

# Country experiences in applying digital learning in Algeria

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*RASS. Pensées Genre. Penser Autrement. VOL 4, No 6 (Novembre 2024)*

## Abstract

In the late 20th century, the shift to an information technology society transformed education. This study examines Algeria's experiences with digital education, highlighting technology's role in improving learning by enhancing information flow and engagement. Digital education proved essential, especially during crises like COVID-19, where it sustained education. Key recommendations include training teachers and students in digital tools, enhancing internet infrastructure, and using digital education to support re-engagement of drop-out students, underscoring digital learning as critical for educational institutions in Algeria.

**Key words:** Digital society, digital education, COVID-19 pandemic, e-learning, distance education.

## Expériences des pays dans l'application de l'apprentissage numérique en Algerie

### Résumé

À la fin du 20e siècle, la transition vers une société de l'information a transformé l'éducation. Cette étude examine les expériences de l'Algérie en matière d'éducation numérique, en soulignant le rôle de la technologie dans l'amélioration de l'apprentissage grâce à une meilleure circulation de l'information et à un engagement accru. L'éducation numérique s'est avérée essentielle, notamment en période de crise comme la pandémie de COVID-19, où elle a permis de maintenir l'enseignement. Les recommandations clés incluent la formation des enseignants et des étudiants aux outils numériques, l'amélioration des infrastructures internet et l'utilisation de l'éducation numérique pour réintégrer les élèves décrocheurs, soulignant ainsi l'importance de l'apprentissage numérique pour les institutions éducatives en Algérie

**Mots-clés :** Société numérique, éducation numérique, pandémie de COVID-19, apprentissage en ligne, éducation à distance.

## **Introduction**

In the last quarter of the twentieth century, the world experienced a qualitative leap that changed human life. After the transformation from an agricultural society to an industrial society, it is now shifting to an information technology society, also known as the digital society. This transformation has altered various aspects of people's lives, including political, economic, social, and educational dimensions. It has become a necessary imperative that cannot be overlooked, representing the most significant achievement for the institutions of countries worldwide and a tool for power, prosperity, and development. It is evident that digital transformation has not been limited to e-commerce and electronic marketing or industrial and economic fields; it has also penetrated educational institutions, compelling them to keep pace with global changes and necessitating their adoption of communication and information technologies, particularly digital education.

The issue that this research paper seeks to address is: How have countries contributed to the implementation of digital education in their educational institutions, and how successful have these experiences been?

In light of the rapid developments in the digital world, three hypotheses can be formulated regarding the impact of digital education on society and the educational process. First, it is assumed that digital societies that rely primarily on technology and information will witness a fundamental transformation in learning and interaction methods, leading to improved educational competencies. Second, it can be assumed that the implementation of digital education contributes to enhancing the quality of the educational process by improving students' ability to access and manage information effectively, as well as fostering interaction between teachers and students. Finally, it is likely that the integration of digital education will increase educational opportunities in remote areas and isolated communities, as demonstrated by the experiences of some countries, such as Canada and India, which have successfully employed technology to overcome geographical challenges and provide education for all.

### **I- Theoretical Aspect**

#### **1-1 Digital Society**

It is a society that relies fundamentally on information, communication networks, and computers for its development. In other words, it depends on what is known as intellectual technology, which includes new goods and services, along with a continuous increase in the workforce. (N. Mutholi 1995, p. 27-28).

## **1-2 Digital Education**

It is the provision of electronic educational content through multimedia on computers and their networks to learners in a way that enables them to interact actively with this content, as well as with the teacher and their peers, whether synchronously or asynchronously. It also allows for the completion of education at a time and place that suit their circumstances and abilities, in addition to managing this learning through those media. The educational system in contemporary society has relied on digital education due to its positive impacts on the educational process, and it has become essential as a result of social changes and modern technologies (R. Belkhiri 2014, p. 32).

In another definition of digital education: "It is the education that relies on the use of electronic media for communication between teachers, learners, and the educational institution as a whole" (Al-Mohisin, 2002, p. 16). It is also the education that aims to create an interactive environment rich in applications based on computer and internet technologies, enabling students to access learning resources at any time and from anywhere" (Al-Owaid et al., 2002, p. 19).

