting a university education digitization project based on principles and factors to achieve transformation and digitization in all

[11] Smaili, Mahmoud & Ben Amara, Saida. "Higher Education Reforms in Algeria: Balancing Quantity Requirements and Quality Challenges – A Diagnostic Study of the Reform Process in the Higher Education Sector." Milaf Journal for Research and Studies, no. 1, vol. 8, June 2022, p. 123.

sectors, including higher education and scientific research. These principles can be summarized as follows: In:

- Integrating information and communication technology (ICT) into the educational process

- Raising awareness among the university community about the importance of ICT in modernizing and improving the efficiency of the educational process

- Working to provide all necessary equipment and ICT networks

- Developing and training human resources

- Learning from the experiences of other countries with expertise in digitization[12].

2- Challenges Facing the Digitization Process:

The challenges facing the digitization of education in Algeria lie not only in participating in the knowledge society, but also in the effective and successful application of ICT and mastering its use. These challenges include:

- The inability of universities to establish large and extensive networks and provide a large number of computers, peripherals, and equipment, and to keep them up-to-date.

- Teachers' adherence to the traditional system, coupled with the absence of awareness and encouragement policies, which constitutes resistance to this change in the education system.

- A severe shortage of specialists in software and computer science, which has negatively impacted the websites of Algerian universities.

- Weak infrastructure for this type of learning, especially in rural and desert areas, particularly regarding internet access.

- A shortage of highly qualified personnel to ensure the success of digitalization.

- A significant percentage of students and teachers suffer from weak computer skills.

- The language barrier, as English is the primary language used in computer applications and networks, posing a major obstacle for many students and even teachers who are not proficient in it.

- This type of education is expensive for students, both in terms of acquiring hardware and software and accessing the internet.

- The difficulty of conducting online exams due to the potential for cheating if strict measures are not taken to prevent it.

[12] Sedrati, Samira. "Digitalization of the Algerian Higher Education Sector: Stakes and Challenges." Journals of Politics and Law, no. 2, vol. 17, p. 39.

- Hacking of e-learning platforms and cyberattacks on major websites are among the most significant obstacles to this type of education[13].

Applied Study

After reviewing the methodological and theoretical frameworks of the study, this applied section presents and analyzes the field results obtained from the electronic questionnaire distributed to professors at the University of Continuing Education – Zarzara Center in Constantine. This section aims to reveal the reality of educational digitization and the level of readiness of the digital infrastructure, in addition to identifying the most significant challenges facing university professors in implementing blended learning, and to explore practical proposals that can contribute to developing the educational digitization experience within the university.

First: The first axis: Profile Data

The applied study at the Zarzara Center, specifically regarding the profile data of the professors working at the University of Continuing Education, which included gender, age group, academic degree, and years of experience, revealed the following:

1- Age Group: The results of the applied study showed that the majority of professors teaching at the University of Continuing Education are over 40 years old, representing 46.2%, indicating their experience in the field of education. 2- Academic Rank: The study results revealed that the majority of professors at the University of Continuing Education in Zarzara are temporary professors, followed by lecturers (19.2%), and then full professors and assistant professors. These results are attributed to the university's recent establishment and its still-developing structure. Its permanent pedagogical and administrative structures have not yet been fully established, leading it to initially rely on temporary professors to address staffing shortages and meet the needs of its branches spread across various provinces of the country.

Second: The second axis: Experience and training in digital education or pedagogical digitization

The responses from professors at the University of Continuing Education in Zarzara showed that the majority (53.8%) had participated in training courses on digital education. This is a respectable percentage, indicating that the university is keeping pace with technological advancements. Furthermore, the nature of the university's training necessitates that professors utilize educational platforms for teaching.

Third: The third axis: Infrastructure, institutional support, and the extent of the

[13] Sedrati, Samira. The previous reference, p. 41.

center's administration's support for implementing digitalization in pedagogical work.

Regarding this axis, it became clear that there is limited support from the administration for implementing digitalization at the center, with 50% of responses indicating this. This was followed by a clear and organized support response at 30.8%, and then a lack of support at 19.2%.

Fourth axis: How to assess the availability of digital infrastructure within the Zarzara Center (equipped classrooms, internet access, devices, educational platforms).

The study results showed that the digital infrastructure within the University of Continuing Education is weak, estimated at 50%. This may be due to insufficient funding allocated to equipping laboratories, digital platforms, and infrastructure such as high-quality internet servers and equipment maintenance. This leads to a gap between digital aspirations and the reality on the ground. Furthermore, the absence of a unified digital vision within the university results in individual initiatives instead of a comprehensive digital policy.

Fifth Axis: Skills and Evaluation of Competence in Using E-Learning Tools

The study results showed that most professors at the University of Continuing Education possess good competence in using and controlling digital learning tools. This is attributed, as mentioned previously, to their experience in the field of education, as well as the training courses that enabled them to master these platforms.

Furthermore, the nature of teaching at this university necessitates remote learning and communication with students due to the specific circumstances of the students, most of whom have professional commitments that prevent them from attending in person.

Sixth Axis: The type of training that professors at the University of Continuing Education believe is necessary for them in the field of educational digitization.

The survey results revealed that the training professors at the University of Continuing Education need is how to prepare digital content, manage classes electronically, and interact through e-learning platforms.

Seventh Axis: The pedagogical and technical challenges facing university professors when using digitization in educational practices. The study results showed that the biggest challenge facing professors at the University of Continuing Education is the weak student interaction and response, with this element accounting for 42.3%. This is followed by the challenge of internet connectivity problems at 19.2%, and then the challenge of inadequate training at 15.4%. This indicates that digitization at the University of Continuing

Education is implemented through individual efforts by

professors, in the absence of a clear institutional framework or effective support mechanisms.

