

**Blended learning a Strategic direction of the higher education system in Algeria,
an analytical study****التعلم المدمج توجه استراتيجي لنظام التعليم العالي بالجزائر، دراسة تحليلية****Khaldi hamida¹**

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Abstract:

This research paper examines Algeria's strategic adoption of blended learning as an approach increasingly implemented worldwide, particularly post-COVID-19 pandemic and pressures from growing student populations. Through descriptive-analytical methodology, the study evaluates the legal frameworks, material infrastructure, financial allocations, and human resources deployed for blended learning implementation, comparing them with established theoretical models of quality standards for such education, with particular focus on student needs. The analysis includes comparative references to Tunisia's parallel experience in this domain. Findings reveal that Algeria's Ministry of Higher Education has successfully implemented an effective strategy based on principles of autonomy and accountability in managing its financial operations, specifically focusing on performance objectives and indicators that regulate the practical implementation of blended learning programs across higher education institutions. The University of Continuing Education has been designated as the vanguard institution in this transition toward becoming Algeria's virtual university in the near future. However, the implementation exhibits certain shortcomings in support services when benchmarked against Tunisia's experience - gaps that could be addressed through expanded utilization of performance dashboards for monitoring and evaluation within the Ministry of Higher Education.

Keywords: blended learning, Dashboard ,Lifelong Learning ,Distance learning ,virtual university.

JEL Classification Codes: A23, I23, I28, O33.

ملخص:

تهدف هذه الورقة البحثية إلى تسليط الضوء على التجربة الجزائرية في تبنيها للتعلم المدمج كتوجه استراتيجي، هذا التوجه المعتمد في مختلف دول العالم لاسيما بعد جائحة كورونا وضغوطات العدد المتزايد للمستفيدين، من خلال المنهج الوصفي التحليلي لمختلف الجهود القانونية، المادية، المالية والبشرية المسخرة لتجسيد التعليم المدمج بالمقارنة مع أبعاد جودة التعليم المدمج ومتطلباته، والتجربة المماثلة للدولة التونسية في هذا المجال. تم التوصل إلى نجاح وزارة التعليم العالي في تبني استراتيجية فعالة في هذا الخصوص من خلال العمل بمبدأ الحرية والمسؤولية المتمتعدين في عملية التسيير العام لشؤونها المالية على وجه الخصوص والتي تركز على أهداف ومؤشرات الأداء التي تضبط التجسيد العملي لأهداف برامج هذا التوجه بمختلف مؤسسات التعليم العالي، وتخصيص جامعة التكوين المتواصل كرائد وموجه في هذا التوجه نحو كونها الجامعة الافتراضية بالمستقبل القريب في الجزائر. إلا أن هذا التجسيد لا يخلو من بعض النقصان خاصة في جانب الخدمات الداعمة إذا ما قارناها بالتجربة التونسية، وهو الأمر الذي يمكن تداركه خاصة بالتوسع في اعتماد لوحة القيادة لمتابعة وقياس الأداء بوزارة التعليم العالي بالجزائر.

الكلمات المفتاحية: التعلم المدمج، لوحة القيادة، التعلم مدى الحياة، التعلم عن بعد، الجامعة الافتراضية.

A23, I23, I28, O3.: **JEL تصنيفات**

Introduction :

In light of the technological developments that the world is witnessing, the open higher education system interacts with developments outside the university. As universities as physical places and studies as social practices in the future, the contrast between the physical and virtual space will become less important - the reality, the two spaces will "merging".

Many opinions assert that online universities will prove themselves alongside campus-based learning. This leads to cooperate between the two types of universities, enabling them to achieve their goals as economically as possible. As traditional higher education institutions are increasingly integrating digital technology into their current operations. (The Operational Approach), and the Digital Transformation of Higher Education (The Strategic Approach) This requires an ambitious strategic reorientation (Dominic Orr, 2020, p. 12). And here comes what is known as Blended learning because of their role in increasing the flexibility and convenience of the learner, Especially with the pressures and accountability facing higher education institutions that force it to meet the various requirements of the beneficiaries according to their different circumstances on the one hand and to ensure the quality of its performance on the other hand.

The blended learning is now considered a mainstream approach to learning in most educational organizations, it based on current and future needs, Especially since it is in order to reach UNESCO'S sustainable development goals, Unesco's education 2030 framework for action provides guidance for governments and partners in turning commitments into action, accessible, and equitable quality education and lifelong learning opportunities for every one across all modes of formal and non-formal learning, there is why the only sustainable means of achieving these educational goals are scalability, opening up education and increases use of the potentials of technology and digitization, which includes the implementation of blended learning (Ebba Ossiannilsson, October 2017, p. 22)

Thus, blended learning is an inevitable necessity and an unavoidable trend for various higher education institutions around the world.in terms of its absorption of the needs of beneficiaries and society in general. Therefore, the matter about the necessity of blended education is settled, but the matter is related to how to operate this blended education in a way that does not negatively affect the institution's functioning, especially when Its material, moral and human requirements, ensuring that it undertakes the same traditional education or better, in order to meet the aspirations of the various parties with interests in higher education institutions, whose levels of assurance cannot be compromised.

Algeria has made serious efforts toward digital transformation as a strategic approach, notably by selecting the University of Continuing Training(Lifelong Learning University) as a pioneering model and designating it for transition into a virtual university in the near future. This shift gained urgency following the COVID-19 pandemic, which imposed challenges necessitating remote work to ensure educational continuity. Consequently, Algeria has worked to integrate distance learning across all higher education institutions alongside in-person instruction (blended learning) by formulating and adapting its strategic roadmap to fulfill this inevitable digital shift.

From this context emerges the central question guiding our research paper:
Are the current efforts sufficient to ensure the successful implementation of blended learning in Algerian higher education institutions?