### **1-2-1 Objectives of Digital Education:**

Digital education aims to achieve several key objectives, including the ability to meet the cognitive and scientific needs and desires of learners. It also seeks to improve the retention of acquired information and timely access to it. Additionally, it aims to renew and organize information and knowledge according to their importance and the context in which learning occurs. Furthermore, digital education contributes to enhancing interaction and communication among all parties involved in the educational process, including teachers, learners, and staff in the workplace.

### **1-2-2 Characteristics of Digital Education:**

According to the American Association, the characteristics of digital education include several essential elements that support individual development and enhance the learning process. First, digital education contributes to promoting communication and mutual interaction, facilitating the transition from the traditional knowledge transfer model to a more guided educational model. It also encourages dynamic and lively participation from learners, enhancing their engagement with educational content. Additionally, digital education relies on developing skills, particularly higher-order thinking skills, and provides multiple levels of interaction, supporting active learning. Finally, digital education focuses on discussing and

studying real problems faced by learners, whether they are students or workers, thereby increasing the relevance of educational content to their daily lives.

### **1-2-3 Benefits of Digital Learning:**

Studies and research in the field of educational technology indicate that the use of digital education enhances the effectiveness of the educational situation by providing a suitable learning environment that accommodates various cognitive and age levels of learners. Digital learning technologies play a vital role in improving students' academic performance, enhancing interaction in classrooms, and making the educational experience more realistic and applicable.

The benefits of digital education manifest in several aspects, including addressing challenges such as increased student absenteeism and dropout rates, as well as reducing resource wastage by providing a precise tracking system for student progress. Additionally, it contributes to the development of independent learning and self-learning skills among students, equipping them with important personal skills. Furthermore, digital education facilitates communication among all parties involved in student learning and creates an advanced educational system that aligns with the rapid advancements in the world. It enhances the ability to confront crises using digital intelligence and presents information to students in a beneficial, enjoyable, and easily comprehensible manner, helping them discover their digital skills from an early age. Moreover, it ensures the delivery of information to learners in the shortest time, with the least effort, and the greatest benefit, which increases students' interest in using new technologies in education (Badranah, 2020, "The Role of Digital Education in Facing Current Crises and Challenges").

## **2. Models of Some Countries' Experiences in Implementing Digital Education**

### **2-1. Applications of online learning outside Arab countries**

#### **2.1.1. Experience of the United States of America:**

There are numerous initiatives and plans for technological integration put forth by the United States. Standards for technological integration in the K-12 and higher education sectors were established by the Department of Education in December 2000, as part of a technology plan aimed at achieving the ability to access and evaluate information. The importance of this strategy was highlighted in many other documents.

Examples of the implementation of technological integration initiatives in the United States vary by state. For instance, Colorado, Wisconsin, and Oregon have adopted certain standards

and implemented various initiatives through state systems, including capabilities for technological integration in higher education (M. Duran, 2021).

In a scientific study conducted in 1993, it was found that 98% of elementary and secondary schools in the United States had one computer for every nine students. Currently, computers are available in all American schools at a rate of 100% without exception. Information technology is considered one of the top six issues in American education by decision-makers in the U.S. administration. In 1995, all U.S. states completed their plans for computer applications in the field of education. (Atiya, 2017, p. 48).

### **2.1.2 The Canadian Experience**

The vast area of Canada, the second largest country in the world, has not hindered communication between its cities, provinces, and villages at various levels. The computer and communication technologies that Canada excels in have enabled Canadian educational authorities to achieve their educational goals, ensuring that as many residents as possible have the right to education and can pursue it to the highest levels, whether they live in urban or rural areas. Canada is recognized as a global leader in digital education, with numerous institutions ranked among the world's best. According to the Times Higher Education World University Rankings 2025, 33 Canadian institutions are listed, with eight in the global top 200. This modern approach helps overcome the challenge of the lack of specialists in certain areas, especially in some northern villages where some residents still speak a language that is distinct from English or French, the official languages in Canada.

It is worth noting that Canadian universities have distinguished experiences in distance learning and e-learning programs. They have contributed to the design of exceptional software that enables content creators and instructional designers to upload and manage educational materials online easily, as well as providing a suitable educational environment for schools and learners.

