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## MONOGRÁFICO

### EDUCATIONAL PROJECTS BASED ON MOBILE LEARNING

**Abstract:** In this paper, we describe how the use of smartphones and other mobile devices is increasing and how to take advantage of this trend to improve formal and informal education through educational projects.

**Keywords:** Mobile learning; learning model; motivation.



## **PROYECTOS EDUCATIVOS BASADOS EN APRENDIZAJE BASADO EN DISPOSITIVOS MÓVILES**

Resumen: En este artículo se describe cómo el uso de teléfonos inteligentes y otros dispositivos móviles es cada vez mayor y cómo aprovechar los beneficios de esta tendencia para mejorar la educación formal y no formal a través de proyectos educativos.

Palabras clave: Aprendizaje basado en tecnología móvil; modelo de aprendizaje; motivación.



## EDUCATIONAL PROJECTS BASED ON MOBILE LEARNING

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### 1. INTRODUCTION

The use of smartphones among teenagers is increasing and a new trend named mobile learning, learning through mobile devices, is beginning to open up new possibilities and challenges in education. Some experts in education and new technologies show that the proper use of these devices may improve performance because of the increase in student engagement compared to traditional teaching. Furthermore, statistics show that smartphones and tablet computers grow in number, so learning is becoming more mobile and easier for the average student. Hence, we are going to review the advantages and disadvantages of using mobile devices in the learning process as well as how this type of learning is evolving.

### 2. MOBILE LEARNING: MEANING AND EDUCATIONAL FIELDS

It is early to know all the possibilities that mobile devices offer because mobile learning is still experimental. Nowadays are being carried out various proofs of concept through mobile learning.

One example is the use of mobiles for visiting museums or historical places in cities in order to carry out the learning process in situ.

Related to this emerging trend there are a number of studies and articles analysing the advantages and disadvantages of using mobile devices for learning.

#### 2.1. Advantages

According to Barseghian (2011) two main facts can be highlighted:

- The potential provided by smart mobile devices in learning is based on its ability to supply instant access anywhere and their possibilities in giving everyone opportunities to collaborate with others. It also provides fun due to the number of educational games available.
- In the current phase of innovation, many creative applications and systems are being developed in order to cover needs of historically isolated populations in the world of information and communication.

Hence mobile learning contributes in improving communication, collaboration, creativity, fun and personal learning everywhere and anytime.



The main advantages and disadvantages, mentioned by Hajim (2012), are described below.

#### 2.1.1. Educational Support

The use of tablet computers and smart phones provide easy access to the knowledge and they can be used as educational supporting tools. These devices allow the student access to information what can improve their academic performance in classroom.

#### 2.1.2. Interaction

With mobile learning, communication between teacher and student becomes simpler and it is easier to encourage shy students to communicate and interact more openly in class. The use of mobile devices could help teachers to interact with students that require special attention.

#### 2.1.3. Management

Each student has its own way of understanding information. This means that each student requires different teaching methods or strategies for learning. Through mobile learning, students are more autonomous and can learn at their own pace and according to their needs. Therefore, they can customize the learning process and enjoy learning.

#### 2.1.4. Wider Access

Mobile devices not only provide access to numerous educational online tools but also allow contact with experts in several fields. There are many blogs, forums, webinars where students have the opportunity to interact with professionals wherever they are.

#### 2.1.5. Special Education

There are developing applications to solve many learning problems and mobile technology could do a lot so as to benefit people with special needs. At present there are several tools oriented to learning difficulties and physical disabilities, allowing all students to acquire the minimum skills.

### 2.2. Disadvantages

One of the problems found in mobile learning, is that mobile devices are not yet sufficiently widespread and although the number of mobile devices per person grows



day by day, not all the people have internet access because of the high prices in some parts of the world. If it is not possible to extend the innovation in learning with mobile devices worldwide, the digital divide could increase.

#### 2.2.1. Cost

The cost of the devices and rates is a major disadvantage of mobile learning. Moreover, technology changes very fast forcing upgrade devices frequently. Besides the device, downloading large files not only takes time but also storage space and costs much depending on the data rate.

#### 2.2.2. Size of Device

The size of the device is also a disadvantage. Mobile phones, which are the most accessible devices, are usually small and can increase the eyes tension when they are used for a long period of time. Also, they have small screens that can display only a portion of the information.

#### 2.2.3. Battery Life

The battery life of mobile devices is very low at present. Most devices only allow a few hours of productivity. If the battery runs out it is needed to plug it in for recharging so learning ceases to be mobile.

#### 2.2.4. Technology

The technology is still limited: most devices have a limited storage capacity. Furthermore, there are several operating systems or platforms that are not always compatible, which makes it difficult to use some applications in all type of devices.

#### 2.2.5. Usability

Mobile devices usually have small buttons or keyboards and small screens making them difficult to use. However, the current trend is to increase the size of the devices so as to facilitate their usage.

### 2.3. *Advantages versus disadvantages*

Reviewing the positive and negative aspects shown above it can be said that there are more benefits than drawbacks.



Nevertheless it is important to consider all the factors for achieving success in learning researching and innovating with mobile devices.

### **3. HOW COULD MOBILE LEARNING CONTRIBUTE IN THE LEARNING PROCESS?**

There are many on-going projects in order to research the impact of using mobile devices in and beyond the classroom.

One example of those projects is “MOBILE LEARNING PIONEERS” (MLDs) (Dickerson and Schad, 2010) in which has been found that it has been achieved a higher quality in teaching, an improvement in the results of state-mandated TAKS Benchmark tests and an increase in student interaction. Students learn to explain things to each other with the support of the teacher and those who were not particularly bright have improved their knowledge through this technology.

