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THE EMERGENCE OF THE NEW TECHNOLOGIES IN EDUCATION IN ALGERIA: CASE STUDY ON ENGINEERING SOFTWARE

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ABSTRACT

Purpose- This work aims to situate the introduction of new techniques, in particular Computer Science in educational institutions and Universities.

Methodology- The work begins by an overview on the practice of the new technology in some European countries. This is to analyze the European experience and its benefits for to adapt them to the Algerian context. The school and education are not immune to the new information and communications technology: Knowledge transfer is no longer only by the book and the mediation of a teacher, but now goes through audiovisual technology and multimedia. The challenges are twofold: mastering by the student of the new technologies in them cultural and economic context in which they are increasingly present on the one hand; and other hand the diversification of forms of learning in relation with reforms in the education system in Algeria.

Findings- The study finishes by a thinking on the causes which delays the emergence of the new technologies in Algeria. After investigations, some remarks and deductions are make.

Conclusion- Significant results were obtained in some universities, particularly the University of Science and Technology Houari Boumediene (USTHB), in terms of allocation of computers and Internet connection. But, it remains to make great efforts in the field of software acquisition, video training and in the computer-aided design.

Keywords: Emergence, new technologies, education, computer science, Algeria.
JEL Codes: G10, G32

1. INTRODUCTION

Higher education institutions play a central role in terms of education, economy and employment in society. The sectors of education from primary and secondary school are closely related to each other. Higher education trains teachers for all levels of the system and depends on the good level of the students trained by the sectors of primary and secondary schools which will in turn become students.

This work aims to situate the introduction of new techniques, in particular Computer Science in educational institutions and Universities. This is to analyze the European experience and its benefits for to adapt them to the Algerian context. The school and education are not immune to the new information and communications technology: Knowledge transfer is no longer only by the book and the mediation of a teacher, but now goes through audiovisual technology and multimedia. The challenges are twofold: mastering by the student of the new technologies in them cultural and economic context in which

they are increasingly present on the one hand; and other hand the diversification of forms of learning in relation with reforms in the education system in Algeria.

The introduction of information science and information technology in particular in education and training has created a powerful momentum, evidenced among others by the inclusion of this dimension in educational programs, the proliferation of educational sites, mobilization of actors around the creation of digital campus and the massive purchase of personal computer. Aware of this evolution, the Algerian public Authority leads, since 2005 year, through the Ministries of Education and Higher Education, a proactive policy to develop the use of information technology and communication within the school and higher education.

Don Knezek, the Director of the International Society for Technology in Education, compares education without technology to the medical profession without tools. “If in 1970 you had knee surgery, you got a huge scar,” he says. Kessler (2011) says “Now, if you have knee surgery you have two little dots”. Richey (2008) gives yhis definition to the education: Educational technology is the study and ethical practice of facilitating e-learning, which is the learning and improving performance by creating, using and managing appropriate technological processes and resources. "Our aim was to encourage far higher levels of active student engagement, where knowledge is obtained by sharing, problem-solving and creating, rather than by passive listening. The digital learning and research are considered as Knowledge Creation approach, increasing the ability of students, citizens, and the workforce to innovate, produce new knowledge, and benefit from this new knowledge. Liz Burdon of Britain's Durham University (Burdon 2012) asserts that this type of classroom enables both active engagement and equal access to researchers.

2. THE COMPUTER SCIENCE IN EDUCATION

2.1. Historic

The analysis concerns some experiences and reports published by some institutions affiliated to UNESCO.

The idea of using computers in education dates back to the early 60s when there appeared, following the theories of Skinner (1968), teaching machines, already media, since resulting from the assembly a computer, a tape recorder and still image projectors and / or films. The only material that had a commercial life was the IBM 1500 system but his career was extremely short. The invention of the "time-sharing operation", that is to say the ability to connect to a powerful computer a large number of terminals that share the processing power of the computer, led the company Control Data Corporation (CDC) to fund the project PLATO (Programmed Logic for Automatic Teaching Operations) from the University of Illinois. Pantages (5) reports that Morris, Vice President of Executive Administration Office for the CDC compagny did not hesitate to predict that about 1985 PLATO is the cause of half the turnover of CDC.

