

## ESTABLISHING MOBILE LEARNING IN THE UKRAINE: PROBLEMS AND PROSPECTS

Oleksiy Voychenko, Nazar Mykhailiv, Larysa Savyuk

**Abstract:** *The article discusses the possibility of rapid deployment in the educational system of Ukraine mobile learning technologies, taking into account the peculiarities of development and implementation of information and communication technologies in the state. Conducted analysis of statistical data that reveal the results of mobile marketing in Ukraine through questionnaires of social networks users. The results of pilot experiments to create micro lessons for the mobile platform Android and the use of podcasting technology in the structure of distance learning courses, demonstrate loyalty to the chosen strategy of developing multi-platform applications for educational purposes.*

**Keywords:** *podcasting, mobile learning, LMS MOODLE, interface, multi-platform, native applications, Information Technology, infrastructure*

**ACM Classification Keywords:** *K.3.1 Computer Uses in Education - Collaborative learning; Distance learning*

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### Introduction

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Mobile learning is closely connected with electronic and distance learning, the difference is the use of mobile devices. Training takes place regardless of location and is using portable technologies. In other words, the mobile learning reduces the restrictions of education at the location using portable devices.

Of particular importance is mobile learning for all age groups, who for various reasons are separated from stationary opportunities for education. In Ukraine today, many settlers from the east of the country, young people should be in anti-terrorist operations. For such people becomes necessary access to information and educational resources using mobile devices.

In addition, mobile learning technologies, able to solve a number of important task is related to overcoming gender issues and problems of social inequality of people with disabilities.

Therefore, today it is necessary to solve the problem of immediate implementation of mobile learning technologies in the life of Ukrainian society. The best way to implement mobile learning technologies is to develop cross-platform applications for educational purposes.

These mobile training applications can be used in the structure of higher education institutions humanitarian and technical training, as well as pre-school, school and vocational education.

### **Problems of implementation of mobile learning technologies in the post-Soviet educational space**

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The During the 9th Ministerial Conference on May 14-15, 2015 in Yerevan (Republic of Armenia), which was attended by 47 European ministers responsible for higher education and research activities, there was approved the updated "Standards and Guidelines for the guarantee quality in the European higher education area" (Environmental, Social And Governance (ESG) Criteria) [ESG,El.Res.]. This document deeply and meaningfully describes the procedures for internal quality assurance of higher education and defines the relationship between the education quality and the Bologna process.

Minister of Education and Science of Ukraine during the meeting of the Accreditation Commission noted that higher education institutions (HEIs) of Ukraine in their activity should be guided by the provisions of this document. The updated "Standards and Guidelines for Quality Assurance in the European Higher Education Area" identified priorities in higher education in Europe: preparing students for active citizenship, future career with the employability development, support their personal development, a broad base of excellence creation and encouraging researches and innovations.

When implementing the accepted standards and recommendations regarding higher education quality it is recommended to use models of student-centered learning, teaching and assessment with the maximum students' involvement in the educational process on the basis of intrinsic motivation and self-examination. Needs of each student should be taken into account through the flexible learning paths creation, use of different ways in educational services providing and advanced teaching methods as well as innovative technologies.

At the UNESCO headquarter in March 7-11, 2016 there was a week of training with the help of mobile technologies. The event organizers focused on the discussion of the prospects for the mobile learning technologies use in the following areas [Институт ЮНЕСКО, Эл.Рес.]:

- Mobile technology as a tool for the students' education quality improvement;
- Promotion mobile technologies to ensure full employment at the global labor market;
- Use of mobile technologies lifelong learning;
- Strategy of equal access to the mobile educational services for the female population, especially in the Third World.

When discussing the introduction of mobile technologies in the educational process one should consider the specificity of the post-Soviet countries. In particular, it is necessary to take into consideration several following factors.

The first factor is related to the characteristics of the mobile internet access. In Ukraine there is no so intensive Wi-Fi coverage as in the developed countries. Ukrainian cellular providers do not offer 4G and existing 3G coverage is not covering large areas so it is not available for all users. Accordingly, a

significant part of the Ukrainian people are still using the second generation standard EDGE coverage and thus can hardly obtain a sufficient connection speed to view live video or download educational content at the high connection speed. Another factor that should be taken into consideration is the variety of the mobile devices used by the students of Ukrainian universities. Latest models of smartphones and tablets are not accessible for the wide audience. In particular, the latest models of Apple mobile devices are not widely distributed. Due to economical reasons, the availability of such devices is rather low. Accordingly, the majority of educational services consumers are not using the latest mobile devices models. The specificity of our country is that the variety of mobile devices used by the students is impressively wide. They have mobile devices with OSs ranging from Symbian to iOS, from Windows Mobile to Windows Phone as well as almost all versions of Google Android [Мобільний маркетинг в Україні]. This factor has a significant impact on the development and integration the mobile technologies in the education system, so it should be taken into account when developing a mobile learning strategy.

