

Higher Education Standard and "ICT" Key Role in Establishing the Pillars of E-Learning

معيار التعليم العالي و "تكنولوجيا المعلومات والاتصالات"
دور رئيسي في إرساء دعائم التعلم الإلكتروني

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Received: 06/06/2022; Revised: 26/06/2022; Accepted: 26/06/2022

Abstract:

This paper is to define a topic that falls within the successive and repeated initiatives aimed mainly at applying modern technologies in the Algerian University various sectors, including faculties, departments, schools and institutes with their respective departments, the goal that will only be possible by establishing a comprehensive advanced electronic system that allows the widespread of new technologies through upgrading the informatics system in the sectors of higher learning, education and training. Through this topic, we try to highlight the importance of embodying the new electronic service by providing better and simpler interaction for services on the Internet, which ultimately falls with the emergence of the Algerian science and knowledge community, which has become one of the necessities and objectives of the actual development and the real activation of the quality of higher education resulting from the proper application and Correct e-learning, because of its goals in the form of saving time, effort and cost.

Keywords:

information and communication technology, E-learning, Informative society, digital generation.

ملخص :

تهدف هذه الورقة إلى تحديد موضوع يندرج ضمن المبادرات المتعاقبة والمتكررة التي تهدف أساسا إلى تطبيق التكنولوجيات الحديثة في الجامعة الجزائرية بمختلف قطاعاتها، بما في ذلك الكليات، الإدارات والمدارس والمعاهد مع إداراتها. وبلوغ هذا الهدف يمر حتما عبر إرساء نظام إلكتروني متطور ومفهوم في مختلف قطاعات التعليم والتدريب العالين. من خلال هذا الموضوع نحاول تسليط الضوء على أهمية إدراج الخدمة الإلكترونية الجديدة عبر توفير تفاعل أفضل وأبسط للخدمات على شبكة الإنترنت، بهدف الارتقاء بالمجتمع العلمي والمعرفي الجزائري، الذي أضحي من ضرورات وأهداف التنمية الفعلية والتفعيل الحقيقي لجودة التعليم العالي الناتج عن التطبيق السليم والتعلم الإلكتروني الصحيح، لما يُتيح من توفير للوقت والجهد والتكلفة.

الكلمات المفتاحية:

تكنولوجيا المعلومات والاتصالات، التعليم الإلكتروني، المجتمع الإعلامي، الجيل الرقمي.

INTRODUCTION

The twenty-first century data indicates that human civilization is going through the so-called knowledge era, based on the main pillar of informatics (hallmark of this era) and turned this vast world into a small electronic vilage despite the huge flow of information in all fields, the very large inflation in output, the urgent need to share large amounts of this information and the need to transmit it often over long distances.

In the midst of these witnessed scientific and technological developments, it was necessary for the institutions and information and communication centers, official and private in various aspects of scientific activity and academic interests and scientific research, to initiate the development of plans, and formulate the necessary policies for the development of information and communication systems, linked to national and global information networks, and preparation of technical competencies and expertise specialized in the field of information, networks and communication systems, to secure access to footholds in this technological revolution in applied fields, and provide fast and advanced information services to thier employees.

Especially in the field of higher education, and on the basis of overall quality and electronic form : electronic space imposes a new sophisticated level of academic and educational bodies and practical field.

So, from this angle, we can pose the following problem:

What is “ICT” and how they have become the symbol of the solid pillar of e-learning that fulfill the achievement of higher education quality at the Algerian University?

I. Information and communication technologies:

Information and communication technology (ICT) has become within a very short time, one of the basic building blocks of modern society. And one of the many challenges facing developing countries today is preparing their societies and governments for globalization and the information and communication revolution.

1. Definition of ICTs:

(ICT) is an extensional term for information technology (IT) that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals) and computers (*Murray, James, 2011*), as well as necessary enterprise software, middleware, storage, and audiovisual systems, that enable users to access, store, transmit, and manipulate information. (*foldoc, 2008*)

ICTs stand also for information and communication technologies and are defined, for the purposes of this primer, as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information”.