To address this problem, the following sub-questions must be answered:

- What are the key requirements for effective blended learning?
- How can policymakers ensure these requirements are met and implemented?

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- How can Algeria's experience be evaluated from both strategic and practical perspectives in adopting this blended learning approach?

Study hypotheses:

To address the study's core problem, the following hypotheses were adopted:

1. The effective implementation of blended learning depends on a strategic roadmap that defines clear objectives and operationalizes them through measurable performance indicators.
2. Policymakers can successfully achieve their targets by adhering to the principle of "autonomy with accountability" when implementing objectives and monitoring performance indicators.
3. The Algerian experience shows promising and inspiring signs of achieving desired outcomes, particularly due to the evidence-based governance adopted by the Ministry of Higher Education and Scientific Research.

Research Approach and Methodology:

To comprehensively address this research topic, the study is divided into two parts:

1. Theoretical

Framework:

This section covers the conceptual foundations of blended learning, its key dimensions, and the standards governing its effective implementation and quality assurance. Special emphasis is placed on the *dashboard tool* as an efficient management instrument for performance monitoring and evaluation—particularly since the adoption of blended learning will rely on both *strategic* and *practical* methodologies.

2. Applied

Framework:

Here, Algeria's experience in adopting blended learning is analyzed, including the concrete efforts undertaken. This analysis is benchmarked against the criteria for successful implementation outlined in the theoretical framework, with a critical assessment of strengths and gaps. For comparative insights, the study references Tunisia's experience in this field.

Given the nature of the research, a **descriptive-analytical approach** is employed, particularly when examining:

- Quantitative metrics used by the Ministry to shape its strategic vision for blended learning.
- Tangible, on-the-ground efforts in implementation

Previous Studies :

- Raza A. Siddiqui, Ashwini Sonawane, Sayali Shinde, **Blended Learning Models: Combining Online and Offline Education for Optimal Outcomes**, Journal of Indian Scientific Journal Of Research In Engineering And Management (Indospace Publications), Vol. 08, Iss: 12, 15 Dec 2024: The paper explores the effectiveness of blended learning models in promoting optimal learning outcomes, indicating that these models can enhance the learning experience by integrating traditional face-to-face instruction with online learning components, It discusses the advantages and challenges of implementing blended learning, highlighting how this educational approach can address the diverse needs of learners in the 21st century, thereby making education more flexible and adaptable. (Raza A. Siddiqui, 2024)
- Intan Farahana Kamsin, **Hybrid E-Learning Model and Applications**, International journal of academic research in business & social sciences, 10 Aug 2024: The paper provides a comprehensive literature review on the hybrid e-learning model, highlighting its advantages such as improved accessibility, flexibility, and student-centered learning

experiences, which can enhance educational outcomes for higher education students, It identifies key elements for successful hybrid learning implementations, including smart course design, effective use of technology, and ongoing support for both instructors and students, while also addressing challenges like digital equity and the need for professional development and training. (Intan Farahana Kamsin, 10 Aug 2024)

- Yuanyuan Feng, Rajendran Nagappan, **Blended Learning as Part of Instructional Design: The Effectiveness in Teaching and Learning by Students**, Journal of education and educational research, Vol. 10, Iss: 1, pp 253-257, 10 Sep 2024: The paper highlights that instructional design in blended learning significantly enhances participation, interaction, and assessment among both teachers and students, indicating its effectiveness in improving the overall learning experience, It provides insights into the future direction of research in blended learning and instructional design, particularly in the context of the "post-pandemic era," guiding stakeholders on areas to focus on for continued development. (Yuanyuan Feng, 10 Sep 2024)
- Fang Wang,Hui Zhang,Xin Yang,Yuehui Liu,Naxin Sun, **AI Empowers Blended Teaching to Achieve Comprehensive Learning with "Five Dimensions and Seven Steps"**, Journal of Advances in education, humanities and social science research (Madison Academic Press), Vol.12, Iss: 1, pp 789-789, 27 Nov 2024: The paper highlights that the AI-empowered blended teaching model, which utilizes the "Five Dimensions and Seven Steps" learning approach, serves as a critical tool for enhancing the overall learning process, thereby improving classroom efficiency and addressing challenges faced in traditional in-class teaching, It discusses the challenges encountered during the implementation of this blended teaching model and proposes solutions, providing valuable insights that can inform and improve modern teaching practices. (Fang Wang, 2024)

1. Theoretical Framework:

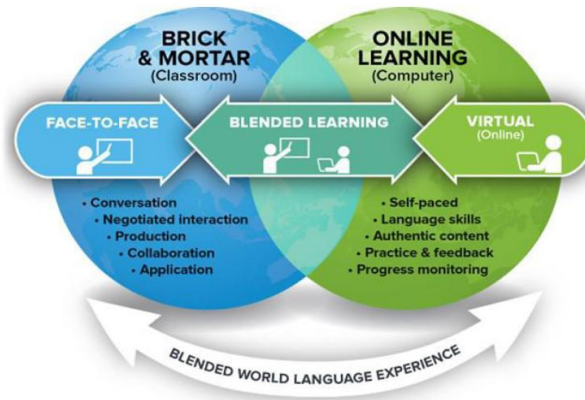
1.1. Blended learning.

"The concept of blended learning simply means the blend of virtual online digital media, training with traditional classroom methods, and face-to-face sessions."

Although the concept of blended learning may seem intuitive, its practical application is complex. It combines brick-and-mortar attendance with teachers in face-to-face classroom practices. Educational models are combined with computer-mediated activities, computer-mediated content, and delivery. Blended learning is also used in professional development and training settings because it is cost effective, time saving, efficient, and learner friendly (Ebba Ossiannilsson, October 2017, p. 22). A common model of blended learning is shown in figure 1.

