Professional review paper

The mobile learning classroom potential

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Abstract: *Mobile learning construct has been present in the field of education for more than a decade. Intuitively, it was expected that the mobile technology development as one of its basic characteristics will directly influence the teaching practice. However, trend of implementation to large extent does now follow social changes.*

Keywords: *implementation; mobile learning; teaching*

1. INTRODUCTION

Generations of students who are now in one of three levels of formal education were born during the existence of mobile technologies and the Internet, so today they are proficient and effective users of computers, mobile phones and a variety of modern communication devices. Mobile learning (M-learning) involves using of portable devices for educational purposes, and to many teachers is still unknown. It is based primarily on the wireless Internet and online access to information. It can be viewed through the prism of the e-learning-based learning in different contexts by using mobile devices. Students may use their mobile devices anytime and anywhere, thus gain a new and interesting learning experience. Introducing students to the techniques of using mobile devices in education is valuable, especially for the professions where these devices has become indispensable.

Traxler and Dearden [12] criticize the view on m-learning exclusively in accordance with its technical orientation, and point out that it should be based on the perspective of the user who is taught in the context of the communication. Brown and Green [1] stated that the m-learning is the natural expansion of e-learning and categorize it as a subset. However, through the implementation, researchers realized that it has different characteristics. According to Keegan [7], there is continuity in the functionality of the devices used for e-learning and m-learning, so he does not see a clear boundary between these two approaches, and considers that the proper identification should be based on mobility, not functionality.

By analyzing the mobile learning approach, we have identified certain important features. M-learning can be implemented anytime and anywhere, while preserving the interaction between teacher and other students so that it integrates a multitude of resources into the process of learning. It is commonly used as a complement and support to other types of learning, not as a replacement. The technologies used for its implementation are cost-effective and widespread. Giving students the responsibility for managing the process of learning, it raised motivation and self-confidence.

M-learning should be seen as a support for lifelong learning and facilitates digital literacy of the population that uses it [6]. It is not sufficient to train students for independent information retrieval. They also need to manage and analyze information in order to turn it into useful knowledge. Digitally literate individual understands the role of the computer as a collaborator in the process of searching and processing information, but is also aware that the success of this process depends mainly on itself and not by the technology that is used. By actively using mobile technology they acquire specific knowledge and skills. Students have the opportunity to attend programs that interest them, even if they are not offered by the educational institutions in the places where they live or work.

Is not always necessary to design and use specific application for learning and distribution of educational content on mobile devices. Usually it is enough to adapt it to the basic functionality of the devices and to adjust it to the display limits.

The modernization of educational technology as an integral part of the teaching process is inevitable in this technological moment. The concept of knowledge is changing. Modern education requires transformation towards a model of active knowledge construction. Teachers and students are becoming partners in building the knowledge base.

2. GOOD PRACTICE AND TEACHING PERSPECTIVE

One of the drawbacks of traditional teaching is restraining the individual characteristics of students. The teacher is not able to give equal attention to each student individually within a class with limited duration. Students are forced to gain knowledge at a pace that often does not match their abilities or desires, and must catch up with the curriculum. M-learning allows students to bridge this gap.

Technical equipment of most of the Serbian schools is far below EU standards, but almost every student has a mobile device that can be a new source of knowledge. This new "book" is a comprehensive, information is easy-to-find and it is practically free.

When we talk about the possibilities of m-learning in the creation of new content and sharing them with the broader community, we must emphasize podcast technology [13]. It is a mode of communication that allows creating audio files and its global distribution so that everyone can access them anytime and anywhere. Podcast is often present in the practice of teaching foreign language, but can be used in the context of any other subject. Especially important and useful lessons can be recorded via mobile devices and uploaded online.

Application of new communication technologies in the educational process involves continuous monitoring and acquisition of new knowledge and experience in these areas. IT and digital literacy is essential mainly to teachers, who are expected to achieve interaction with students in the modern technological environment.