These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony. In recent years there has been a groundswell of interest in how computers and the Internet can best be harnessed to improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings.

But ICTs are more than just these technologies; older technologies such as the telephone, radio and television, although now given less attention, have a longer and richer history as instructional tools.

Whereas “IT” is short for Information Technology and is pronounced as separate letters. Information technology is the broad subject concerned with all aspects of managing and processing information, especially within a large organization or company. IT is generally not used in reference to personal or home computing and networking.

2. Difference Between ICT and IT:

IT and ICT must not be confused with each other because they are two different fields. The industry of Information Technology (IT) which involves computers, software, networking and other IT infrastructures to help relay or manage

information is very important in modern-day living as seen primarily in big companies or corporations that run multi-billion-dollar ventures.

So IT helps strengthen companies with the existence of a set of IT personnel that are equipped with servers, database management systems, and security measures for protecting confidential information about the company. Without IT, all of the company's important data can easily be compromised by many outside attackers and hackers alike.

For instance, radio and television have for over forty years been used for open and distance learning, although print remains the cheapest, most accessible and therefore most dominant delivery mechanism in both developed and developing countries.

So the use of computers and the Internet is still in its infancy in developing countries, if these are used at all, due to limited infrastructure and the attendant high costs of access. Moreover, different technologies are typically used in combination rather than as the sole delivery mechanism.

3. Future New Technology :

F.T will serve the new generation more than we can imagine, and will have a great impact on all sectors, such as transportation, health, education, communications, agriculture, government services, security, aviation, etc.

For example, the European Union estimated that in five years, electric cars will make up 50 percent of the total number of cars on the road in Europe, while autonomous cars will constitute around 20 percent.

In health, remote medical operations are already being executed in Europe and the US. It is now possible for many hospitals to share experiences globally via high-end ultra-fast communication.

Let's not forget, as well, the important role of robotics and sophisticated tools and equipment used inside operation rooms which allow for precise and fast results. Furthermore, online education has become very popular.

Universities have developed online learning programs which allow students to earn masters and PhD degrees. Technologies of the future have also made it highly important for universities to create new courses, such as AI courses and R&D for 5G testing. (telecom review, 2019)

In video streaming, 8K is now the most advanced technology in place even though it is not yet commercial. However, 4K is set to be commercial in two years and will change the way we watch videos. This new technology will introduce a new

era for the broadcasting and audiovisual industries. This is only the beginning of what seems to be a revolutionary era in which technology will disrupt all sectors without exception.

II. Digital Transformation and Artificial Intelligence :

D.T is defined as the adoption of advanced technologies and the rise of innovations as companies and individuals reorganize their operations to be digital, multimodal, and intelligence-driven. According to Haileleul, it is a catalyst for engendering agility, and has become crucial for organizations to stay competitive, achieve successes, and even survive.

Starting 2017, artificial intelligence (AI) has been everywhere! New technologies driven by AI have emerged and most new devices, cameras and sensors are now equipped with AI features.

AI existed a long time ago in R&D, laboratories and business development master plans of the largest hi-tech companies; otherwise, it wouldn't have reached its current level of advancement.

However, it was only recently that it became a recurrent topic. This technology has become a marketing tool used by many companies and has contributed to boosting the conference businesses by creating hype over topics such as blockchain and 5G.

Going deeper into this technology, here is an example of what the AI world is bringing: Artificial Intelligence is allowing computers to be smarter and predict human behavior. In the case of autonomous cars, before AI, smart sensors weren't able to recognize which obstacle to avoid in case of an accident.

Now, thanks to AI, cars are programmed to avoid hitting pedestrians when faced with a choice of either hitting pedestrians or another car. Artificial intelligence is key to bring technology to the next smart level. Labeled as the 'great transformer', AI is considered to be a key enabler of this transformation.

Artificial Intelligence is meant to change systems, behaviors and work patterns within organizations. These systems use things like aggregated data, usage analysis, pattern recognition, and predictive analytics to deliver intuitive insights or make choices, improving efficiency and even shifting business models across all sectors.

