ICT as Learning Tools and Collaborative Work Facilitators in the Moroccan University Educational System: Summary, Review and Optimization Approach

Bouchaib Riyami[1,2], Khalifa Mansouri[2] and Franck Poirier[1]

[1]*Lab-STICC Information Techniques and Sciences of Communication and Knowledge,*
Université Bretagne Sud, Vannes, France
[2]*Signals, Distributed Systems and Artificial Intelligence (SSDIA), Hassan II University, Casablanca, Morocco*

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Abstract: In the Moroccan university educational system, courses, tutorials and hands-on exercises are taught in face-to-face lectures. This means that learners' attendance is required in all training sessions. Learners do not have access to alternatives courses, nor to the explanations and lecture notes. There is also a lack of distance education (henceforth, e-learning system) allowing them to have flexible access to course content. For these reasons, the learners, especially those who, for some reason or other, cannot attend the face-to-face lectures, prefer to work in groups to re-discuss and rework all course sections not seen with their teachers. Our contribution is to highlight the different uses of ICT tools by Moroccan university students during their daily collaborative work in relation to projects and assignments requested by their teachers, and also to advance a practical means to revise some sections of the course with learners with difficulties, and explain the difficult parts to learners who have not attended the face-to-face sessions. We then unveil some obstacles which hamper the success of "e-learning" in the Moroccan university educational system, relying on our daily experience as university teachers for the last fifteen years, as well as on statistical data on the appropriation of ICT by university students.

1 INTRODUCTION

The Moroccan university educational system faces many difficulties in trying to successfully integrate ICTE (Information Technologies and Communication for Education) (Luc Trouche, 2014) (NdibnuessinaEthé and NyaNouatcha, 2014), collaborative work and distance learning as learning tools. Learners continue to follow the traditional system requiring obligatory attendance in all training sessions. To overcome this inconvenience, students try to use some technological tools and social networks as a collaborative work environment, to learn and improve their educational level (Naji, 2014).

In this paper, the main ICT tools used by Moroccan university students in achieving their collaborative work, learning, and distance education will be dealt with in detail.

The remainder of the paper is structured as follows: the first section describes the current situation of the Moroccan educational system, in terms of equipment, platforms and digital content. Section 2 presents the current practices of ICT by university students. Section 3 describes a mapping synthesis using ICT tools to develop a good collaborative work. Section 4 proposes a process for improving the use of ICT tools in the Moroccan educational system. Last, Section 5 concludes the paper and discusses future work.

2 THE CURRENT SITUATION IN TERMS OF EQUIPMENT, PLATFORMS AND DIGITAL CONTENT

In so far as the use and exploitation of ICT as a tool for teaching and training is concerned, we can divide the Moroccan educational system into three different

categories: public higher education (universities), private higher education and vocational education. In this part, each category is dealt with according to the following parameters: material resources, software means and human resources.

2.1 Public Higher Education

In the public higher education, the major problem encountered relates to the management, motivation and ownership of ICT by learners and teachers (Kaikai, 2014). Practically, all universities and institutions of higher education in Morocco use equipment purchased as part of the annual budgets of the state, free software (open source) or paid (under license) through specific agreements, like Microsoft educational Academy[1], CISCO Networking Academy[2], ORACLE University for Education (Oracle University for education[3]), ...

Some universities have implemented national DWE (Digital Work Environment) such as SAC (Central Authentication Service) in Hassan 1st University in Settat, or DEUW (Digital Environment University Work) in Hassan II university in Casablanca, and have recruited specialized teachers in ICT, but the weekly workload is very slim to allow for the delivery of enough courses (6-12 hours per week on average). In addition, the Moroccan government has launched several incentive programs for the benefit of the entire administrative staff, teachers and university students, such as INJAZ (INJAZ AL-Maghreb)[4] program for the acquisition of computers for preferential prices, and free internet access for one year; the MARWAN project (Morocco Wide Area Network) to interconnect all the Moroccan universities and educational institutions; the GENIE project (Generalization of ICTs in Education 2009-2013) (Kabbaj et al., 2009), the financing of the introduction of educational platforms in all universities and Moroccan educational institutions, and finally the generalization of broadband internet access in all rooms, halls and classes, in all Moroccan universities.