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Figure (1): A model of blended learning



Source: (Ebba Ossiannilsson, October 2017, p. 23)

There are at least three key dimensions to consider in classifying learning: physical class-based or virtual, formal or informal, and scheduled or self-paced, and it is possible to introduce one additional dimension of learning, namely availability of face-to-face interactions outside the class between the students and the instructor/ tutor (Kim, 2007, p. 12).

An influential early definition was that of Graham, who proposed that "Blended learning systems combine face-to-face instruction with computer-mediated instruction. This defines the Blend as some combination of two modes.

At the same time Graham offered this definition, computer-mediated communication was seen as largely asynchronous and text-based. Now that teleconferencing applications are common, Friesen has suggested the need to redefine "face-to-face" as "co-present". For Friesen, "Blended learning" designates the range of possibilities presented by combining internet and digital media with established class-room forms that require the physical co-presence of teacher and student (A. Bryan, Vol 8, no 2, 2016, p. 25)

Other theorists and practitioners offer definition, which are similar to those of Graham and Friesen. For Staker and Horn, Blended learning is "a formal education program in which a student learn at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and least in part at a supervised brick and mortar location away from home". This definition emphasizes that content and instruction must be delivered online, meaning that a traditional face-to-face course in which students are encouraged to use internet for research does not qualify as Blended learning. The phrase "supervised brick and mortar location" means that the "face-to-face" element need not necessarily consist of traditional classroom contact. For Krasnova, Blended learning may be defined as a "method of teaching that combines the most effective face-to-face teaching techniques and online interactive collaboration, both constituting a system that functions in constant correlation and forms a single whole.

Stacey and Gerbic consider a range of definitions of the term, but at a minimum it involves "some combination of virtual and physical environments". For Launer, it is "the combination of technology supported self or distance study settings and face-to-face settings". (A. Bryan, Vol 8, no 2, 2016, p. 25)

So, the term Blended learning, hybrid learning, technology-mediated instruction, technology-enabled (enhanced) learning, web-enhanced instruction and mixed-mode instruction are often used interchangeably in the research literature.

Blended learning is sometimes also used synonymously with personalized learning and differentiated instruction.

1.2. The Key issues in the successful implementation of blended learning:

The implementation of blended learning is considered the main and prominent stage in the path of this trend, so in order to ensure the success of this stage, a number of issues were presented as follows:

- capacity development of teachers and teacher trainers is key in improving educational quality worldwide.
- teachers and teacher trainers must be supported effectively through professional development programs to transform their understanding and professional practice.
- the role of new media, especially mobile learning, in supporting teachers and teacher trainers must be included in this learning process.
- the ways in which traditional online courses can be replaced, supplemented, or supported by mobile technologies must be identified.
- capacity building and teacher training in blended learning should combine face-to-face workshops on the introduction, confidence building, group dynamics, and technology in blended learning, as well as include online modules for content reinforcement, communicative and collaborative learning, coaching, and ongoing support for the transfer of understanding into practice.
- capacity building and teacher training in blended learning should be developed with partner institutions in local educational projects, such as universities and governmental agencies. The training should address a variety of subjects depending on the needs of the partners and the program design.
- new media should be implemented to facilitate access to training as well as new forms of learning and teaching, such as peer coaching and collaborative learning (Ebba Ossiannilsson, October 2017, p. 38)

1.3. Quality in Blended learning:

Blended learning could raise education to new levels of effectiveness and quality, especially when it will influence learner satisfaction, thus blended learning is not a question of quality but of quality, satisfaction, and effectiveness.

Chen and Yao (2016) found six critical factors in perceived e-learner satisfaction, the six dimensions were learners, instructors, the course, technology, design, and environment.

But the most important question in blended learning is not whether it will be norm but whether it will be done well or badly (Bates 2016), there is where he foresaw several challenges if the issue of quality in blended learning were to be taken seriously. His suggestions and solutions include the following:

- Develop an institutional strategy for teaching and learning.
- allocate resources, time, and teamwork for the move to innovative teaching.
- prioritize, encourage, and support innovative blended learning designs.
- build an institutional community of practice so that different support units can learn from each other.
- prioritize research on blended learning (Ebba Ossiannilsson, October 2017, p. 39).

1.3.1. Quality standards in blended learning:

Quality normally is defined using standards, and these standards only can be developed by authorized institutions, but generally most of the quality systems focus on blended learning courses or course evaluation,

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So we chose the quality framework focused on **the learner's needs** where it makes the learners as a center of the learning and teaching process. This model was a project of "Peter Mazohl & Harald Makl, January 2017" (Peter Mazohl & Harald Makl, January 2017.), Which depends on the criteria set out in the following table 1:

Table (1): Quality dimensions in blended learning

Quality of instruction	Enrolement	Course	Learning environmen and learning phase	Assessment and evaluation
-Administration -Technical administration -Programme administration -Documentation -Resources of the insitution/course provider -Technical resources -Human resources -Financial resources -Teachers/trainers -ICT skills -Didactic skills -Instructional design	-Course information -Pre-knowledge -ICT skills -Structure of course Enrolement procedure -Registration -Handling -Access to software, marerials..	-Documentation - Get to know the tutor(s) and the other learners - Well known course structure	- Teaching activities - Distance learning - Media - Social form and contact - Motivation - Workload - Communication - technology - Equipment and software - Platform for the distance learning phase	- Planning and definition of assessment - Assessment execution - Assessment testing definition - Learning outcomes - Evaluation &Feedback - evaluation - Of the course - Of the teachers - The course structure

Source: (Peter Mazohl & Harald Makl, January 2017.)