The third factor is closely connected with the specific features and functionality of mobile learning content. Such content for mobile learning, especially in the conditions described above, requires a specific approach to its development. In particular, it is necessary to adopt it to relatively small mobile devices' screens, and especially to the low speed of Internet connection.

In the developed countries the traditional approach is to create native applications for mobile learning. Implementation of such approach in Ukraine faces some difficulties. In particular, there is a need to create native applications for a significant number of different mobile platforms. Accordingly, the cost of such native applications development is rather high and the most of Ukrainian educational institutions can hardly afford it.

Also in labor market of post-soviet countries there is a lack of professionals able to effectively develop native apps for various mobile platforms.

Taking into consideration all mentioned above it becomes clear that for effective and massive introduction of mobile technologies in the educational process in Ukraine it is necessary to look for alternative approaches. Moreover, substantial investments in Information Technology (IT) infrastructure of educational institutions are often problematic. Therefore, the most appropriate approach should mostly base on the existing IT infrastructure for distance learning.

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### **Solutions to problems of implementation of educational mobile technology**

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To solve this problem we have performed a research and found following solutions:

- Podcasting;
- Web Apps on HTML5;

- Learning content in e-book readers-friendly formats.

Now let's consider mentioned solutions in more details.

When considering podcasting, the optimal way seems to be a usage of an existing LMS as a podcast-generating engine.

In particular we used LMS MOODLE as it is very popular learning management system in Ukraine, used by the majority of the educational institutions.

Podcast generation is not included in the LMS MOODLE default functionality, but there is a free plugin that extends the basic functionality and provides podcasts generation. This approach allows to generate educational podcasts based on the content of already existing in the LMS learning courses. Podcasting is very useful solution for mobile learning introduction as the most mobile platforms have free podcast player applications.

Creating learning podcast on the basis of the existing elearning infrastructure, in our case - LMS MOODLE, allows to cover maximum students audience, regardless on the mobile platforms they use. We have already gained some experience in the educational podcasts development [Oleksiy Voychenko, Larysa Savyuk, 2015]. Pilot experiments demonstrated high effectiveness and relevance of this mobile learning approach.

Example of the podcast mobile interface is presented at Figure 1.

The most important feature of Web Apps on HTML5 is that they are multi-platform, at least they are supported by majority of mobile platforms. Thus, there is no need to engage in the development of mobile learning applications for each platform. Another significant advantage of Web Apps developing is that the development of these applications does not require proprietary software, accordingly, it eliminates investments in the proprietary software acquisition. There are a lot of free software tools for HTML5 development.

Of course, Web Apps have certain limitations in comparison with native ones. Web Apps are unable to use the full range of capabilities of mobile devices such as camera, accelerometer, etc. But the basic functionality, including interactivity, which is provided by the browser, can be successfully used for learning purposes.

In many cases HTML5-based Web Apps may serve as an adequate alternative to the native applications. For example, HTML5 provides all necessary features for performing knowledge control, so it may be successfully used as a replacement for native applications for testing students.

E-book readers are popular in Ukraine due to the relatively low cost, so this class of devices should not be ignored in the mobile learning introduction.

In general, the learning process includes not only interactive and multimedia components. Reading texts is also an essential part of learning activity. Accordingly preparing static educational materials in

different formats suitable for various models of e-book readers, allows to extend the target audience and to ensure that students who do not have a powerful smartphone or tablet may download the prepared learning content to their e-book readers. So they may perform at least some part of learning activity through the available mobile devices they have.

We have developed a mobile application for learning the basics of the theory of automatic control for the most popular platform in Ukraine Android [Михайлів В., Сав'юк Л.О., 2015]. Figure 2 shows fragments of micro lessons with the inclusion of educational content, tests and multimedia pieces for educational purposes.

The main quality of these micro lessons - it's easy to use, easy interface and availability of materials. Easy is not overloaded interface allows even active mobile users in the first few minutes of using the app correctly orient the structure of the course and begin to assimilate training material.

It should be noted that these micro lessons are very popular among students. The next step in the development of the home means - in their transfer type milty educational platform applications.