It is also expected to ultimately boost overall economic growth, and create jobs not yet imagined, and with the advancement of smart living, smart devices and data on the worldwide web, there is always something going on behind the

scenes at labs and R&D centers. Without such workshops of technology, smart living and our cyber life would be at risk; it wouldn't move or even exist.

Besides the daily exchange of data via billions of emails, data usage is increasing because of smart airports, smart medical systems, smart education, smart traffic management, smart household equipment, smart meters, smart sensors, etc.

This is generating massive amounts of traffic on our networks and it will continue to increase to reach Z bytes of data per minute, with the expectation to connect 15k new devices every minute (currently, it is at 5K per minute). This data should be managed, protected and secured, and it seems that R&D centers are focusing on artificial intelligence to teach computers and smart devices to understand their environment, and to be smart and protected from malware and hackers.

Just recently at Yahoo, 500 million emails accounts were hacked. This happened to a giant Yahoo, not just an individual PC, which shows how important the issue is.

Artificial Intelligence promotes cybersecurity by using software that predicts, not just prevents or detects.

How can you control hundreds of thousands of security cameras in a city without Artificial Intelligence? Or smart software? Cameras such as those in the city of London need thousands of staff 24 hours a day to check the content generated. Only Artificial Intelligence software can detect the malicious incidents on these cameras. This is but one example.

The future of smart cities is also based on secure technology. Security means creating enough smart solutions and features that enable us to detect an unlimited amount of information at top speed that can treat the huge amount of data transactions.

III. E-learning : evolving high standard systems :

Graziadei, W.D published In 1997 an article entitled "Building Asynchronous and Synchronous Teaching-Learning Environments: Exploring a Course/Classroom Management System Solution". They described a process at the State University of New York (SUNY) of evaluating products and developing an overall strategy for technology-based course development and management in teaching-learning. (Graziadei, W. D., et al., 1997)

1. Definition of e-learning:

E-learning includes all forms of electronically supported learning and teaching. The information and communication systems, whether networked learning or not, serve as specific media to implement the learning process. (Leypold M, 2004).

The term will still most likely be utilized to reference out-of-classroom and in-classroom educational experiences via technology, even as advances continue regarding devices and curriculum. Abbreviations like CBT (Computer-Based Training), IBT (Internet-Based Training) or WBT (Web-Based Training) have been used as synonyms to e-learning that is also the computer and network-enabled transfer of skills and knowledge.

E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.

It is commonly thought that new technologies can strongly help in education. In young ages especially, children can use the huge interactivity of new media, and develop their skills, knowledge, perception of the world, under their parents monitoring, of course. Many proponents of e-learning believe that everyone must be equipped with basic knowledge in technology, as well as use it as a medium to reach a particular goal.

2. E-learning neighboring types :

- Blackboard Inc and Moodle :

There are Two popular tools :

➤ **Blackboard Inc** : has over 20 million users daily. Offering six different platforms: Blackboard Learn, Blackboard Collaborate, Blackboard Mobile, Blackboard Connect, Blackboard Transact, and Blackboard Analytics; Blackboard's tools allow educators to decide whether their program will be blended or fully online, asynchronous or synchronous. Blackboard can be used for K-12 education, Higher Education, Business, and Government collaboration.

1. **Moodle** : is an Open Source Course Management System. It is free to download and provides blended learning opportunities as well as platforms for distance learning courses. The Moodle website has many tutorials for creating a program or becoming a Moodle student. (Jacobsen and Kremer, 2000).

- **Blended learning models:**

The Valyathan three blended learning models, namely:

- Skill development model Skill-Driven Model: combines self-learning and a coach or teacher to facilitate the support and development of knowledge.

- Development model attitude Attitude-Driven Model: mixes various events and the various means provided for the development of certain behaviors.

- Model development efficiency Competency-Driven Model: blends performance and tools supporting it with the Department of sources of knowledge and guidance, in order to develop competencies in the workplace, in order to capture and transfer of knowledge and requires interaction with experts and monitored.