Consequently, it is critically important to consider these standards when implementing and evaluating performance, serving as essential benchmarks - particularly as they focus on student needs, given that students are the primary beneficiaries of blended learning

1.4. Dashboard for Effective Blended Learning

Dashboards function similarly to automobile dashboards by providing a simplified representation of key performance metrics in the form of gauges, tables, and charts. They are typically displayed on a single screen within a web browser and use color-coded indicators (such as traffic light colors) to track progress toward goals. These dashboards are dynamically updated at various intervals (hourly, weekly, monthly, or as needed) to ensure real-time data availability.

Dashboards enhance data comprehension through visualization techniques, leveraging principles of human cognition. They follow Gestalt principles, such as similarity and proximity, to present information clearly and concisely. Performance dashboards are described as layered information delivery systems that provide insights and alerts, enabling users to monitor, analyze, and manage business performance effectively.

As a core component of Decision Support Systems (DSS), dashboards play a crucial role in performance monitoring, analysis, and decision-making. They facilitate the comparison of actual vs. target performance, identify causes of inefficiencies, and enhance organizational collaboration.

Performance dashboards are particularly useful for tracking key performance indicators (KPIs) and supporting strategic planning by running scenario analyses and sharing insights across different business units. This makes dashboards an essential tool for improving decision-making processes within organizations. (Abd-Elfattah, 2014, pp. 62-63)

1.4.1. Dashboards in higher education institutions

Dashboards in higher education institutions function as **performance measurement tools** that provide a **real-time overview of key institutional objectives**. They serve as **visual representations** of critical performance indicators, allowing university leaders to **track progress, assess trends, and make data-driven decisions**. A dashboard translates **strategic direction into measurable outcomes**, enabling institutions to align their actions with long-term goals.

Dashboards and Strategic Planning in Higher Education

Effective strategic planning in higher education involves setting clear objectives, allocating resources efficiently, and continuously assessing progress. Dashboards contribute to this process by:

- **Linking strategic goals to performance metrics**, ensuring that all institutional departments work toward the same vision: Universities can track student success rates, faculty productivity, financial performance, and resource utilization.
- **Providing a centralized data platform**, allowing administrators to analyze trends, track key indicators, and adjust strategies accordingly: Dashboards allow administrators to **identify strengths and weaknesses** and make timely adjustments.
- **Enhancing transparency and accountability**, as dashboards facilitate data-driven decision-making and allow stakeholders to evaluate institutional effectiveness.
- **Supporting Continuous Improvement** – By tracking trends over time, institutions can refine academic programs, research initiatives, and student support services.
- **Ensuring Accreditation Compliance** – Dashboards facilitate documentation and reporting of institutional performance to meet accreditation and quality assurance standards

By incorporating dashboards into their strategic planning efforts, universities can improve **resource allocation, operational efficiency, and institutional sustainability**.

So, Dashboards are essential tools for **strategic planning in higher education**, offering a structured approach to **monitoring progress, ensuring accountability, and driving continuous improvement**. When integrated effectively, dashboards help universities **streamline operations, enhance transparency, and achieve long-term institutional success** (STACY SMULOWITZ, January, 2014, pp. 48-49.)

2. Applied Framework: Algerian efforts in the field of blended education

Algeria is working towards incorporating blended learning into its educational policy, adapting to various constantly changing circumstances, both locally and internationally. The most important of these was the adoption of the University of Continuing Training as a leading model in this field, towards its accreditation as an open university, and the adoption of a strategic approach towards establishing blended learning in various higher education institutions...etc., as follows:

2.1. University of Continuing Training, a leading model in the field of blended learning

The University of Continuing Training has known the launch of the blended training starting from the academic year 2020/2021 with the title of Open license (Bachelor) and Open Master in several of its centers and in several specializations. This adoption, which is considered a bold step by the university to adapt to global developments that makes the learner the center of its attention, has passed through several steps, the most important of which we mention:

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- The International Forum on "training engineering in the e-learning system" was held in coordination with the Laboratory of Modern Pedagogical Engineering in Education and Continuing Training on the 25. 26/02/2019, in the University Presidency "Dali Brahimi", Where many professors, researchers and specialists in the field of e-learning from inside and outside the country met to find out the most important international experiences in distance education, as well as exchange experiences and knowledge in this field.

- Receiving a delegation from the American Columbia University, led by Ms. Portia Williams, Executive Director of External Relations, accompanied by representatives of the American Embassy, on 15.02.2020. Where the delegation welcomed the possibility of close cooperation in the field of blended education that combines the residency method and through electronic platforms, especially in terms of the transfer of professors and students to receive specialized training according to the agreements.

The delegation also valued the capabilities of the Continuing Training University with regard to audio-visual aids and the possibility of using them to produce lessons within the framework of distance education, as well as the equipment used by the Accounts Center to run the electronic educational floors , Waiting for a cooperation project that includes the interests of both parties (University Continuing Training, 2021)

- Issuance of the legislative framework for the qualification of an open license and an open master, entitled the academic year 2020.2021.

2.1.1. Legal texts for the establishment of blended learning at the University of Continuing Training:

Blended learning was launched at the University of Continuing Training by issuing a set of legal texts issued by the Ministry of Higher Education and Scientific Research as shown in the following table 2:

Table (2): Legal texts for blended learning at the University of Continuing Training

No. Resolution		Content	Field	Division	Specialization	Nature
1019	22/12/2020	qualification of the open license.	economics, management and commercial sciences	Financial and Accounting Sciences	accounting and finance	Academic/ Online
1020	22/12/2020	qualification of the open Master.	Law and Political Science	Law	Business law	
1021	22/12/2020	qualification of the open license.	Law and Political Science	Law	-Private Law -public law	
1022		qualification of the open license.	human and social sciences	Human sciences - media and communication sciences	-Media - Communication	

1023		qualification of the open Master.	human and social sciences	Human sciences - media and communication sciences	Print and electronic journalism	
1024		qualification of the open Master.	Mathematics and computer science	automatic notification	Networking and Security	Professional/ Online
1087	30/12/2020	qualification of the open license.	Literature and foreign languages	English Language	Technical English	Academic/ Online

Source: (Directorate of Legal Studies and Archives, Fourth Trimester, 2020)

These legal texts constitute the foundational framework for implementing blended learning at the University of Continuing Training(*Université de la Formation Continue*). They were followed by subsequent legal provisions regulating the institution's training programs, which have become a benchmark for Algerian higher education institutions in blended education.