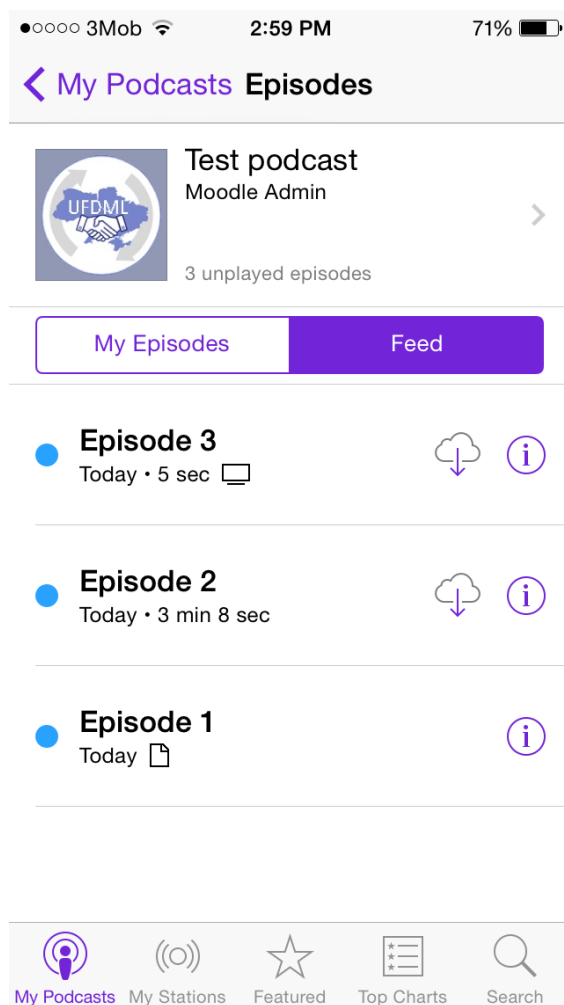


Figure 1. Example of the podcast mobile interface on iOS

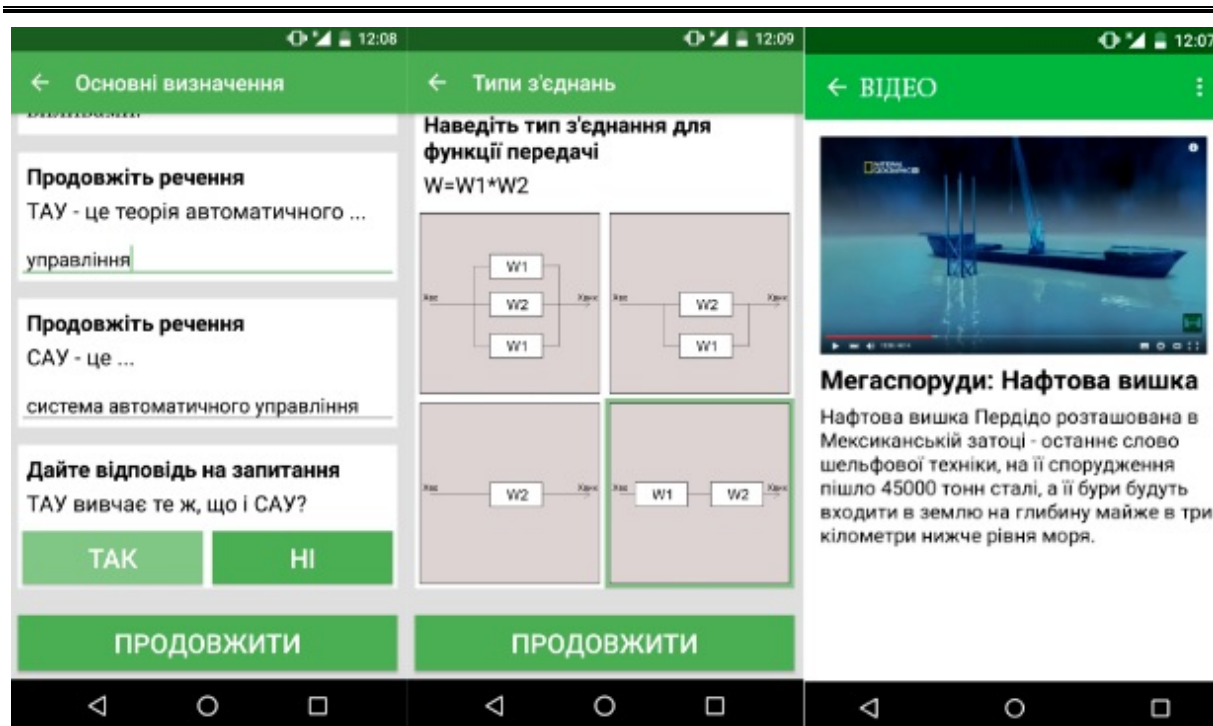


Figure 2. Fragments of micro lessons

## Conclusion

In conclusion, at the current stage of technological development in our country, mobile learning is not a full-fledged alternative to the distance learning, but rather may serve as its effective extension.

The introduction of mobile technologies in the teaching process of secondary and higher education should be based on the assumption that the financial situation of the Ukrainian population does not allow them to use in everyday life mobile devices of expensive brands. However, today in Ukraine has not paid enough attention for the deployment of pilot projects to create multi-platform mobile applications educational purposes. This is not consistent with the policy of the European community, that is aimed at providing equal access to educational resources for all members of society with limited material possibilities and people with high needs.

These development are particularly important for Ukraine, which is under a deep economic crisis and military occupation

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