This benefit extends beyond students; teachers also benefit from it by offering various training courses through the network and relying on the principle of teamwork, which provides a degree of interaction among the parties connected to the network. This not only provides information but also offers the opportunity for interaction with other cultures and peoples. (Ali, Ashlan, 2019, p. 418).

### **2.1.3- The Indian Experience**

India is considered one of the leading countries in software development since the beginning of the last decade of the previous century, with the emergence of many specialized companies and programming houses that found a market in developed countries. In 2003, Microsoft, in collaboration with Indian universities and companies, launched a set of projects to support information and communication technology in India, allocating \$1.8 billion over five years through direct financial support or by providing its software for these projects (Microsoft Co, 2004). The aim of these projects is to support the software industry, develop infrastructure, and promote information culture across India.

Indian universities and scientific institutes, in collaboration with local companies, have worked to develop software for e-learning and to provide as many citizens as possible with access to it. i-managerindia ([www.managerindia.com](http://www.managerindia.com)) is considered one of the leading companies in the field of training, e-learning, and self-education, offering integrated software solutions for managing educational systems, particularly distance education. (Hudhaifa, 2008, p. 27).

#### **2.1.4. The UK's Experience in Digital Education**

Despite the increase in initiatives and technological integration programs in Europe in recent years regarding e-learning, the United Kingdom, in particular, has witnessed numerous discussions on this matter. These discussions are based on addressing e-learning on a broad scale through practical applications aimed at skill development using accurate information across all levels of education and promoting it at the grassroots level.

At the first level, the focus was on developing skills in reading and information literacy. At the second level, efforts were made to enhance information handling skills, which are used in the process of information literacy. This term encompasses information skills and information technology. The electronic handling of skills and information is considered an essential mechanism for achieving information literacy. A model known as the Information Skills Model (SCONUL) was proposed as an approach related to the development of reading and writing skills, addressing seven skill groups. Some skills associated with these processes appear repetitively, presenting user information by enhancing efficiency and refining experiences based on practice.

The United Kingdom is also considered one of the leading countries in developing new methods and approaches in education, particularly concerning open learning and distance education, to align with the needs of learners and the global job market.

The increased pressure exerted by the government on colleges and universities in the United Kingdom to increase the number of enrolled students aged 18 to 30 by about 50% in 2010 posed significant challenges for educational institutions to accommodate this rising number of students while also developing their skills (P. Bennell 2023). Limits to growth? Key enrolment trends for UK transnational higher education, 2002–2021. *High Educ* **86**, 81–97 (2023). <https://doi.org/10.1007/s10734-022-00902-z>. Hence, there is a need to enhance learning resources through the adoption of new technologies that will form a central part of the educational strategies of these institutions.

Distance education and e-learning are not limited to university and college curricula that culminate in accredited academic or training certificates; they also include programs for teaching English and other languages to non-native speakers. The experience of the International Language School in the United Kingdom is distinguished in this field. (Abu Amma, Abdul Rahman, 2002).

## **2.2. Applications of E-Learning in Some Arab Countries**

The implementation of e-learning is not limited to developed countries; there are several Arab nations that have presented visions and experiences combining good organization and practical application. In recent years, numerous initiatives for e-learning applications have emerged in the Arab world, especially in higher education. Notable examples include the Syrian Virtual University and the Tunisian Virtual University, as well as the experiences of open universities in Egypt, Algeria, Sudan, Libya, the United Arab Emirates, and Palestine, in addition to the Arab Open University.

The Gulf Cooperation Council countries have directed, and continue to direct, much of their efforts towards social development, including education, training, and development. These countries recognize the need to expand opportunities for e-learning and the necessity of employing information and communication technology in various fields, including educational institutions. (Atiya, 2017, p. 52).

### **2.2.1. The Algerian Experience in E-Learning**

The "Ipad" Foundation launched a digital school designed for secondary and middle school students by creating a special online program aimed initially at those preparing for the baccalaureate or basic education certificate exams. This virtual school is called "Tarbiytak," which serves as a pedagogical virtual space or a platform for distance learning. It is a comprehensive solution that allows all stakeholders involved in the distance education process

to participate. Most importantly, it is specifically aimed at both students and their parents, as well as educational institutions, making "Tarbiytak" a significant resource.