Despite all these facilities and the diversity of free platforms, we find that the educational content platform is very limited because of a number of barriers which relate to the educational system itself, such as the policy of implementation of ICT

development strategy, obstacles relating to the support, development and motivation of human resources, barriers relating to language and culture, and last but not least, technical problems which relate to the implementation of the technological infrastructure (Mastafi, 2014).

2.2 Private Higher Education

The private higher education sector uses ICT in the curricula of initial and continuous training, with a utilization rate better than that of public higher education. However, it remains insufficient in providing the benefits of learning platforms. In this sector, the exploitation of ICT is mandatory for certain structures that have outsourced training in partnership with French or other international universities. This is the result of cooperation agreements and partnerships with non-Moroccan institutions that require the use of ICT in their teaching, and which is generally aligned with current trends of ICT. Other structures integrate ICT in their training as supplementary tools to coach learners (Quintin, 2008), to improve the quality of teaching and to have a leading edge over other schools and private universities in a highly competitive educational market.

2.3 Vocational Education

The vocational education and particularly in the case of the training of specialized technicians, by national offices OFPPT[5] (Office of Vocational Training and Work Promotion) over a period of two years after the baccalaureate, operates ICTE in all training curricula by a much higher rate than the private and public higher education sectors[6]. The implementation of ICT in this sector was achieved through a good organizational strategy, motivated teaching staff, partnership agreements with large organizations of information technology IT, such as Microsoft Education, CISCO Networking Academy, ORACLE University for Education....

The educational content of these platforms is rich and varied - improved by the latest technology, in the form of text, animated images, sound, video and virtual machines. Laboratories, practical workshops, code scripts, quizzes and exams are already integrated. At the end of their training course, learners have to sit for written exams and exams on eLearning platforms. Successful students receive certificates, in addition to a specialized technician's

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[1] http://it-learning-maroc.com

[2] http://www.netacad.com

[3] http://www.oracle.com

[4] http://www.etudiant.ma/actualite-programme-injaz-intel-un-ordina teur-pour-chaque-etudiant-1709.html or http://injaz-morocco.org/

[5] http://www.ofppt.ma/offre-de-formation2/presentation-de-l-offre.h tml

degree from OFPPT. Graduates of the Vocational educational sector ae easily integrated in the professional field. They are also allowed to enroll in the third year of a private higher education institute, as well as in the "professional license" (a professional bachelor's degree) in a public university.

3 CURRENT USES OF ICT TOOLS IN LEARNING AND COLLABORATIVE WORK

In the last decade, the explosion of ICT, the diversity of international learning platforms, the MOOC (Massive Open Online Courses) (Bachelet, 2014) (Delpeyroux and Bachelet, 2015), the appearance of smart devices such as smartphones, tablets and other mobile devices, and the revolution in social networks like Facebook, Viadeo, Linkedin, Twitter, became very powerful means to facilitate education and training by promoting easy sharing, effective and flexible learning. They allow learners who have not had the chance to enroll in one of the best universities in the world to enjoy the same course content to learn and improve their knowledge. Because in the Moroccan university educational system, we notice a weakness in terms of educational content of ICT platforms, learners and teachers benefit from using social networks like Facebook for purposes of knowledge sharing and collaborative work (Mélot, 2015). Other learners use DropBox tool for sharing documents, courses, practical workshops and articles. A third category uses the services offered by Google, such as Google Drive for sharing of all types of documents and files, as well as Gmail for messaging and asynchronous communication teacher-student accounts. Several other categories of learners prefer the use of YouTube and enjoy videos which offer a better educational content.

For videoconferencing, synchronous communication and sharing presentations, learners use "Skype". This tool is also used in the case of lessons, lectures, oral presentations or remote selection interviews. In addition, appointments and meetings, bindings are done via Doodle tools and shared Google Calendar. Students enter their free time slots in the Doodle application that is shared by all learners, who decide the most suitable timing for everyone according to the intersection of the free slots provided in this application. The shared Google calendar recalls the events, activities, tasks and work

to be done, specifying all working parameters such as date, time, location, guest learners and other issues. The shared Google calendar also offers the ability to synchronize all tasks to be performed, via mobile devices such as smartphones and tablets, for example.