The results of PISA and TIMSS tests clearly indicate that the teaching process in Serbia must improve, innovate and adapt to the needs and interests of modern students [4]. Classes in Serbia are still traditionally taught, related to the blackboard, chalk and frontal mode. Despite the desire to place student at the center of education, the focus is still on teachers.

There is practically no application that cannot be used for m-learning. The only limiting factor is the technical characteristics of the mobile device. For example, modern geography lessons are inconceivable without using modern technologies, such as Google Earth [11]. Thanks to the Google Drive and Kingsoft Office applications, electronic notebooks have

been developed, so that each student can access information when and where needed on the mobile phone or tablet instead from a backpack packed with books.

Two leading popular free aplications for the implementation of m-learning are Pear Deck (https://www.peardeck.com/) and Nearpod (https://nearpod.com/). They allow teachers to present controlled content via their laptop, tablet or smartphone on student devices [2], and currently represent the most quality solution for synchronous classroom use of mobile devices. Schematic view is presented in Figure 1. A teacher can show a prepared presentation while the students monitor it on their devices and meet the interactive content in the form of short examination, or other forms of open questions, drawings, etc. Further, the teacher receives direct feedback from students. Using these applications, we are able to dictate the pace of learning by changing the content of the slides which motivates students, and focus them on interactive, dynamic and interesting lectures.
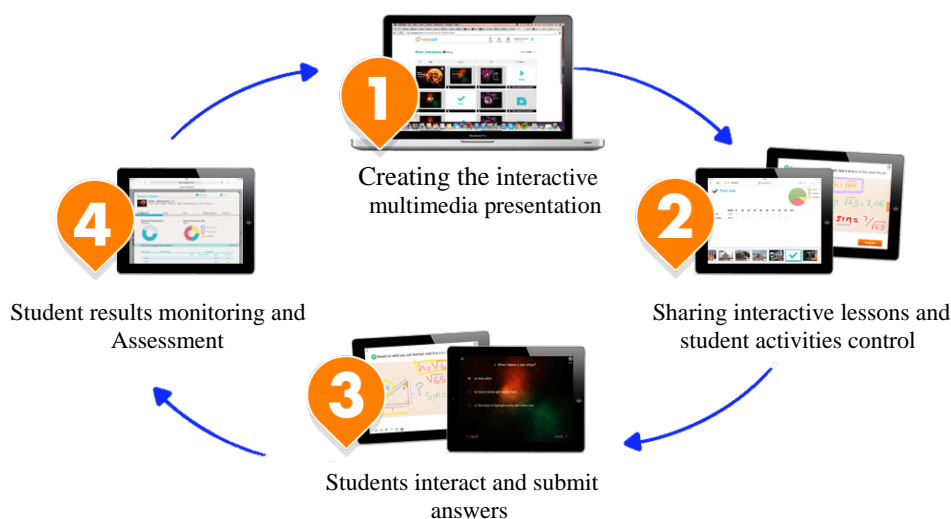

Figure 1. *Syncronious classroom mobile devices usage*

Pear Deck application is closely related to Google services, making it more functional. Its trial implementation began in March 2016 in the primary school "Svetozar Marković" in Kraljevo (Serbia) within the required elective course "Informatics and Computing" in 8th grade, and in the period of the first month of use gives encouraging results. The results analysis and application possibilities are topics of future research.

An overview of current projects aimed at the development of m-learning is the first step of the analysis of m-learning possibilities. *MOBIlearn* is a project that demonstrates the latest achievements in the research of new generation paradigms and interfaces for technology-assisted learning in a mobile environment [10]. The new architecture of m-learning supports the creation, delivery and monitoring of educational content using personalization, multimedia, instant communication messages (text, video) and distributed databases. The aim of the *HandLeR* project is the development of personal handler of mobile technology for learning, based on the understanding the ways in which people learn in different contexts. Questions that are explored are the concepts of mapping, sharing knowledge,

lifelong learning and wearable technology learning [5]. The *mGBL* (mobile Game-Based Learning) is developed by the organizations from UK, Italy, Croatia, Austria and Slovenia. It is aimed at development of a platform for the educational content presentation on mobile devices using digital games [9].