Today, the university's programs are listed among the higher education options for baccalaureate holders in the *Baccalaureate Holder's Guide*. Moreover, its graduates are granted significant priority in doctoral recruitment competitions, pending the institution's habilitation for third-cycle training under the LMD system—commonly referred to as "doctoral training"—after having already established Bachelor's and Master's programs in multiple critical and specialized disciplines.

2.1.2. The blended learning at the University of Continuing Training:

The institution offers distance training, in-person training, and on-demand training.

Distance education is considered one of the most important sides of the formation triangle at the University of Continuing Training due to the nature of the university in that it does not have its own structures but is affiliated with **the incubating universities**, in addition to the nature of student life in it, where students study after four o'clock in the evening during weekdays,

Until the issuance of Ministerial Resolution No. 1022 of October 23, 2017, granting the university the possibility of training within the framework of L. M.D according to the e-learning style (distance) in the first and second phases (Directorate of Legal Studies and Archives, the fourth quarter 2017).

2.1.3. The possibilities and structures of blended education at the University of Continuing Training:

The University of Continuing Training is considered the first model of an open or distance university in Algeria.

2.1.3.1. University vision and mission :

In the same context of the institution's vision and mission defined by the higher education directive law, which is to support economic, social and cultural development, the University of Continuing Training works to spread and communicate science and knowledge to every beneficiary, whether a student or an employee wishing to improve his level without any consideration for the university's traditional obstacles, especially spatial ones (Algerie Presse Service, 19 mai 2020).

2.1.3.2. The Key issues in the implementation of blended learning At the University of Continuing Training:

The University of Continuing Training has worked to prepare and intensify various capabilities, especially with regard to digitization, to implement the digital orientation of distance education, as shown in the following points:

- Moving from the educational entrance to the learning entrance: whereas, in the entrance to learning, the professor becomes a scriptwriter, that is, moving from content to competence, and from professor to student.
- The Australian “Model” floor has been adopted since 2013, this floor which is characterized by its accommodating the large and steady number of students and instructors, replacing the French “zaatar” floor.
- Internet flow: Concluding agreements with customers to provide a high flow of the university and its centers. Whereas, in 2005, Algeria used the Internet in distance education by exploiting SLM learning management systems. (كريمة بوعاشور، 2020)
- Training professors, lesson designers, and accompanying professors: Algeria has worked on forming experts in distance education and employing them as professors or engineers in Algerian university institutions, through partnerships within cooperative programs, the most important of which is the “Cos clear distance learning program” between the Ministry of Higher Education and Scientific Research and the Swiss institution “Qualilearning”, which includes (09) Countries from the coast and the Maghreb region. So that this program revolves around training in the principles of distance education, as its first phase ended in 2007 with the training of 34 experts, while in its second phase, which began in March 2009 to train e-learning specialists, it aimed at: Developing permanent teams for pedagogical and technical support (granting the e-address for students, storing documents...etc).

In addition to the Ibn Sina program, the AUF program, the Ide@ program(Tempus meda), which is based mainly on the extension and dissemination of information and communication technology, in the field of higher education, scientific research and vocational training sectors, as well as the development of training via the Internet.. (خالدة هناء سيدهم، 2017, pp. 15-16)

- Technical accompaniment: Provides registration platform, distance education platform, national portal for all floors (Webtude.Ufc.dz)...
- It provides digital marketing structures such as the university radio (Radio Al-Maarifa¹), the university’s television share, in which all new university news is broadcast...
- Accordingly, in 2016, the Ministry of Higher Education and Scientific Research qualified the University of Continuing Training to accompany universities in the context of a distance master’s degree, namely: University of Algiers 1, Oran University, and University of Algiers 3. Through the tasks set out by Supplementary Circular No. 635 of October 26, 2016 relating to the organization of a remote master, as follows:
 - Ensure technical accompaniment throughout the training period.
 - Managing the educational ground allocated for this type of training.(كريمة بوعاشور، 2020)

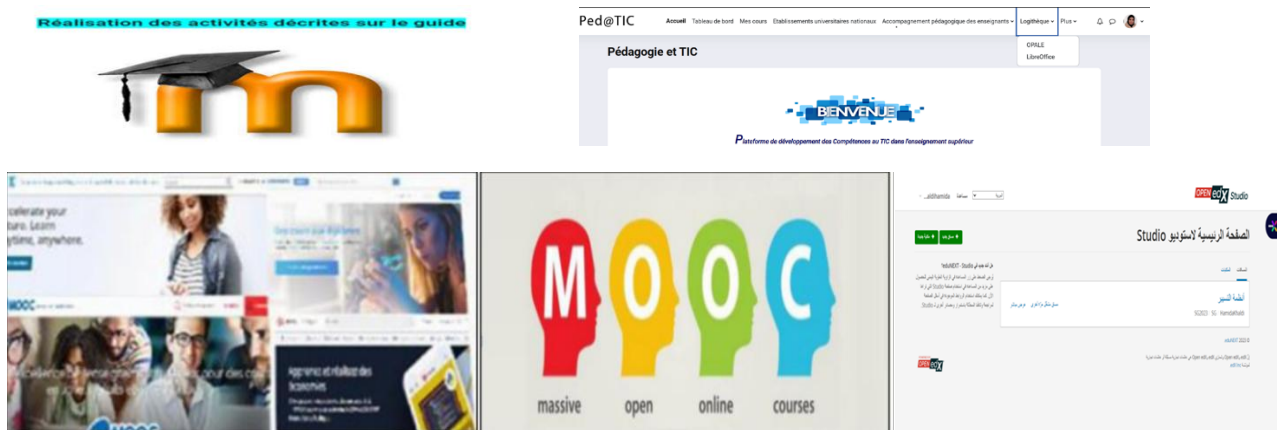
¹ The radio was established on April 16, 1990, in order to provide remote lessons in addition to cultural and scientific programs related to university life. Its programs are broadcast from Sunday to Friday during 6 hours a day on the medium wave.