The "Ipad" Foundation has established a virtual school within the same program ("Tarbiytak") that allows students, whether they are attending official school or studying elsewhere, to register in preparation for exams (S.N.J. Ibnu, 2020) . The subjects taught in this virtual school align with the official curriculum set by the Ministry of Education. Any student in their final year or in the fourth year of middle school can access the "Tarbiytak" website and register, where they will find 300 lessons for the final year and 300 lessons for the middle school, in addition to 3,000 exercises with corrections and explanations.

Students can also connect with subject teachers through this program to receive additional explanations and can access past baccalaureate or basic education exam papers along with their corrections. Additionally, parents can monitor everything their children are doing in school through the network, including lesson schedules, absences, and their child's performance, as well as view all grades and comments. Furthermore, teachers using the "Tarbiytak" program can access a list of students and their lessons through the teacher's office feature (Shishavan, H. B., & Sadeghi, K. 2009)

Among the objectives of "Tarbiytak" are the use of information and communication technologies in the educational environment, ensuring the serious and beneficial use of the internet and computers within schools, increasing the chances of academic success, guaranteeing constant communication between schools, teachers, students, and parents, and providing more opportunities for students to use computers within educational institutions.

This was the initial step, and then the experience transitioned to the virtual university in Algeria after gaining independence. It had to face challenges on multiple levels: economic, political, and from this standpoint, it was essential to give education the importance it deserves. Efforts were made to build educational institutions and adopt a democratic approach to education and its accessibility. However, the goals are significant while the resources are limited.

Through the results of some research and studies in this context, it has been shown that teachers have a sufficient understanding of the concept of e-learning and possess a good awareness of the most important related concepts. This allows us to say that theoretical knowledge of this modern technology does not pose a problem for teachers, whether they are familiar with what is published about it in scientific journals and books, or because they are users of these technologies in teaching as well as in research work.



The application of e-learning at the university varies from one department to another and from one college to another. Its usage is higher in scientific and technical disciplines, while it is lower in literary fields. Additionally, its use is more prevalent in applied sciences compared to theoretical sciences, and overall, its usage is moderate. Presentation techniques such as "data show" for displaying information and preparing lectures in PowerPoint have developed significantly. However, the availability of lessons and their accessibility on the internet remains somewhat limited, as some professors resort to sharing their lessons on their personal blogs instead of the university's website, due to its weakness and lack of updates. (E-learning in Algeria, 2016, Initial Steps Awaiting Generalization.) <http://www.djazairress.com/elmassa>

### **2.2.2. The Egyptian Experience in Digital Education Applications**

A protocol was signed with the Ministry of Education aimed at eliminating computer and internet illiteracy among secondary school graduates. In addition, 12 schools were connected to free internet services, and a new (non-profit) model for e-learning was established. The Egyptian University for E-Learning was approved to start classes from the 2007/2008 academic year. Additionally, the Education Development Fund approved the establishment of several technological schools. Furthermore, the Egyptian Universities Information Network was launched after its development and the introduction of the latest technological advancements. (Al-Hajri, 2016, Education in the Arab World Facing Technological Challenges) <http://www.on.edu.eg/conference.com>

The Ministry of Education and Youth adopted a project to develop computer science curricula for high school education, which began implementation in the 1989/1990 academic year for the first and second high school grades. The project started with preparing a specific curriculum for the first year of high school and testing it in two schools, one for boys and the other for girls, in each educational zone. The experience was then generalized to all high schools in the country the following year. This initiative received wide acceptance from students and parents and resulted in positive outcomes, including increased awareness among parents about the importance of computers in modern life, encouraging teachers of other subjects to learn about computers, and motivating school administration to use computers in management areas. This pushed the ministry towards integrating computers into these domains and led teachers of other subjects to view computers as an effective educational tool for teaching their subjects.

In light of successful experiences, computer education has been adopted at the intermediate level, with the book "Computer Skills" included in the life skills curriculum for the first and second secondary grades. The goals and areas of using educational technologies in

the country's education have been defined according to the latest educational concepts, as evident in the ministry's educational policy and the future plans derived from the education vision up to 2020, as well as in the developed curriculum documents.