The countries formulate, increasingly, national policy on the use of computers in education as a response to the increasing number of computers used in the private sector and in response to domestic political pressures that are emerging face of the global information revolution. Such a national policy is also necessary to introduce computers in public education because of the relatively high cost of operation.

According to Hebenstreit (1969, 1998 and 1992), in the early 70s, It is are launched various projects including French project known as the " Expérience des 58 lycées " and the English project NDPCAL "(National Development Program for Computer Assisted Learning) under Authority of the Council for Educational Technology of Waterloo University wich will be the first experimental ground for a semi-massive use of computers in education in Europe.

The massive arrival of computers and lack of instructional teacher preparation has led experts to address a number of the optimistic findings:

a) The Carnegie Report "The Fourth Revolution" (1972) indicates that, compared to initial assumptions, the New Information Techniques (NIT) in education come more slowly than expected, cost more than expected, and go s' add to what exists rather than replace it.

b) The Office for Technological Assessment (OTA) of US Congress (1994) considers that the computer needs more creativity and more time spent with the teacher (Office for Technological Assessment 11).

c) The Carnegie report discovers that teachers who work to develop software are usually not rewarded for their efforts.

d) The report of the OTA of US Congress (95) concludes: " Although much educational software are judged favorably by rating agencies and by professional magazines, the most widespread opinion among teachers (and also among publishers of educational software) is that quality educational software could be much better ".

2.2. The French Experience

The French experience is characterized by the following actions:

1. The development of the French supply of the Open and Distance Higher Education

Two calls for proposals for the establishment of digital campuses were launched in 2000 and 2001 to support and structure the national offer open and distance training. Universities, institutes, engineering schools and colleges have responded massively to it. Consortia thus constituted include corporations (50), associations and local authorities (48). An Amount of 12.12 million euros were allocated to them for study and implement the Open and Distance Training.

2. Information and communication

The specialized site for information and communication technologies has emerged since 1997. Educnet: Opened in 1998, this site of information and communications technology for teaching gathers reference texts, examples of teaching practices, lists of resources but also a legal topic to guide users, a topic standby documentary and new section. He welcomes every month more than 300,000 visits.

3. The research effort

The whole French experience strategy is based on two axes:

a) Innovation Audiovisual and Multimedia Network: Established in 2001 and with a budget of 20.58 million euros, the network aims to promote cooperation between companies and teams of public research in the field of audiovisual and multimedia. The field of education is widely considered (European residence dedicated to educational technology: Villa Media, urban community of Grenoble Alpes Métropole).

- Support for Educational Research: The need for a database of all research groups working on these issues is now available.
- Anticipation and foresight actions: Permanent technological monitoring, missions, seminars and conferences are organized. Studies are also being conducted on some emerging themes.
- Support the creation and enterprise development: Law on innovation and research in July 1999: It allows offering, for civil servants of public services, the opportunity to exercise their skills with French companies, creation or development of educational multimedia sector.
- National Incubator "Belle de Mai" dedicated to educational and cultural media: Created in 2000, following the call for "Incubation and seed capital for technology companies" projects, the Incubator of educational multimedia products and services and business cultural "Belle de Mai" in Marseille, provides support to entrepreneurs in this sector.
- Seed capital "C-source": Established in 2000, the C-Source seed capital fund of an estimated amount of about 15.25 million euros. A quarter of contribution comes from the Government, associations public (mainly INRIA, ENSET Cachan and the Caisse des Dépôts et Consignations) and private investors. It can support young companies in the media sector, including education, for the acquisition of shareholdings.