2.2. Compulsory training course for newly hired teachers in Algerian higher education institutions on ICT:

The Ministry of Higher Education and Scientific Research mandated compulsory training for newly recruited professors in the field of "Information and Communication Technologies (ICT) and the Practice of Pedagogical Teaching," led by the University of Mentouri Brothers in Constantine 1. This training spanned eight (08) months and aimed to equip participants with the fundamentals of distance education through the following key themes:

1. Structuring and Designing Lessons: This module included competencies such as creating mind maps for lessons, designing lessons using formats and software supportive of online/distance learning, and the pedagogical structuring of online learning (entry system, learning system, exit system, defining objectives for each lesson level, and incorporating supporting materials, including prior knowledge). It also emphasized aligning lesson design with learning objectives, inspired by Bloom's taxonomy.
2. Delivering Lessons Online: This segment involved simulating the Moodle platform, where professors learned to craft interactive spaces and supports that foster effective communication with students online. It also covered enabling student access to online lessons, self-assessment, and other forms of evaluation after each lesson and lesson level.
3. Creating a MOOC on the Edx Platform: This part focused on utilizing the MOOC platform, particularly its tools for embedding pedagogical content, such as uploading lesson materials and designing courses. It also included creating videos for lesson content and outlines using platforms like EduNext.
4. Assessment Process: This critical component equipped professors with various skills and options for evaluating students online.

Figure (2): Some distance learning stations for newly hired teachers



Source: (Khaldi hamida, September 25-29, 2023)

The training was structured into five (05) workshops as follows:

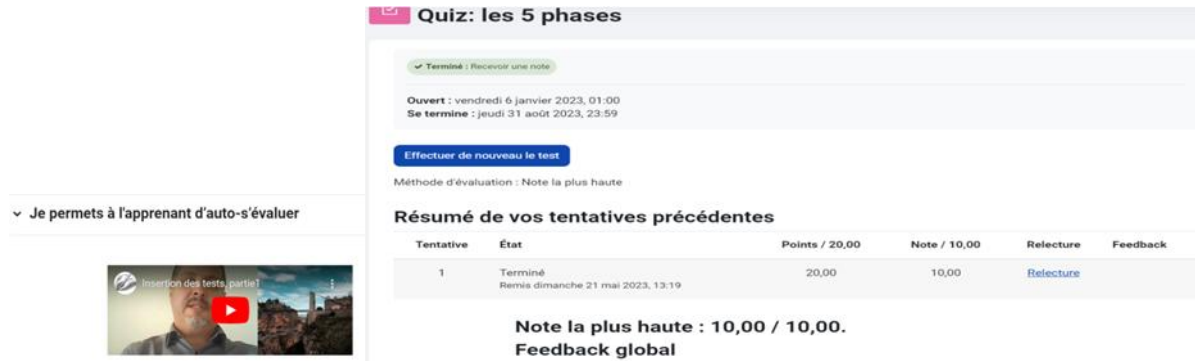
- Workshop 1: Tools to Assist in Using ICT in Teaching.
- Workshop 2: Designing a Course for Hybrid Teaching.
- Workshop 3: Methodology for Designing Training for Hybrid Teaching.
- Workshop 4: Designing a MOOC.
- Workshop 5: Pedagogical Follow-Up.

Each workshop included pedagogical kits in various formats (videos, PDFs, etc.), interactive spaces for team collaboration, and group activities. Professors from across the country were divided into

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teams, each supervised by a mentor. After engaging with the pedagogical kits, participants were assessed through activities in each workshop, with their work evaluated by their mentors within set deadlines.

Figure (3): Distance learning support for newly hired teachers



Source: (Khaldi hamida, September 25-29, 2023)

The training was further reinforced with surveys targeting professors' pedagogical backgrounds, identifying gaps, and encouraging teamwork through group activities. This approach aimed to foster interactive and collaborative practices between professors and their students in online environments throughout their professional careers (Khaldi hamida, September 25-29, 2023). For reference, the number of professors trained in the January 2023 session reached at least 614 professors from various higher education institutions in Algeria (53 institutions). (MOURI Fouzia, 2023)

Thus, the higher education system, through this initiative, has worked to instill and equip professors with the skills and competencies necessary for blended learning. It also prepared higher education institutions to transition to distance education when needed, utilizing platforms like Moodle and MOOC.

In alignment with the model proposed by (Peter Mazohl & Harald Makl , January 2017) on the quality requirements for blended learning, the Ministry aimed to address and prepare the following requirements for blended learning:

- Human Resources: The most critical resource, represented by teaching staff (Teachers/Trainers), emphasizing ICT skills and didactic skills.
- Technical resources: software, marerials, Platforms At the top of which is the **Moodle** platformm,.....
- Course Information: Through the platforms available at higher education institutions, including the University of Continuing Education.....
- Assessment and Evaluation.