- **Open and distance learning:**

Commonly, Open and distance learning is defined by the Commonwealth of Learning as:

- a way of providing learning opportunities that is characterized by the separation of teacher and learner in time or place, or both time and place;
- learning that is certified in some way by an institution or agency;
- the use of a variety of media, including print and electronic;
- two-way communications that allow learners and tutors to interact;
- the possibility of occasional face-to-face meetings; and a specialized division of labor in the production and delivery of courses.

But there is not one definition of open and distance learning. Rather, there are many approaches to defining the term. And most definitions, however, pay attention to the following characteristics:

- **Separation of teacher and learner** in time or place, or in both time and place.
- **Institutional accreditation**; learning is accredited or certified by some institution or agency. This type of learning is distinct from learning through your own effort without the official recognition of a learning institution.
- **Use of mixed-media courseware** ; including print, radio and television broadcasts, video and audio cassettes, computer-based learning and telecommunications. Courseware tends to be pre-tested and validated before use.
- **Two-way communication** ; allows learners and tutors to interact as distinguished from the passive receipt of broadcast signals. Communication can be synchronous or asynchronous.
- **Possibility of face-to-face meetings for tutorials** ; learner–learner interaction, library study and laboratory or practice sessions.
- **Use of industrialized processes**; in large-scale open and distance learning operations, labour is divided and tasks are assigned to various staff who work together in course development teams.

IV. ICT efficiency in E-learning :

Educational institutions in the past provided little choice for students in terms of the method and manner in which programs have been delivered. Students have typically been forced to accept what has been delivered and institutions have tended to be quite staid and traditional in terms of the delivery of their programs.

1. Preparing the digital generation through evolving e-learning:

The digital age and technology are omnipresent in all aspects of our daily life, and education at schools and universities are moving at the same speed, so for educational institutions adequately are preparing the next digital generation, so they are changing curricula to include high tech courses in all majors, from engineering to medicine and even journalism.

The main universities in the USA, Canada and UK are already focusing on this and are integrating Artificial Intelligence into their systems. One school of thought is that Artificial Intelligence should not be suggested as an elective course, but rather as a requirement, whatever major students choose. Furthermore, quantum computing is changing companies, industries and governments - that is why it should be included in any educational program.

Cybersecurity is a must-have for everyone. We are all online and this means our most important data is too. Learning to protect our data privacy should begin along with the most basic learning courses. Subsequently preparing our digital generation is important regardless of the field of study or objectives of the workplace. It would be best to apply this approach now, to prepare the current generation moving forward.

2. E-learning effectiveness:

ICT applications provide many options and choices and many institutions are now creating competitive edges for themselves through the choices they are offering students. These choices extend from when students can choose to learn to where they learn.

❖ Anytime, anywhere:

One defining feature of ICTs is their ability to transcend time and space. ICTs make possible asynchronous learning, or learning characterized by a time lag between the delivery of instruction and its reception by learners.

Online course materials, for example, may be accessed 24 hours a day, 7 days a week. ICT-based educational delivery (e.g., educational programming broadcast over radio or television) also dispenses with the need for all learners and the instructor to be in one physical location.

Additionally, some types of ICTs, such as teleconferencing technologies, enable instruction to be received simultaneously by multiple, geographically dispersed learners (i.e., synchronous learning).

❖ Access to remote learning resources:

Teachers and learners no longer have to rely solely on printed books and other materials in physical media housed in libraries (and available in limited quantities) for their educational needs.

With the Internet and the World Wide Web, a wealth of learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time the day and by an unlimited number of people. So this is particularly significant for many schools in developing countries, and even some in developed countries, that have limited and outdated library resources.

ICTs also facilitate access to resource persons, mentors, experts, researchers, professionals, business leaders, and peers all over the world.

❖ ICTs help prepare individuals for the workplace:

One of the most commonly cited reasons for using Information and Communication Technology in the classroom has been to better prepare the current

generation of students for a workplace where ICTs, particularly computers, the Internet and related technologies, are becoming more and more ubiquitous.

Technological literacy, or the ability to use ICTs effectively and efficiently, is thus seen as representing a competitive edge in an increasingly globalizing job market.