b) The International partnership

- International electronic learning networks: The networks of schools are woven around common projects such as the hands-on, or Mesoe that respect the environment. France has organized in November 2000, as part of its EU Presidency, the conference and exhibition "eEducation". Numerous actions have also been undertaken in the framework of the European Union and the "eEducation" initiative launched by President Romano Prodi: European Schoolnet, mentioned above, participation in the European Year of Languages, Netdays, E- Schola. Multilateral and bilateral relations.
- Multilateral relations: The Ministry of Education actively participates in work conducted in international organizations in which France is represented: Council of Europe, OECD, G8, Unesco, Seameo.
- Bilateral relations: The offered education must be built on innovative applications of information and communications technology (internet, interactive online documentation, etc.) and it permits for students the realization of creation conditions of an international learning cooperation with many countries as Greece, the regions of North African and Middle East.

2.3. The Algerian Experience

Many actions have been taken to achieve these objectives at the announcement of the government's action plan for the academic year 2000. These include:

- Infrastructure development and support during this period:

- Creation and development of a park of computers,
- Tax relief with respect to the importation of computer tools,
- Connect to the network,
- Sites for schools,
- These results were obtained by a strong mobilization of local authorities and a substantial assistance of government.
- The evolution of teaching content and teaching practices.
- The technologies of information and communication have been gradually introduced since eptember 2000, into the new programs of primary and secondary. New features and particularly at the disposal of the rooms equipped with computers allow to the students the diversification of modes of knowledge acquisition and practice of computer tools such as software.
- The raising awareness of the educational and personal coaching

Since January 2000 several national conferences were organized. They were for managers and training actors and thus supported the training effort in Universities. They have focused on issues related to the new technologies, training for the network and the establishment and exploitation of the web databases. By example, in January 2002 a conference was organized by the National Institute of Informatics (ENI), the Research Center on Scientific and Technical Information (CERIST) in collaboration with Oracle Corporation. In year 2010, the Algerian government has signed a deal with Microsoft Corporation for the maintenance of software and the data bases.

Training has referred in particular in the City of Algiers, the school managers who have all been endowed with a particular computer.

Many actions are underway in the universities to stimulate the use of computers and the software in daily work.

3. CASE STUDY OF CIVIL ENGINEERING TEACHING

This investigation was making during two years with my Students in Master degree during 2012 and 2013 into the faculty of civil engineering in University of science and technology Houari Boumediene (USTHB) of Bab Ezzouar, Algiers, Algeria.

Four questions were put:

- Are you satisfied by the availability of computer material?
- Are you satisfied by the knowledge of teachers in this domain?
- Are you satisfied by the availability of technical software?
- Think you that the tutorials and workshops concerning these tools, are widely ensured?

The responses must be formulated as follow:

- Yes=3,
- Well enough=2,
- NO=1.

On a population composed of 100 persons, the answers are represented by table 1 and figures 1 to 4.

Table1: Answers of Questions

Questions		**Answers**			
		1	2	3	Total
1	Satisfied by the availability of computer material?	40	30	30	100
2	Satisfied by the knowledge of teachers in this domain?	50	30	20	100
3	Satisfied by the availability of technical software?	60	20	20	100
4	Tutorials and workshops concerning these tools, are widely ensured?	70	20	10	100