Eighth Axis: The Impact of Digitalization on the Relationship Between Professors and Students at the University of Continuing Education.

The results of the applied study revealed that most professors were unable to define the relationship between professor and student, with this element representing 57.7%. This was followed by the element of positive influence, also at 57.7%, and then the element of negative influence, at a very small percentage of 7.7%. These results are attributed to the fact that student acceptance of this type of education remains weak due to inadequate training in this area or a lack of sufficient university incentives.

Ninth Axis: Psychological and Organizational Aspects:

The study results showed that most professors at the University of Continuing Education sometimes feel pressured and exhausted as a result of using digital media daily. This indicates that implementing digitalization at the university is very important, as it has reduced pressure on professors and helped them work more comfortably. However, there is also difficulty in adapting to rapid technological changes. Tenth Theme: The Impact of Digitalization on the Nature of Work and Time Management for University Professors.

The study results showed that digitalization has had a positive impact on the nature of work and time management for professors at the University of Continuing Education in Zarzara, Constantine. This is a natural outcome, as distance learning has reduced the burden of travel and effort for university professors.

Eleventh Theme: The New Role of the University Professor in the Digital Age:

The study results for this open-ended theme, in which professors presented their perspectives on this role, yielded the following responses:

- The professor is the primary guide and mentor, a source of information, and digitalization is merely a tool for pedagogical support.

- Balancing traditional and distance learning.

- The professor's role is more about guidance, participation in learning, and mentorship than teaching.

- Providing content that is appropriate for the specific characteristics of the digital environment.

- Better organization of pedagogical tasks and easier delivery of information using digital tools.

- The professor should accompany students throughout their distance learning journey.

- The professor's role is to explain, clarify, and share information. - Enhancing interaction with lectures and using modern methods in student assessment.

Twelfth Theme: Does Digitalization Represent a Means to Improve the Quality of University Education?

We also left this theme open for professors, and the results all pointed to digitalization as a means to improve the quality of university education. However, some additions suggested the need for rational use and providing the necessary resources. These were some of the professors' additions:

- Digitalization necessarily requires infrastructure to improve the quality of university education

- Yes, in some aspects.

- Yes, if it is used properly and all the necessary resources are available.

Thirteenth Theme: Proposals and Recommendations Regarding the Needs that Enable Professors to Practice Their Profession More Efficiently in a Digital University Environment

The results of the applied study revealed proposals that would meet the needs of university professors to practice their profession more efficiently in a digital university environment. Most of the responses revolved around these proposals: - Providing internet access, electronic devices, and technical support teams at the university.

- Continuous training and material and moral incentives.

- Equipping lecture halls with presentation equipment and creating professional email addresses affiliated with the center.

- Providing technical and material support, sound organization, and commitment to roles, along with intensifying training courses in the field of digitalization and keeping abreast of the latest developments.

- Training students in the field of digitalization.

- Allocating communication tools and devices specifically for professors.

- Finding solutions to bridge the gap between professors and students resulting from the use of digitalization and online platforms.

Thirteenth Axis: Proposals to Improve the Digitalization Experience within the University of Continuing Education:

The study results for this axis revealed proposals, most of which focus on facilitating and streamlining processes to keep pace with technological advancements, develop Algerian universities, and implement digitalization in the education sector. These were the most important proposals put forward by professors

at the University of Continuing Education in the Zarzara Center:

- Equipping the center with the necessary technical infrastructure, electronic devices, and equipment, and providing the required infrastructure.

- Finding fundamental solutions to the limited interaction between professors and students on digital platforms.

- Providing high-speed internet access at the center.

- Organizing training courses for both parties involved in the educational process, with the continuity of these courses.

- Expanding partnerships, such as with telecommunications companies, by allocating SIM cards and internet access specifically for professors and students.

Study Results:

- The study results show that professors at the Zarzara Center of the University of Continuing Education in Constantine agree that educational digitization is essential for the success of the digital transformation.

- The study results also show that awareness of the importance of digitization exists, but it is hampered by weak digital infrastructure and a lack of training programs.

- The success of a digitization project in higher education depends on the integration of human and technological elements within a unified system that contributes to improving university performance.

- The digital challenge at the University of Continuing Education extends beyond the technical aspect to the organizational and cultural dimensions. This necessitates the implementation of comprehensive digital governance that includes administration, training, motivation, and continuous technical support for professors. Successful digitization is not achieved through tools alone, but rather by creating an institutional digital culture that fosters the values of innovation, collaboration, and openness to digital knowledge.

Conclusion:

This field study on the challenges facing university professors and researchers in the context of digitalization at the University of Continuing Education confirms that digital transformation in higher education is not merely a pedagogical choice, but a strategic necessity for adapting Algerian universities to the demands of the digital age. However, the reality on the ground at the University of Continuing Education – Zarzara Center – reveals that the digitalization project still faces structural, organizational, and cultural obstacles that hinder its effective and comprehensive implementation. Weak digital infrastructure, the absence of continuing education programs, and a lack of motivation

and technical support all contribute to university professors treating digitalization as an individual effort rather than an institutional policy. Nevertheless, the results show a growing awareness among professors of the importance of digital transformation and a genuine desire to adapt to it, provided that the university offers the appropriate material and human resources.

Developing university education in Algeria through digitalization requires a comprehensive approach based on enhancing university competencies through continuous training in digital education, modernizing infrastructure and technological platforms to support blended learning and e-research, and building an institutional digital culture that encourages professors and researchers to be creative and innovative in the digital university environment.

The experience of the University of Continuing Education is a pioneering one that reflects the readiness of Algerian universities for digital transformation. It is an experience that can be developed and generalized if placed within the framework of a comprehensive national vision that unites efforts towards a digital Algerian university capable of competing regionally and internationally.

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