3. E-learning common benefits:

- Greater efficiency throughout the school.
- Communication channels are increased through email, discussion groups and chat rooms.
- Regular use of ICT across different curriculum subjects can have a beneficial motivational influence on students’ learning.
- A user can logon to a computer anywhere on the network and access their work files from the file server.
- Computers can be managed centrally - with the same software installed on each one.
- Time : it is much faster to install an application once on a network - and copy it across the network to every workstation.
- Sharing printers, plotters, modems.etc saves money and time.
- Security : the Network Manager can allocate usernames and passwords to all users to try to prevent unauthorised access.
- It is easy and convenient to monitor users - for example websites visited or documents printed - this can be done using software running on the server.

Benefits for teachers:

- ICT facilitates sharing of resources, expertise and advice.
- Greater flexibility in when and where tasks are carried out.
- Gains in ICT literacy skills, confidence and enthusiasm.
- Easier planning and preparation of lessons and designing materials.
- Access to up-to-date pupil and school data, anytime and anywhere.
- Enhancement of professional image projected to colleagues.
- Students are generally more ‘on task’ and express more positive feelings when they use computers than when they are given other tasks to do.
- Computer use during lessons motivates students to continue using learning outside school hours.

Benefits for students:

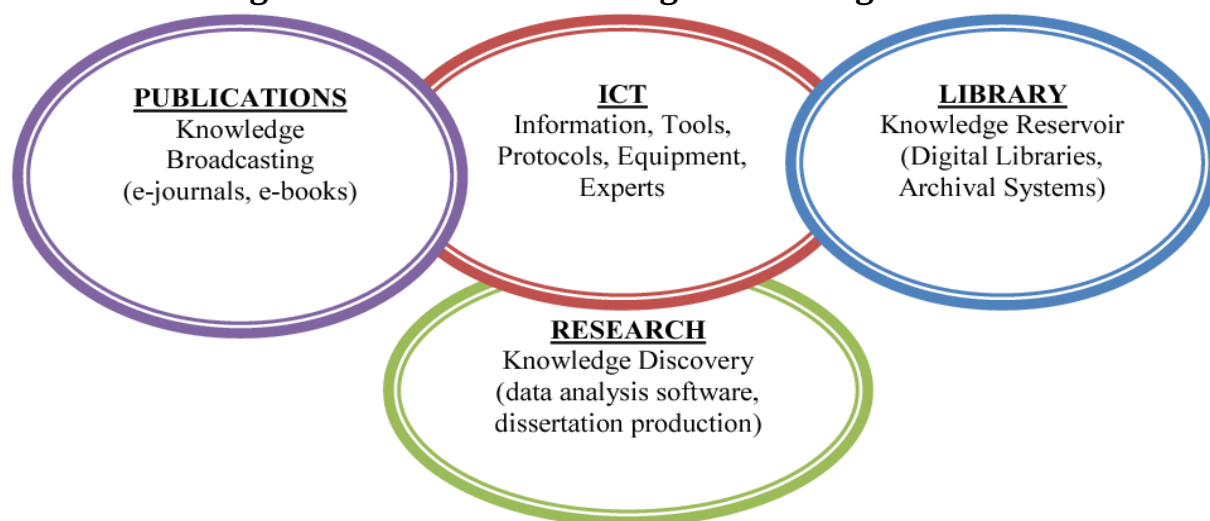
- Higher quality lessons through greater collaboration between teachers in planning and preparing resources.

- More focused teaching, tailored to students' strengths and weaknesses, through better analysis of attainment data.
- Improved pastoral care and behaviour management through better tracking of students.
- Gains in understanding and analytical skills, including improvements in reading
- Comprehension.
- Development of writing skills (including spelling, grammar, punctuation, editing and re-drafting), also fluency, originality and elaboration.
- Encouragement of independent and active learning, and self-responsibility for learning.
- Flexibility of 'anytime, anywhere' access.
- Development of higher level learning styles.
- Students who used educational technology in school felt more successful in school, were more motivated to learn and have increased self-confidence and self-esteem.
- Students found learning in a technology-enhanced setting more stimulating and student-centred than in a traditional classroom.
- Broadband technology supports the reliable and uninterrupted downloading of web-hosted educational multimedia resources.
- Opportunities to address their work to an external audience.
- Opportunities to collaborate on assignments with people outside or inside school.