Figure 1: Answers for question 1

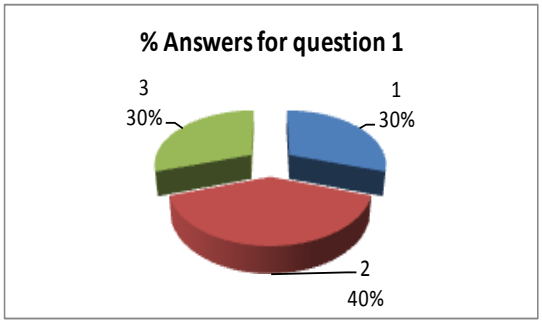


Figure 2: Answers for question 2

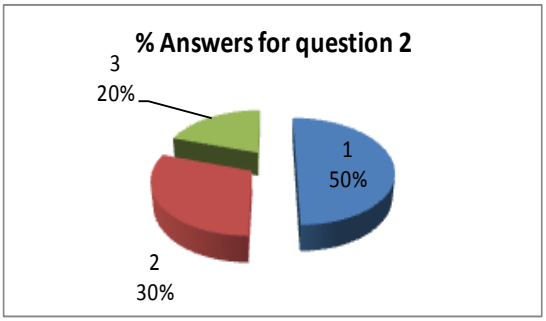


Figure 3: Answers for question 3

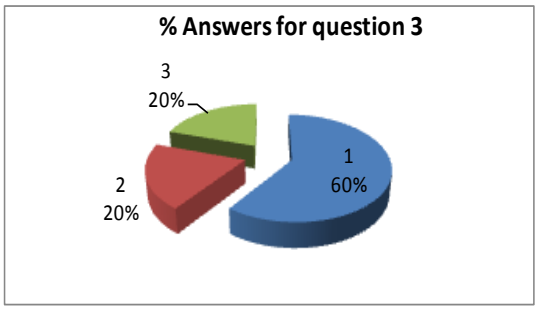


Figure 4: Answers for question 4

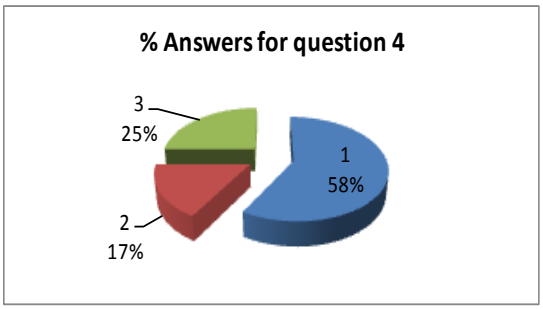


Figure 5: Evaluation of answer for question 1

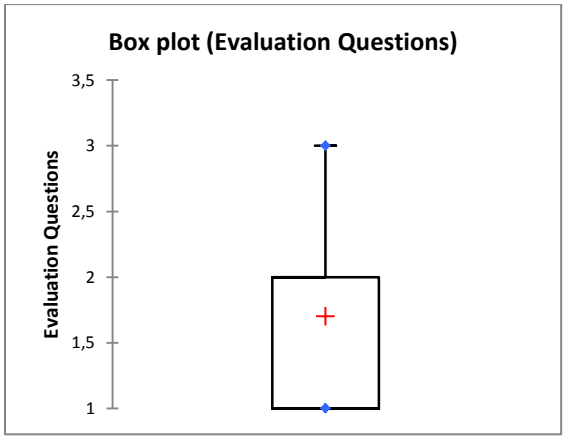


Figure 6: Evaluation of answer for question 2

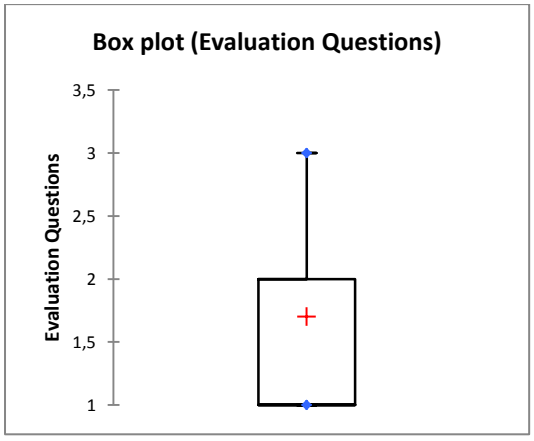


Figure 7: Evaluation of answer for question 3

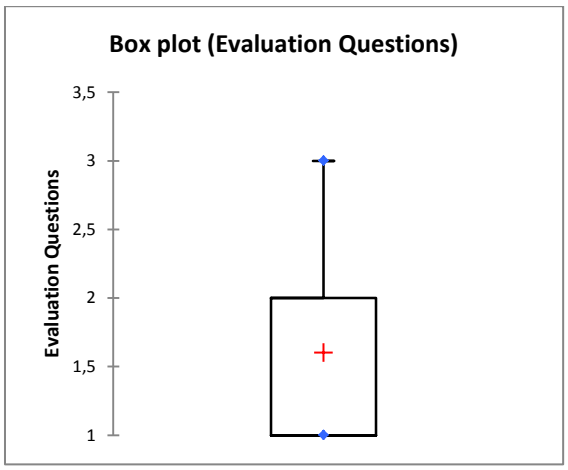
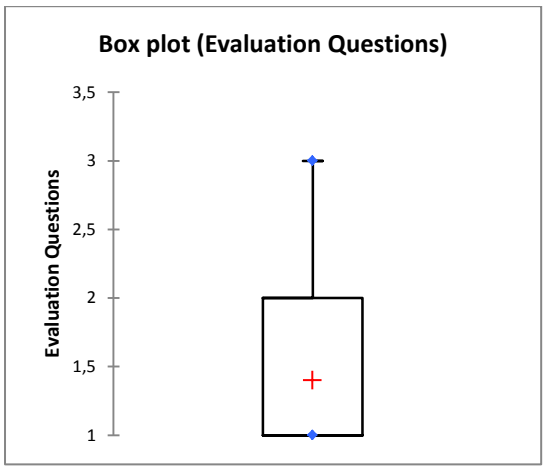


Figure 8: Evaluation answer for question 4



3.3. Interpretation

The responses to the cited questions show that excepted the question number one (1), the large part of students are not satisfied of the actual situation about the teaching of the engineering software. Indeed, the obtained mean score vary between 2.0 and 1.4. The bad score is obtained by the question 4 which illustrates the lack mastering of the software because there are not enough tutorial and workshops.

The availability in number of computers and cyber space is satisfying. Concerning the lack level of knowledge of the teachers, it is demanded to enhance their expertise. The difficulty to accessibility to the technical tools (software) can to be explained by the absence of free software.

Globally, the mean score for all answers is 1.68; this value is inferior to the value “well enough”.

4. FINDINGS AND DISCUSSIONS

