Abstract

Currently, the world is evolving towards hyper-connectivity; we are witnessing the emergence of a new form of technology integration in the classroom: the "Bring Your Own Device (BYOD)". The mobile is a medium that the trainer will be able to use to support his learners throughout the training process. It empowers the learners; the user decides for himself how he trains himself according to his desire. However, various factors can be a barrier to the integration of mobile devices in an educational context, such as the high rate of demotivation and abundance.

This research work raises the question of how to promote the adoption of mobile devices in schools. It is therefore necessary to adapt online learning activities for these devices, which are characterized by the absence of mice and keyboards, a small screen (3 to 12 inches) and frequent use on the move. Our challenge will be to put in place the appropriate strategies to exploit the potential of these new tools, and enable users to create their own personal digital environment.

Several research models provide some insights into the mechanisms for the use of information and communication technologies for education (ICT) such as integration models and the acceptability of digital tools and user satisfaction models. The analysis of all these models provides some insights into the mechanisms that influence teachers' perceptions of ICT. However, no research work combines the models: engagement, system acceptability, user satisfaction and integration of digital tools. This is the reason why we have chosen in this article to exploit the different dimensions of these models, which seem to us to be decisive, to establish a hybrid synthesis model that can serve as a blueprint for the integration process.

Keywords: BYOD, ICT, SAMR, TAM, UX.

1 INTRODUCTION

Mobile phones have become the number one screen in the world. According to UNESCO, nearly 6 billion people have a connected mobile device. In Morocco, almost all students have a smartphone, it is a device that could therefore be used in the training process. An educational use of the smartphone is part of the BYOD approach (Bring Your Own Device). Mobile learning is when training resources are accessible from a smartphone.

Mobile learning facilitates learning for the learner because it allows him/her to follow his/her training according to his/her desire and availability. It does not necessarily make the difference between working time and personal life. Ease of access, flexibility, freedom and pleasure are increasingly sought by learners.

2 MOBILE LEARNING, WHAT ARE WE TALKING ABOUT?

Mobile learning is learning in multiple contexts, through social interactions and interactions with content, using personal electronic devices. [2]

2.1 The benefits of mobile technologies in education

Mobile learning allows the learner to work anywhere and at any time with his or her personal digital camera [3]. A way to promote student learning because the student has the choice of the tool he or she knows and masters. [4].
2.2 The disadvantages of using mobile phones in an educational context

Despite all the advantages mentioned above, the adoption of mobile still presents a challenge given certain factors: Need for autonomy, Need for competence, Need for affiliation, Lack of equity between students, Complexified classroom management, Complexified lesson planning, Additional workload, Material resource prices.

3 THE USE OF DIGITAL IN EDUCATION

If the use of ICT provides interesting pedagogical perspectives, several authors have tried to explain this "non-use" of ICTs.

- Aurélien Fiévez, doctoral researcher in educational sciences at the University of Montreal, has listed the advantages and disadvantages of BYOD in an educational context (Fievez, 2015):

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Inconveniences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased collaboration among students,</td>
<td>Technical requirements: bandwidth and infrastructure,</td>
</tr>
<tr>
<td>Critical thinking and student empowerment,</td>
<td>Lack of equity among students; need for additional materials,</td>
</tr>
<tr>
<td>Increased communication between students and teacher,</td>
<td>Network and data security,</td>
</tr>
<tr>
<td>Access to information anywhere, anytime,</td>
<td>Complexified class management,</td>
</tr>
<tr>
<td>Continuity between school and home,</td>
<td>Requires additional technical mastery for the teacher,</td>
</tr>
<tr>
<td>Reduction of costs for the school,</td>
<td>Complex lesson planning,</td>
</tr>
<tr>
<td>Prepare students for professional realities,</td>
<td>Additional workload</td>
</tr>
<tr>
<td>Personalized learning.</td>
<td>.</td>
</tr>
</tbody>
</table>

- Ben Abid-Zarroquk (2012): The use of digital tools in the classroom by some teachers appears likely to redefine the teacher's work.
- The lack of mastery of digital tools generates a feeling of uncertainty and anxiety, factors that may lead to a blockage of involvement.
- A survey of 340 trainers at the University of Strasbourg showed that lack of time is the main factor blocking the use of ICT, as well as the price of material resources, and lack of skills.

4 POINTS TO CONSIDER FOR THE ADOPTION OF MOBILE PHONES IN THE CLASSROOM

The above factors explain the non-use of mobile phones in the educational environment. Several models can be used as a framework for the process of adopting ICTE in all its dimensions.

4.1 Engagement factors

According to O'Brien & Toms is a quality of user experience (UX) that depends on several factors such as:

- Aesthetic appeal (stimulation)
- Innovation
- Usability of the system
- Ability to get involved
- Overall evaluation
To measure user engagement with a mobile application, three main factors are identified from the O'Brien and Tom's model.

- According to Donald Norman is related to human psychology
- From R. Ryan and E. Deci determines his commitment to a technology
- According to Nielsen is described using 5 factors: ease of learning, error prevention, user satisfaction, ease of recall and overall effectiveness.

4.2 Motivation

The research of Edward Deci and Richard Ryan shows that motivation is based on three main basic needs: autonomy, competence and social relationships. [2] [7]

- The need for autonomy: It refers to the feeling of feeling at the origin or source of one's actions.
- The need for competence: It refers to a feeling of efficiency in one's environment, which stimulates curiosity, the desire to explore and take up challenges.
- The need for affiliation: It refers to a sense of affiliation and a sense of being connected to people who are important to you

In this way, combining mobile devices with a learning platform increases students' intrinsic motivation. [2]

4.3 Models for integrating digital tools [8]

Describe the different practices to be followed and the tasks to be carried out in order to complete the progress of the process and to better place technology in the pedagogical activity. Among these, let us note: The SAMR model, the ASPID model, the continuum of approaches and the TPACK model
4.4 Models of the acceptability of a technological system

These models are the integration of concepts from several models or theories to explain the intention to use a technology. [9][10]. These include: the TAM3 model and the UTAUT model.

However, these models were not yet perfect and it does not address the aspects related to the success of information systems.

4.5 User Satisfaction Model [9]

It is a descriptive model that integrates all the central aspects related to the success of information systems. The authors list the six major dimensions of success: system quality, information quality, system usage, user satisfaction, and net benefits (individual and organizational impact)
5 PROPOSAL OF A SYNTHESIS MODEL

The analysis of the different models just described provides some insights into the mechanisms that influence teachers' perceptions of ICT, hence the possibility of integration.

- Karsenti considers that the integration of ICT depends on the responsible use of ICT by learners and the level of techno-pedagogical commitment of the teacher. [10]
- Technology acceptability models do not address aspects related to the success of information systems. [9]

However, no research work combines the models: engagement, system acceptability, user satisfaction and integration of digital tools. This is the reason why we have chosen in this article to exploit the different dimensions of these models, which seem to us to be decisive, to design a theoretical synthesis model.

6 CONCLUSIONS

Mobile learning is a topical issue, which means that various factors are blocking their adoption.

This research work aims to improve the quality of learning through mobile integration. To this end, several approaches have been described.

However, the results of these approaches have been replicated and coupled to design our synthesis model that responds to all factors influencing the implementation of ICT. Consequently, our next step will be to reflect on several hypotheses in order to refine the factors of ICT integration.

REFERENCES

[2] L ’ apprentissage mobile et la réussite des élèves Qu ’ est-ce que l ’ apprentissage mobile ?