**Benefits for parents:**

- Easier communication with teachers.
- Higher quality student reports – more legible, more detailed, better presented.
- Greater access to more accurate attendance and attainment information.
- Increased involvement in education for parents and, in some cases, improved self-esteem.
- Increased knowledge of children's learning and capabilities, owing to increase in learning activity being situated in the home.
- Parents are more likely to be engaged in the school community.
- You will see that ICT can have a positive impact across a very wide range of aspects of school life.

Figure 01 : role of ICT in higher learning



Source: <https://www.webopedia.com/TERM/I/IT.html>. By Vangie Beal.

4. ICT Raising standards in E-learning :

Recent research also points out ICT as a significant contributory factor in the raising of standards of achievement in schools:

- Schools judged by the school inspectors to have very good ICT resources achieved better results than schools with poor ICT.
- Schools that made good use of ICT within a subject tended to have better achievement in that subject than other schools.
- Socio-economic circumstances and prior performance of pupils were not found to be critical.
- Secondary schools with very good ICT resources achieved, on average, better results in English, Mathematics and Science than those with poor ICT resources.

A great range of research indicates the potential of ICT to support improvements in aspects of literacy, numeracy and science:

- Improved writing skills: grammar, presentation, spelling, word recognition and volume of work.
- Age-gains in mental calculations and enhanced number skills, for example the use of decimals.
- Better data handling skills and increased ability to read, interpret and sketch graphs improvements in conceptual understanding of mathematics (particularly problem solving) and science (particularly through use of simulations).

a) Using ICTs helps improving the quality of education:

ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement by facilitating the acquisition of basic skills, and by enhancing teacher training. And they are also transformational tools which, when used appropriately, can promote the shift to a learner-centered environment.

b) 2. Motivating to learn:

ICTs such as videos, television and multimedia computer software that combine text, sound, and colorful moving images can be used to provide challenging and authentic content that will engage the student in the learning process. Interactive radio likewise makes use of sound effects, songs, dramatizations, comic skits, and other performance conventions to compel the students to listen and become involved in the lessons being delivered. And more than any other type of ICT, networked computers with Internet connectivity can increase learner motivation as it combines the media richness and interactivity of other ICTs with the opportunity to connect with real people and to participate in real world events.

c) 3. Facilitating the acquisition of basic skills:

The transmission of basic skills and concepts that are the foundation of higher order thinking skills and creativity can be facilitated by ICTs through drill and practice. And educational television programs such as Sesame Street use repetition and reinforcement to teach the alphabet, numbers, colors, shapes and other basic concepts.

Most of the early uses of computers were for computer-based learning (also called computer-assisted instruction) that focused on mastery of skills and content through repetition and reinforcement.

d) Enhancing teacher training:

ICTs have also been used to improve access to the quality of teacher training.

For example, At Indira Gandhi National Open University, satellite-based one-way video- and two-way audio-conferencing was held in 1996, supplemented by print-materials and recorded video, to train 910 primary school teachers and

facilitators from 20 district training institutes in Karnataka State. The teachers interacted with remote lecturers by telephone and fax.

V. ICTs and E-learning in Algeria :

Globalization and technological change - processes that have accelerated in tandem over the past fifteen years - have created a new global economy “powered by technology, fueled by information and driven by knowledge.”

The emergence of this new global economy has serious implications for the nature and purpose of educational institutions. As the half-life of information continues to shrink and access to information continues to grow exponentially, schools cannot remain mere venues for the transmission of a prescribed set of information from teacher to student over a fixed period of time. Rather, schools must promote “learning to learn”: i.e., the acquisition of knowledge and skills that make possible continuous learning over the lifetime.

1. The virtual university experience:

The virtual university provides higher education programs through electronic media, typically the Internet. Some are bricks-and-mortar institutions that provide online learning as part of their extended university courses while others solely offer online courses. They are regarded as a form of distance education.