3. CONCLUSION

Research [3] [8] show that students are satisfied in the process of m-learning, do not have objections to uneven criteria, while the grades that they received are higher on average. In order to follow the trend of innovative technology the educational system must introduce mobile devices in the daily classroom practice. M-learning in Serbia is still underrepresented, nor is developed. It is necessary to educate teachers about the possibilities of m-learning in order to change their attitudes and accept that it may be productive as the traditional approach, if not more. The introduction of m-learning in the school system involves the realization of a few basic conditions: the organization of support systems, training teachers and staff for technical support, and strategic commitment to the systematic introduction of information technology in teaching.

It can be expected that the educational process will be significantly improved by the creation of new learning materials with a visually appealing multimedia content including interactive and contemporary information that can be used multiple times. New technologies open the door to alternatives to classical teaching methodology that passivated pupils which often were not sufficiently motivated.

The problems of m-learning development and implementation in Serbia is not just about the educational system, but the society at large. The question is how much the social environment is ready for the influx of new technologies in education. Parents generally support the introduction of new technologies in education, but often carry the belief that the way in which they were taught is also suitable for their children, so that any alternative approach is wrong.

M-learning started its life as an experiment, but the development of new technologies cramps its way for future implementation. It is only the matter of time when the m-learning will become one of the recognized and identified tools in the production of modern educated individuals.

REFERENCES

[1] Brown, B., & Green, N. (2012). *Wireless world: Social and interactional aspects of the mobile age*. Springer Science & Business Media.

[2] Delacruz, S. (2014). Using Nearpod in elementary guided reading groups. *TechTrends, 58*(5), 62-69.

[3] Furió, D., Juan, M. C., Seguí, I., & Vivó, R. (2015). Mobile learning vs. traditional classroom lessons: a comparative study. *Journal of Computer Assisted Learning, 31*(3), 189-201.

[4] Hebib, E., Spasenović, V., & Šaljić, Z. (2015). Evaluation of school education in Serbia. In *Quality, Social Justice and Accountability in Education Worldwide*, 198.

[5] Hummel Jr, R. L. (2015). Teaching with a GoPro Camera! Simultaneously incorporate technology and learning while creating flipped classroom content. In *Society for Information Technology & Teacher Education International Conference (Vol. 2015, No. 1)*,1786-1787

[6] Ion, A. M. (2015). Mobile Technologies for Lifelong Learning. *Informatica Economica, 19*(2), 112.

[7] Keegan, D. (2005). Mobile learning: the next generation of learning. *Distance Education International*, 137-143.

[8] Liaw, S. S., & Huang, H. M. (2015). How factors of personal attitudes and learning environments affect gender difference toward mobile learning acceptance. *The International Review of Research in Open and Distributed Learning, 16*(4).

[9] Lilly, J., & Warnes, M. (2009). Designing mobile games for learning: the mGBL approach. *Serious Games on the Move*, 3-25.

[10] Lonsdale, P., Baber, C., Sharples, M., Byrne, W., Arvanitis, T. N., Brundell, P., & Beale, R. (2005). Context awareness for MOBIlearn: creating an engaging learning experience in an art museum. Proc. *MLearn 2004: Learning Anytime, Everywhere*, 115-118.

[11] Muñoz-Cristóbal, J. A., Prieto, L. P., Asensio-Pérez, J. I., Martínez-Monés, A., Jorrín-Abellán, I. M., & Dimitriadis, Y. A. (2015). Coming Down to Earth: Helping Teachers Use 3D Virtual Worlds in Across-Spaces Learning Situations. *Educational Technology & Society, 18*(1), 13-26.

[12] Traxler, J., & Dearden, P. (2005). The potential for using SMS to support learning and organisation in sub-Saharan Africa. In *Proceedings of Development Studies Association Conference,* Milton Keynes.

[13] Williams, A. E., Aguilar-Roca, N. M., & O'Dowd, D. K. (2016). Lecture capture podcasts: differential student use and performance in a large introductory course. *Educational Technology Research and Development, 64*(1), 1-12.