2.3. Project to promote blended learning in higher education institutions in Algeria (over five years) :

Higher education and scientific research institutions fall under the authority of the Ministry of Higher Education and Scientific Research as part of the public sector. The management of these institutions has increasingly adopted modern public administration principles, which are reflected in their financial management. This approach is now based on the principles of autonomy and responsibility, guided by performance indicators. This means that expenditures are managed according to the desired outcomes of predefined objectives. Within this results-oriented philosophy, every Dinars of the

budget is justified, and reports such as the Report on Plans and Priorities (RPP) and the Departmental Performance Report (DPR) are prepared to monitor performance.

It is worth noting that funding is allocated according to programs. A program represents:

- An expression of a public policy that includes a predefined strategy,
- A coherent set of actions and measures in support of this strategy,
- Efforts aimed at achieving predefined objectives, measured by performance indicators,
- Adequate resources allocated to achieve the predefined objectives.

The Minister of Higher Education and Scientific Research presents the program and policy of the sector during the planning and preparation phase of the general budget, based on a five-dimensional framework within the Report on Plans and Priorities (RPP). This document reflects the strategic planning for the ministry's management and includes the following strategic elements:

- Program strategy,
- Objectives and indicators (including their methodology and evaluation),
- Justification for funding,
- Summary of program funding by sub-program and line item... (صابر عيشور, 2023)

Table (3): The most important indicators of the integration of blended learning in higher education institutions in Algeria

Program me Name	Responsi ble Manager	Objectives for the period 2023-2025	Perfor mance indicat ors	Curr ent value s	(Mea sure)	Date	Target values	Target values per exercise		
								200 3	200 4	200 5
Higher Education and Training	Director General of Education and Training	Redesign of teaching methods and strengthening of training in science and technology	Numbe r of training courses provide d online (L3 and Master)	0.8%	%	2021	20% minimum of training in social sciences and humanities in L3 and Master	0.8 %	3%	6%
			Numbe r of courses digitize d and put online	800	Numb er of course s	2021	Increase the number of courses put online by 100%	120 0	140 0	160 0

Source: (MESRS, 2023, p. 16)

- Number of training courses provided online (L3 and Master): This fully online (distance) training mode is one of the main missions of the **University of Continuing Education (UFC)**. In its action plan, the sector has already begun the procedure for revising the status of the UFC, with a view to transforming it into an **Open University (Algerian Open University (AOU))** and responsible for providing training in professional disciplines provided exclusively remotely. This future university will strengthen the sector's capacities in this training mode which is perfectly adapted to a section of our society, as practiced in several countries around the world.

- Number of courses digitized and put online: The pandemic experienced by the country since March 2020 has made us aware of the alternative offered by the distance learning mode. The experience capitalized by the higher education sector is able to offer students new educational tools,

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including the provision of digitalized online courses. The current demographic growth suggests an even greater mass increase in student numbers in the years to come. It is therefore clear that the combination of the online provision of digitalized courses and distance learning will provide a response to this numerical constraint. To address this, the sector's capacities in terms of digital educational platforms (hardware and software), ICT tools, internet speed and trainer training must be strengthened by providing the sector with appropriate resources.

- Additionally, the list of new projects included the preparation and equipping of an audiovisual center at one of the higher education institutions, with an allocated budget of 25,000,000 DZD for the year 2023. (MESRS, 2023, pp. 17-24)
- In addition to urging various higher education institutions to allocate and equip offices for televised education to enable professors to record lessons and make them accessible to students online, this initiative is reflected in the sector's budget under the heading of operational and equipment expenses (MESRS, 2023, p. 19) .(The figure below)

Figure (4): Financial allocations for the Higher Education and Training program

Dépenses du programme 1 par sous-programme année 2023 (en DA)

Programme	Titre 1 : Dépenses de Personnel	Titre 2 : Dépenses de Fonctionnement des services	Titre 3 : Dépenses d'Investissement	Titre 4 : Dépenses de Transfert	Total
13.1.1-1er et 2ème cycles d'enseignement	262 104 816 330	29 265 241 000	32 197 733 000	0	323 567 790 330
13.1.2-Formation au 3e cycle	13 719 084 460	1 697 642 000	50 000 000	500 000	15 467 226 460
Total	275 823 900 790	30 962 883 000	32 247 733 000	500 000	339 035 016 790

Source: (MESRS, 2023, p. 19)

These performance indicators can be relied upon to build a dashboard that helps track the successful implementation of these various objectives and adjust any deviations from the correct and planned path. In particular, the focus on blended learning reflects the digital orientation in the pedagogical approach of the ministry.

2.4. Blended Learning Support Services

The pillars of blended learning encompass the administrative aspect, including online administrative and research documentation, online administrative services, and more. In this endeavor, we find several efforts and achievements with a strategic orientation towards implementing blended learning by the Ministry of Higher Education and Scientific Research, as follows:

-Support for the National Documentation System Online (SNDL): This indicator allows for browsing national and international electronic documents that are rich and diverse across all fields and specializations. The current value of this indicator is 221,999 active accounts, with a target of increasing the number of active accounts by 5% annually, aiming for 2025. (Refer to Table No.)

- Student Life: Currently, the administrative handling of student life services is being digitized. The student's administrative file is uploaded electronically to university service directorates, which issue special cards allowing students to benefit from free transportation (tram, metro, train, etc.).