Therefore the goal of virtual universities is to provide access to the part of the population who would not be able to attend a physical campus, for reasons such as distance - where students live too far from a physical campus to attend regular classes; and the need for flexibility some students need the flexibility to study at home whenever it is convenient for them to do so.

Some of these organizations exist only as loosely tied combines of universities, institutes or departments that together provide a number of courses over the Internet, television or other media, that are separate and distinct from programs offered by the single institution outside of the combine.

while others are individual organizations with a legal framework, yet are named "virtual" because they appear only on the Internet, without a physical location aside from their administration units.

Still other virtual universities can be organized through specific or multiple physical locations, with or without actual campuses to receive program delivery through technological media that is broadcasted from another location where professors give televised lectures.

Program delivery in a virtual university is administered through Information Communication Technology such as web pages, e-mail and other networked sources. As virtual universities are relatively new and vary widely, questions remain about accreditation and the quality of assessment.

The Virtual University experience can be accurately summed up in the following excerpt: "A post-secondary educational environment, delivered electronically through a communications medium, which mimics a real-world post-secondary environment in every aspect, resulting in an educational experience equivalent to one normally received by attending the same university in the physical world."

"The illiterate of the 21st century," according to futurist Alvin Toffler, "will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn." And Information and Communication Technology (ICT) has become, within a very short time, one of the basic building blocks of modern society.

So countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy. And one of UNESCO's overriding aims is to ensure that all countries, both developed and developing, have access to the best educational facilities necessary to prepare young people to play full roles in modern society and to contribute to a knowledge nation.

Maintaining a capacity to advise national governments on the use of technology in schools and, in particular, on the optimal balance, given local circumstances, between ICT and older educational technologies and assisting countries in developing educational software and materials that reflect their own national and regional cultures are key components of the organization's strategy to achieve the education for all goals.

2. ICTs in Algerian university:

Algeria is interested in developing the use of ICT in the education sector, the Ministry of Education in cooperation with the Ministry of Information Technology to integrate ICT in the education sector.

a) Current ICT initiatives and projects:

Algeria has placed considerable emphasis on the importance of developing a national ICT strategy for education and training.

The ministry of Education has taken steps to support the implementation of the strategy either by direct action or through the various institutions and agencies that partners with the ministry, such as UNESCO, the EU, and different UN agencies.

Approximately USD\$130 million was allocated for the creation of a technology park at SidiAbdallah, 30 kilometers from Algiers. The park (or IT City) is foreseen to facilitate Algeria’s entry into the information society, and a number of ICT initiatives have been designed:

➤ **Technopole of SidiAbd Allah:**

Technopole of SidiAbdallah comprises three major technology parks and an industrial park with the aim of providing the space for technology firms and fostering the growth in ICT sector while encouraging local, international, private, and public investment in the field of ICT.

➤ **Algerian Digital Library of Science:** Algerian Digital Library of Science will support the continued relationship between the scientific communities in Algeria and the United States of America.

The digital library project linking researchers across the world to research by providing access to Algerian researchers and the wider public, to more opportunities for joint research. The project will also enable Algerian researchers and academics to access research in the world.

➤ **Net enterprise:** Net Enterprise is a project to support the new ICT companies and ensure their growth and sustainability.

➤ **Technobridge Incubator:** Technobridge Incubator supports research and development in the field of ICT, supports ICT start-ups, provides institutional support and development to existing businesses with clear coherent operational and growth visions, and provides support to Institut National des Telecommunications (INT) and the “École Centrale de Postes et Telecommunications” for renewing curricula on ICT management and cyber entrepreneurship.

b) Algeria high learning challenges in integrating the ICT:

A country’s educational technology infrastructure sits on top of the national telecommunications and information infrastructure. Before any ICT-based program is launched, policymakers and planners must carefully consider the following:

- In the first place, are appropriate rooms or buildings available to house the technology? In countries where there are many old school buildings, extensive retrofitting to ensure proper electrical wiring, heating/cooling and ventilation, and safety and security would be needed.

- Another basic requirement is the availability of electricity and telephony. In developing countries large areas are still without a reliable supply of electricity and the nearest telephones are miles away.