These goals are represented in improving and developing the teaching and learning processes in the general curricula, preparing students to efficiently handle the information age by equipping them with skills related to self-learning and using computers and communication networks to access local and international electronic information sources. The ministry also aims to develop an information communication network between the ministry, educational areas, and schools, which helps decision-making centers quickly access various information related to students, teachers, and supervisory and administrative bodies. Additionally, the ministry aims to develop in-service training processes for teachers to equip them with the necessary educational competencies to implement the new curricula by establishing training centers in each educational area, as well as developing assessment processes by creating question banks for each subject and expanding the use of electronic tests (Qamal, 2010, *Advanced Countries' Experiences in E-Learning*).

### **2.2.3. The Jordanian Experience**

Entering the knowledge era, which relies on leveraging modern technologies in various aspects of contemporary life, necessitates elevating the future vision and rethinking traditional methods across all levels, especially in the Arab context. Information and communication technology has become a way of life, not just luxury tools limited to a specific field or social elite. In light of the global trend toward knowledge economies that fundamentally depend on modern technologies to utilize knowledge for enhancing social welfare and optimizing various resources, technology has become essential.

Information and communication technology is a means of survival among nations and an indispensable tool in an open world that relies on competitiveness as a criterion for progress and prosperity (M. Castells 1999). Among the pioneering Arab experiences in this field is the Jordanian experience. Recognizing the importance of education and training in Jordan to achieve a change in thinking patterns, which must precede the desired transformation in lifestyle, I have chosen to highlight the Jordanian experience as one of the most important in the Arab region.

Recent efforts by successive Jordanian governments have focused on establishing a knowledge-based learning system that utilizes modern technologies as an effective means for acquiring, preserving, and transmitting knowledge in its various forms. All of this is undertaken

within a conscious future vision and unlimited support from the higher leadership. Consequently, a national strategy for e-learning has been adopted, which involves leveraging modern technologies as a fundamental means within the Jordanian education system at all levels.

Recent statistics indicate that 75% of Jordan's population is under the age of 30, and 53% are under the age of 18 (F. De Bel-Air 2016). The statistics emphasize that development efforts should focus on bringing about change in the educational system through well-defined policies and strategies that incorporate information and communication technology at the core of the educational process, making it a foundation for enhancing education and a tool to stimulate creativity and excellence.

Such a change requires time and effort and cannot happen overnight. Given the importance of this topic, a closer examination of the Jordanian experience with e-learning, which is still in its early stages, reveals the complexity of the issues and the magnitude of the task. It requires establishing a nucleus for a knowledge network, and a learning resources center has been created to provide schools with educational curricula (in Arabic), some of which the ministry has successfully converted into electronic content used by connected schools. This is supported by some systems and software developed locally by Jordanian companies to provide e-learning resources in Arabic for the Kingdom's schools, which have been adopted by the Jordanian Ministry of Education at the local level.

Additionally, a Jordanian policy has been adopted to create what are known as knowledge networks that connect educational systems to achieve knowledge integration through rapid and unobstructed electronic data and information exchange. This is essential for transitioning to a research-based learning system and knowledge acquisition. Currently, more than a thousand schools have been connected to a medium-capacity electronic network. Most schools in the Kingdom have been supplied with over sixty thousand computers.

to ensure the use of these modern technologies, the ministry has started training all teachers and ministry staff on information and communication technology and how to leverage it to improve the educational process since 2002. Although these steps have yielded results, albeit limited, the Jordanian government has recently adopted a project to create a high-capacity educational network using fiber-optic technology, which will cost over fifty million Jordanian dinars. This decision followed an extensive study that demonstrated the long-term feasibility of this investment. Additionally, more than seven thousand teachers have been trained and qualified to use communication and information technologies and modern learning methods.

The completion of this knowledge network is expected within the next five years through a gradual implementation of the project's successive phases, which may cost up to five hundred million US dollars, with part of the funding secured through loans, grants, and the budget. It may also be linked in the future to the e-government network and local community centers to provide continuous learning opportunities for everyone in Jordan.

One of the greatest challenges that Jordan faced in the field of e-learning initially was the limited capacity of local companies to create wide-area networks and provide a large number of devices and equipment. However, through the partnership between the public and private sectors to achieve national goals, coordination, collaboration, and division of work into phases were established to enable local companies to implement and learn from these phases. This led to enriching the experience of local companies and developing their capabilities, allowing them to overcome this obstacle and become capable of handling large, sprawling networks.