The difficulty of access to the computer room, the lack of means to buy software, but also the decline in student interest in computers can explain the disillusionment of some teachers to the new information technologies (NIT). The serious crisis facing the computer industry and the employment prospects in this area are no longer what they were (Recent Trends in Education 13). The social pressure that had greatly contributed to the installation of computers in education has significantly diminished which means there are not motivation for that government undertakes big actions in this area. According to the Minister of Education of the time, approximately 60% of Algerian secondary schools did not possess Laboratory of Computer Science in 2011 (INRE 14). According to the ITU (International Telecommunication Union) (15), Over 250 million people came online over the last year, and almost 40 per cent of the population of the world will be using the Internet by end 2013.

The teachers criticize, without having a clear conscience, the lack of available softwares and the non-mastering of these tools. Guité observes (16) that the computer rooms limit the educational uses of computers because of the constraints they impose. These observations were confirmed by an internal inquiry realized into our university.

Current costs of Internet communications services remain a brake for mass education, especially for poor countries. For example, in Algeria, the cost of internet connection is fifteen (15 €) Euros by month for one (1Gbit) gigabit and the acquisition of router is fifty euros (50 €). Compared to a purchasing power (mean salary=200 €) the costs of internet connection are real constraints and a barrier for the generalization of the eLearning.

If one analysis the remarks reported by some authors as Bialo and Sivin-Kachala (1995), on the emergence of the new technologies in United states during the 1990 to 2000, one note some similitudes with to the algerian contex, but with an delay of 10 years.