4 ICT TOOLS TO DEVELOP COLLABORATIVE DISTRIBUTED WORKS

In this section, we propose a cartographic synthesis of the use of ICT tools for learners of the Moroccan educational system to develop collaborative distributed works in order to optimize the use of these tools. This map shows explicitly how the students work in groups to try to develop a well-structured and well-presented collaborative teamwork, using ICT tools for sharing documents, synchronizing treatments, fixing work appointments, recalling the events of group work, synchronous and asynchronous communication and other distance learning needs.

Our mapping is composed of collaborative work tasks related to appropriate ICT tools to facilitate good interaction between learners in order to develop an efficient working team.
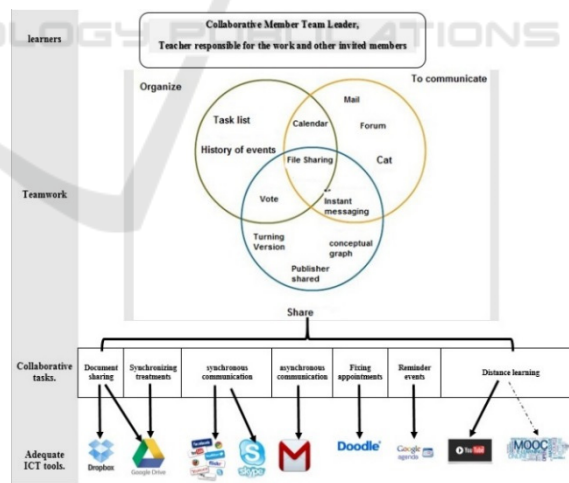

Figure 1: T Allocation of adequate ICT tools for collaborative work tasks used by Moroccan university students.

The map in Figure 1 outlines the main ICT tools currently used by Moroccan university students during their collaborative work, and a very low use of MOOC platforms or international e-learning content, because of the lack or absence of the

learning platforms in the Moroccan higher education system.

5 APPROACH TO OPTIMIZING THE USE OF ICT TOOLS IN THE MOROCCAN EDUCATION SYSTEM

In this section, we propose some steps and recommendations to increase the rate of use of ICT in education, as a key development sector.

We invite teachers to:

- Participate in periodic trainings on learning platforms to update their teaching content for the benefit of learners.
- Track the interactions of learners on learning platforms.
- Train learners on the efficient use of international free learning platforms such as MOOC (Massive Open Online Course) (I. Nawrot and A. Doucet, 2014).
- Interact with the students when using online courses (emails, forums, discussions via social networks, etc.).

This invitation can only be fruitful if the following set of working conditions is met:

- The acquisition of appropriate equipment.
- The installation and the configuration of learning platforms.
- The listing of teachers in regular trainings.
- The updating of the educational content on these platforms.
- Yearly commitments signed by teachers to ensure the updating of the educational content and the continuous use of the platforms of learning.
- The Moral and the material motivation of the teachers involved in this endeavor, given that these tasks are additional to their usual tasks.

The proposals mentioned in this paper are inspired by:

- Our daily work as university teachers and trainers in the field of ICT for several decades.
- Our weekly and monthly meetings with other university teachers and researchers from different Moroccan and foreign universities.
- Our meetings at seminars and academic conferences on ICT.

- Statistical studies that have been carried out on the appropriation of ICT by learners (sample of 750 students) (Ait Kaikai, 2014).
- Further studies on teaching approaches of ICT in higher education in Morocco (Bezzari, 2013).

6 CONCLUSION

In this paper, we presented a report on the current situation of the Moroccan higher educational system in terms of equipment, e-learning platforms and digital learning content, and we also tried to highlight the current ICT practices by Moroccan university students in distance learning and achievement of collaborative work.

We then proposed a cartography which represents the allocation of ICT tools for collaborative tasks to meet the learners' needs, and we noticed a very low utilization of MOOC platforms by Moroccan higher educational institutions. We also tried to propose a tentative optimization approach of the tools mentioned in the cartographic synthesis using ICT tools, relying on our professional experience, as well as statistical studies to improve the rate of use of ICT and especially MOOC by university students in Morocco.

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