- Public Administration and Digitization Program through the "PROGRES Information System": This system enhances the performance of administrative and pedagogical functions (everything related to the student's academic affairs: registration in university training programs, transparent access to schedules, course instructors, exam timetables and locations, exam results, the possibility of filing appeals, success rates, and deliberations, etc.). The indicator used is the "generalization of the

PROGRESS Information System," with the current value being 88 university institutions, targeting 114 institutions by 2025 (Refer to Table N°4). This level of performance will ensure control over all data related to the management of higher education institutions and enable proactive and strategic decision-making. On the other hand, it ensures that students can track their academic progress with complete transparency and clarity, as highlighted in the research paper by Samir Laïssouf and Kamel Lahouel titled "The Role of Program Budgets in Integrating Educational Technology - The Digital Transformation of the Ministry of Higher Education and Scientific Research as a Model, published in the journal ,Atras,in September 2024."

Therefore, based on the above and applying the model by (Peter Mazohl & Harald Makl, January 2017) on the requirements for the quality of blended learning, it can be concluded that higher education institutions, under the leadership of their ministry, have adopted successful programs and policies to implement their strategic orientation towards blended learning in both pedagogical and administrative performance. This approach is driven by global circumstances and developments, particularly the increasing demand for higher education and the changing patterns of these demands towards higher education institutions, a change that is imposed by circumstances in one way or another.

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Programme Name	Responsible Manager	Objectives for the period 2023-2025	Performance indicators	Current values	(Measure)	Date	Target values	Target values per exercise		
								2023	2024	2025
Scientific research and technological development	Director General of the General Directorate of Scientific Research and Technological Development	Improving the visibility of scientific and technical information	National Online Documentation System SNDL	16221999	Number of databases Number of active accounts	2021	16 over 3 years plus 5% per year	20 235000	20 250000	20 260000
General Administration	Secretary General	Improving university governance	Generalization of the use of the information system (PROGRES) Support the integration of ICT into the teaching and governance process and provide information on the deployment of information systems	88	Number of establishments using the progress information system Calculation formula: (Number of establishments operating the SII at 100% + number of establishments operating the SII partially *0.5) / total number of establishments	2022	114	100	114	114
				60%	Number of generalized domains (business bricks) Calculation formula: Average operational functionality rates for each area Operational functionality: ✓ Function used by at least one establishment ✓ The data produced by this function is reliable	2022	100%	80%	100%	100%

Indicators for the implementation of the objectives of services supporting blended learning in Algeria

Source: (MESRS, 2023) , (Mohammed Chérif, 04 septembre 2022)

**Table
(4):**

However, what is still needed for the proper adoption and implementation of blended learning in Algeria is its reinforcement with dedicated online support platforms. Here, we can cite the Tunisian experience in this field, where specialized many platforms for students and Professors have been established to ensure the quality of blended learning, which is distinguished by its unique characteristics compared to traditional education. The higher education system has incorporated this as an important indicator to measure its performance within supportive services, with the number of these platforms 41 online services in 2021, i.e. 44% reaching, targeting an increase to %61. In 2025, Such as "the digital platform for psychological support services", which increases the number of beneficiaries of psychological support, supporting students' psychological comfort and developing their potential and psychological readiness to engage in academic and cultural activities under the best conditions. (Ministry of Higher Education and Scientific Research of the Republic of Tunisia, October 2022)

Thus, after the ministry's clear definition of its strategic orientation and its linkage to objectives and performance indicators, it can utilize a dashboard tool to effectively monitor its performance and detect any deviations from achieving its goals.

Conclusion:

Based on the theoretical framework and demonstrated importance - indeed, the necessity - of blended learning imposed by rapid changes, including growing student needs that traditional face-to-face education can no longer meet, blended learning emerges as an essential complement to conventional instruction. This is particularly critical in the digital transformation era, serving to bridge the gap between universities and learners. For optimal results, specific requirements must be met in implementing blended learning, as outlined by various theorists who have established quality assurance criteria for this educational approach. The model by (Peter Mazohl and Harald Makl ,January 2017) stands out for its clarity, simplicity, and student-centered design, recognizing learner satisfaction as a key indicator of blended learning success.

Effective blended learning implementation requires:

- 1) Technological infrastructure (particularly learning platforms)
- 2) Faculty training in digital communication technologies and online course development methodologies
- 3) Supportive administrative services to ensure smooth operations
- 4) Most critically, comprehensive legal frameworks governing distance education and incentivizing institutional adoption

Accordingly, Algeria's Ministry of Higher Education has strategically incorporated blended learning across institutions through its short-term plan (2023-2025), as outlined in its priorities and planning report. Preparatory measures included designating the University of Continuing Education as the national leader in this domain, with plans to establish it as Algeria's first official virtual university. Its bachelor's and master's programs employ a blended approach combining online instruction with professor-guided assessments alongside essential face-to-face components for core subject explanations. The Ministry further provides comprehensive ICT training for newly appointed faculty nationwide, covering:

- Online course design methodologies
- Remote student support and assessment techniques
- Platform utilization skills (Moodle, MOOC.....)

Furthermore, the digital-enabled administrative support services comprehensively address student needs across multiple dimensions:

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- Academic support (digital libraries and research repositories)
- Learning management systems (e.g., Progress platforms for pedagogical administration)
- Student welfare provisions (Food cards, residential accommodations, and transportation assistance)...

These initiatives confirm Algeria's successful adoption of an effective blended learning strategy, validating our first hypothesis. The Ministry's use of performance indicators to measure objective achievement demonstrates sound policy implementation and management practices, confirming our second hypothesis - though dedicated dashboards for blended learning remain underutilized. While Algerian higher education shows promising success in institutionalizing blended learning (confirming our third hypothesis) through substantial, strategically sound efforts, comparative analysis with Tunisia's experience reveals areas for improvement, particularly in student support services like psychological monitoring platforms. We therefore recommend:

- Developing dedicated blended learning dashboards with comprehensive performance metrics
- Implementing psychological support platforms as critical components of student services
- Incorporating these support systems as formal performance indicators

These enhancements would address current gaps while building on Algeria's significant achievements in innovative higher education delivery.

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