Another example is “Take Project K-Nect” (<http://www.projectknect.org/>). It is a program about socio-media-based curriculum that combines collaborative activities and the use of tools related to media. It is carried out with 3000 high scholars in three states of North America. There are algebra mini apps that support instant messaging and blogging, assessment tools for teachers, supplemental activities, project-based learning components, problem sets, and cartoon animation. The result is that students personalize their learning and are able to take control of their learning process.

Additionally, a study carried on by Grunwald Associates LLC (2013) about parent's thoughts about mobile devices for early childhood and K-12 learning shows that there are great benefits in using mobile devices in different competences.

Therefore, mobile devices appears to be really useful in order to improve the motivation and performance in learning, furthermore students could learn whenever and wherever they need the information which opens a great amount of opportunities.

### **4. COULD MOBILE LEARNING REDUCE DIGITAL DIVIDE?**

Studying the figures in the mobile technology penetration during the last years it is found that the mobile-cellular subscriptions are increasing year by year, in fact there are almost as many subscriptions as people in earth. This is reflected in the study carried on by the Telecommunication Development Sector (ITU-D) (Sanou, 2013). Hence mobile learning could have a great potential in reducing Digital Divide. Nevertheless, it can be found reviews for and against in this regard.



#### 4.1. Positive effects

The following positive aspects, argued by Barseghian (2011), can be taken into account:

- In those countries that did not have a good telephone infrastructure or where the telephone service was not universal, much less Internet Access, mobile phone service has transformed the way of communication and interaction, because they are more accessible for everybody.
- The use of mobile technology enables social connection between people. Social connections are our primary platform for learning in everyday life. This trend represents a great transformation in the context of learning.
- In developing countries mobile phones are the only portal to the world of information. These platforms encourage creativity through the use of text messages, information access and learning tools from around the world.

Overall an improvement in communication, more creativity and easy information access could be obtained by this technology in all parts of the world, thanks to the high spread of mobile phones worldwide.

#### 4.2. Negative effects

According to Barseghian (2011) the following negative aspects can be noted:

- For students at risk of exclusion (homeless or people with insufficient financial resources) using mobile technology platforms for learning is not enough. Moreover, they may not have access to mobile devices due to their cost. In these cases, social support is needed to help them to integrate socially and avoid that the digital divide can be increased.
- Actually, systems are not open enough to allow innovation in learning and knowledge at street-level and it could bring on even more of a digital divide. These systems could bring many learning tools to people of all ages, mainly young people, if they are spread worldwide for all people regardless of their social status.

Thus the main problem of mobile learning accessibility is that smart mobile devices are not yet sufficiently widespread so as to reach all target audiences.

### 5. EXAMPLES OF EUROPEAN PROJECTS IN MOBILE LEARNING

There are many European projects related to mobile learning, some of them carried on in the framework of the Lifelong Learning Programme as it is shown in this section.



### *5.1. Lifelong Learning Programme Projects*

There have been several projects in the framework of the Lifelong Learning Programme. As for example the projects described below:

- e-Future - Transforming progression and learning outcomes for Youth at Risk through ICTs, Web 2.0 and Mobile Learning (Education, Audiovisual & Culture Executive Agency, 2010b). In this project, new methods for the use of ICTs, Web 2.0 and Mobile Learning for Youth at Risk have been developed. The main objective of this project has been to support large numbers of youth at risk in order to improve their capacity to enter the labour market and to progress to further education.
- ENSEMBLE European citizeNShip lifElong MoBile Learning (Education, Audiovisual & Culture Executive Agency, 2008). This project worked on the use of ICTs - and particularly of mobile tools, like mobile phones, MP3 readers and netbooks - so as to encourage the integration of social groups that are at risk of being marginalized.
- Español a la Carta: mobile learning for immigrants in the restaurant sector (Education, Audiovisual & Culture Executive Agency, 2010a). This project has developed a training program for teaching Spanish to immigrants who are already working in medium or small companies of the tourist and restaurant industry. It was initially developed for mobile telephones, but a web page for supporting the mobile learning course was created too.
- COLLAGE - Collaborative Learning Platform Using Game-Like Enhancements (<http://www.ea.gr/ep/collage/main.asp>). This project has implemented an integrated in an innovative, really state-of-the-art mobile learning support and information application with existing best practices experiences in the field of mobile learning applications in Europe.

### *5.2. Results*

It can be seen that there are a great variety of projects and papers in the mobile learning field, but there are still many steps to take in order to ensure that mobile devices are a reality in education. Therefore, it is needed to keep bringing new innovative projects or educational policies that allow exploring all the possibilities offered by these devices.

Under the framework of the new Erasmus+ programme, which is the continuation of the Lifelong Learning Programme, many institutions could apply for grants to carry out projects in different areas of education including among others mobile learning. ICT is one of the main objectives that the European Community wants to promote, and m-learning is one branch of it. The call for proposals has been published in December of



this year and it explains all the information of the new program. More information could be found in <http://ec.europa.eu/programmes/erasmus-plus/>.

## 6. CONCLUSIONS

The great penetration of mobile devices worldwide turns them into a tool with many possibilities in the field of education.

As it is supported by UNESCO (2012) the scope and diversity of mobile learning projects indicate the need for governments to invest in the development of large projects based on the efficient use of mobile phones for learning.

Thereupon, it is needed to loss the fear of allowing the use of mobile devices in classroom and to establish the rules that help to find a balance between suitable and unsuitable uses of mobile technology in classroom.

Furthermore, action is required in order to achieve that this new educational trend can reach most of the population in both developed and developing countries, thus reducing the digital divide.

Finally, due to the growing importance of mobile learning, the new Erasmus+ programme could contribute to foster projects in the field of innovation in education related to this trend, as ICT in education is one of the main objectives of the programme.

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