On the software side, the lack of e-learning applications in Arabic posed a challenge that could only be overcome through self-reliance and encouraging local programming companies to venture into this field despite its difficulties, attempting to produce what is needed in this area. (M. Hudhaifah 2008, pp. 33-34).

### **3. Discussion**

À la fin du vingtième siècle, le monde a connu une transformation majeure qui a bouleversé la vie humaine. Après la transition d'une société agricole à une société industrielle, nous sommes aujourd'hui témoins du passage à une société numérique, fondée sur les technologies de l'information. Cette évolution a eu un impact profond sur divers aspects de la vie, notamment les dimensions politiques, économiques, sociales et éducatives. La transformation numérique n'a pas seulement touché le commerce électronique et les secteurs industriels, mais a également pénétré les institutions éducatives, les poussant à s'adapter aux changements mondiaux et à adopter les technologies de communication et d'information, notamment l'éducation numérique.

Le processus de l'éducation numérique consiste à utiliser des contenus éducatifs électroniques à travers des supports multimédias, permettant une interaction active entre les apprenants, les enseignants et leurs pairs, soit de manière synchrone, soit asynchrone. Ce modèle offre la possibilité d'accéder à l'éducation à tout moment et en tout lieu, en fonction des besoins et capacités des étudiants. Il vise à améliorer la rétention des informations, organiser

les connaissances en fonction de leur importance et renforcer l'interaction entre les parties prenantes du processus éducatif.

Les objectifs de l'éducation numérique incluent la satisfaction des besoins cognitifs des apprenants, l'amélioration de la gestion de l'information, ainsi que la facilitation des échanges entre élèves, enseignants et institutions éducatives. Elle permet également un apprentissage plus dynamique et interactif, favorisant des compétences de réflexion critique et de résolution de problèmes. L'éducation numérique s'adapte aux défis contemporains en répondant à des besoins éducatifs variés et en offrant une flexibilité qui améliore l'engagement et l'intérêt des élèves.

Les bénéfices de l'éducation numérique sont nombreux. Elle améliore la performance académique des étudiants en leur offrant un environnement d'apprentissage plus flexible et interactif, tout en réduisant les taux d'absentéisme et de décrochage. Les technologies éducatives permettent également de suivre les progrès des élèves et d'optimiser l'utilisation des ressources. De plus, l'éducation numérique favorise le développement de l'autonomie et des compétences d'apprentissage indépendant chez les étudiants, tout en facilitant la communication entre tous les acteurs du processus éducatif.

À l'échelle mondiale, plusieurs pays ont mis en œuvre des stratégies pour intégrer les technologies dans l'éducation. Aux États-Unis, des initiatives ont été lancées dès les années 2000 pour intégrer la technologie dans l'enseignement primaire et secondaire, avec des normes établies par le Département de l'Éducation pour améliorer l'accès à l'information. Ces initiatives ont permis une adoption massive des outils numériques dans les écoles américaines, et les États comme le Colorado et l'Oregon ont intégré ces outils avec succès, créant ainsi des systèmes éducatifs plus interactifs et accessibles. En somme, la transition vers l'éducation numérique a prouvé qu'elle offre des opportunités d'amélioration des processus éducatifs, d'inclusivité et d'adaptabilité aux défis contemporains.

## **Conclusion**

Through our research paper, we conclude that the application of digital education has become an urgent necessity for all educational institutions, thanks to the numerous advantages it offers compared to traditional education. However, the success of this application requires two essential conditions: training teachers and students in the use of digital technologies and providing modern scientific means to ensure the delivery of educational content with high

quality and efficiency. This contributes to achieving fruitful and satisfactory results for both parties the teacher and the learner.

The research culminated in a set of important recommendations, including the necessity of enforcing digital education in all educational institutions, as it has become an effective tool to address crises in abnormal circumstances, as evidenced by the experience of the COVID-19 pandemic, which forced the world to continue education through digital technology.

Furthermore, the research recommends providing high-speed internet networks to facilitate the digital education process and ensure fruitful outcomes, as well as utilizing digital education to integrate students who have dropped out of school, giving them another opportunity to learn, thus helping to reduce pressure on educational institutions. Finally, training courses should be offered to users of digital education, teaching them how to effectively use the available technological resources.

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