5. CONCLUSION

In a very short time, the new information technologies have changed very quickly and are used in all domains of society and economy in Europe and USA. The roles they can and will play in the education have changed also. But in the field of engineering, a big retard is noted in the Algerian universities like the University of Science and technology Houari Boumediene (USTHB) in Algiers. This delay can be explained by an insufficiency in acquisition of technique softwares caused

by the problem of license and the lack mastering of teacher on these engineering software. To promote the development of applications in relation with the design aided by computer, it is recommended to mutualize the resources of the Faculties of mathematic and informatics with the others Engineering faculties into a big laboratory in University.

The great remark, that can to be making an observer, is the absence of an evaluation of the emergence of these new technologies by public institutions. Indeed, in the long term, the development of new technologies certainly will have impacts on pedagogy, engineering design, territorial repartition of schools, working patterns and the urban composition of our future cities. Already some sociologists and urban planners begin to imagine the city of the future.

Significant results were obtained in some universities, particularly the University of Science and Technology Houari Boumediene (USTHB), in terms of allocation of computers and Internet connection. But, it remains to make great efforts in the field of software acquisition, video training and in the computer-aided design.

REFERENCES

Bialo E. R. and Sivin-Kachala J. 1995, “Report on the Effectiveness of Technology in Schools”, Washington, D.C.: Software Publishers

Burdon L. 2012, “Durham University News, 2012”, ur.ac.uk/news/newsitem/?itemno=15991.

Carnegie Commission on Higher Education, 1984,”Rapport: The Fourth Revolution". http://files.eric.ed.gov/fulltext/ED091984.pdf

Guité, F. 2006. Obstacles aux TIC pour un prof technophile, Blogue RELIEF, Montréal, novembre 2006. http://www.opossum.ca/guitef/archives/003434.html.

Hebenstreit J.1969, “Computers in education: Things to come”, Proc. 8th International Conference on Technology in Education, Brussels, 1989.

Hebenstreit J.1984, "Informatique et enseignement”, Comptes rendus de l'Académie des Sciences –La vie des sciences, tome 1, n° 5, 1984.

Hebenstreit J.1992, “Computers in education: The ten next years”, Keynote speech, ICTE 92, Paris 16-19, 1992.

INRE (Institut National de Recherche sur l’Education, Algérie), Les TIC au service de l’éducation , OPU, Algiers, p.20.

International Telecommunications Union (ITU), « Measuring the Information Society », Rapport 2013, pp. 250. https://www.itu.int/en/ITU.../mis2013/MIS2013_without_Annex_4.pdf

Kessler S. 2010,”Technology-in-education”, http://mashable.com/2010/11/22/technology-in-education/

Office for Technological Assessment (OTA) 1994, “The Effectiveness of Technology in Schools: A Summary of Recent Research”, US Congress. http://www.ala.org/aasl/sites/ala.org.aasl/files/content/aaslpubsandjournals/slr/edchoice/SLMQ_EffectivenessofTechnologyinSchools_InfoPower.pdf.

Office of Technology Assessment (OTA) April 1995, U.S. Congress, Teachers and Technology: Making the Connection . https://www.princeton.edu/~ota/disk1/1995/9541/9541.PDF

Pantages A.1976, “Control Data's education offering: Plato would have enjoyed PLATO”, Electronics, pp. 183-187.

Recent Trends in Education, 2010, http://education.mapsofindia.com/recent-trends-education.html.

Richey, R.C. 2008,”Reflections on the 2008: Definitions of the Field”, Association for Educational Communications and Technology (AECT), Ed.TechTrends. https://thenextnewthing.files.wordpress.com/.../aect-d

Skinner B.F. 1968, “The technology of teaching”, Appleton-Century-Crofts, pp.271. onlinelibrary.wiley.com/doi/10.1002/j.2162-6057.1970.../pdf.

University of Waterloo 2006,”Teaching with Technology”, http://cte.uwaterloo.ca/teaching_with_technology.