Experience in some countries in Africa point to wireless technologies (such as VSAT or Very Small Aperture Terminal) as possible levers for leapfrogging. Although this is currently an extremely costly approach, other developing countries with very poor telecommunications infrastructure should study this option.

- Policymakers should also look at the ubiquity of different types of ICT in the country in general, and in the educational system (at all levels) in particular. For instance, a basic requirement for computer-based or online learning is access to computers in schools, communities, and households, as well as affordable Internet service.

c) Implementing ICT in Education: What Helps and What Hinders?

Table 1 lists the core factors and provides a summary of the current stage of development in Algeria in terms of enabling or constraining ICT applications in the education system:

Table 01: ICT features in higher learning

Factors	Enabling Features	Constraining Features
Policy framework	A national ICT policy for educational development was set forth in 2002. The government has adopted ICT in all domains, particularly the education sector, as an integral part of the development process.	The policy for ICT exists, but to be successfully implemented it needs strong infrastructure and resources. Vast areas of Algeria are still lagging behind in basic needs.
Infrastructure and access		Algeria faces problems of poor infrastructure and connectivity issues.
Availability of appropriate learning materials	The development and provision of tools and learning material are at the heart of the policy of ICT for educational development.	There is not enough appropriate learning materials.
Rural/urban divisions	A major concern of the national ICT policy is provision of access and connectivity to all areas of the country.	Few schools and even fewer universities and higher institutions are available in rural communities.
Gender equity	A number of development projects especially non-formal education	In general, the level of illiteracy is higher among females and this is reflected in their

	programs are directed towards females being part of the underserved population.	access to ICT as well as training and skills.
Human resource development		The multilingual base in Algeria poses a major hurdle to unifying or implementing programs at a large scale. Professional development programs and teacher training is still limited to basic ICT training with no connection or relevance to integration into the educational process. Professional development and ICT programs lack connection with content and curriculum development in a manner that allows for proper implementation of reform. The disconnection among the different development programs impedes proper impact and progress.
Sustainability	The political arena has stabilized somewhat in Algeria, thus setting the grounds for proper implementation of the development programmers and allowing for a more sustained reform effort. The political stability leading into economic reform allows for attracting investment and support locally and internationally.	Several projects and initiatives have been underway, but due to the obstacles posed by the political unrest, many of them have been discontinued.

3. Difficulties of implementing e-learning in Algeria:

These difficulties can be summarized in the following points:

- Internet weakness where there must be a high flow speed lacking in Algeria, as the speed of flow according to the latest statistics are among the weakest in the world.
- Lack of awareness of professors as for interest in this type of education due to the need of officials of this type of education because of traditional education.
- The lack of interest of the university in this type of education, and the lack of activation by the state and not to harness all the potential for this type of education.
- Lack of desire of the student in this type of learning because he goes to lectures ready, preferably the traditional way so that the lecture is characterized by the non-allowance of the effort of the student who is only receiving.

Conclusion :

Undoubtedly, access to information is easy, due to the amount of information and services offered by the Internet, access to and use of information in the teaching-learning process easier than ever. So far this vast amount of information and the ability to understand become much harder, making the need for new ways to deliver information quickly and the concept is very important.

Meanwhile teaching-learning process has been escorted by the evolution of the Internet development tools, methods and techniques that can be used in dealing with the information and then deliver to users, and multimedia are used in the educational process of the most important of these techniques, and became the educational process, in light of the times technical talk, depends strongly on multimedia, which led to the differentiation teams, one mastered the use of these tools and techniques without availability of sufficient experience in the techniques and methods of teaching, the other team has the knowledge and experience in the teaching-learning process without meeting the needs of learners from the thrill and creativity offered by these arguments.

Based on the foregoing and in order to set our country within the IT team in order to keep pace with advances in the field of information and catch up with the countries who have made great strides in this area we should give greater importance to the awareness of the value of information and attention to the introduction of IT in our institutions and our scientific and research centers.

So the major factors of production at the present time, that we must recognize are benefits that entails the use of ICTs. As is the optimal use of information across the network and modern and advanced information systems as are significant the reductions in the cost of many of the services provided by them in various educational fields and health, cultural, social welfare and others.

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