MOBILE LEARNING ON THE BASIS OF THE CLOUD SERVICES

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ABSTRACT

Spreading of interactive applications for mobile devices became one of the trends of IT development in 2015-2017. In higher education mobile applications are being used to advance the productivity of professors and students, which raises the overall quality of education. In the article SkyDrive, GoogleDisk mobile applications' features for group academic activities with the help of mobile devices are described. Integration technology of cloud services and education management system is described. The article includes an example of educational content management system building in frames of master's semester (September-December 2016).

KEYWORDS

mobile learning, learning management systems

1. INTRODUCTION

Wide spreading of interactive applications for mobile devices became one of the trends of IT development in 2015-2017, which is proved by Gartner, Inc. analytical data (Rivera, 2015). Such trend finds its reflection in educational process management of professional education as mobile learning that is becoming popular nowadays (Stefan, et al, 2005; Makarchuk, 2013). One of the features of mobile learning are classes with the application of interactive methods with the quota of 10-20% of all the classes (Makarchuk, et al, 2014). All higher education institutions included in the academic rating of world universities, pay specific attention to the development of interactive methods and teaching environment (Stevens and Kitchenham, 2011).

Recently, the rising of Web 2.0, the online knowledge-sharing community formed by interpersonal interaction is now a major character of mobile learning (Huang, et al, 2010). According to annual «Mobile World Congress» 2015, 2016 (URL: www.mobileworldcongress.com) among the manufacturers of mobile devices emerged a trend of mobile devices and technologies prices' reduction for «democratization» of access to them given the fact that they are in high demand in the sphere of mobile learning.

Delivery options for mobile learning are increasing, however new technologies alone will not improve the experience of mobile learners. Learning content must be adapted to meet the unique and personal needs of that learner within their current context (Al-Hmouz and Freeman, 2010).

2. ACTIVE LINKS CREATION TECHNIQUE IN THE SYSTEM OF MOBILE LEARNING MANAGEMENT ON THE BASIS OF PERSONAL CLOUD

Learning management system (LMS) is one of the main instruments of mobile learning (Cashell, 2011). LMS is a cross platform, web-oriented environment accessible from mobile devices with multi language support. Traditional approach to the work with LMS includes data storage on the program server, which creates difficulties with learning content editing. Thus, the process of editing means the execution of a certain chain of actions. You need to download the document from the server; save it on the computer; edit it; upload a new version of the document to the LMS server; delete the old link; add new link to the new version of the

document. From the side of a student file editing is even more complicated process as quite often professor's actions are needed in order to delete old version of the task and upload the new one. In learning process when joint work of professor and students (200+) is in action, repeating of redundant actions leads to students' and professors' time losses. Creation of active links to the learning content on the basis of personal cloud of every participant of the learning process with the uploading of the link to the LMS reduces time in the management of the learning content. Integration of the cloud services with the LMS facilitates publishing and management of the content developed and saved in different software environments and data storage systems.

3. TECHNOLOGY OF OPERATION IN LMS ON THE BASIS OF THE CLOUD SERVICES

Learning Management System (LMS) is high-level strategic decision for planning, conduction and management of the studying course (Mtebe, 2011). In the work (Birkenkrahe, et al, 2012) mentions that the content published in LMS has to comply with the principles of Web 2.0:

interactivity - filling of content with visual elements like graphics, animation, video clips, 3D models etc.;

openness - availability of the content to the big amount of users regardless of the organization it belongs to;

community - open exchange of opinions according to the focus of the course;

Control in the process of the work with educational content.

There is a decent amount of LMS-platforms ready for usage which are published on the web-servers, multilingually supported and possess its own data bases.

Nowadays there exist three options of learning management system acquisition by the organizations:

-LMS are developed by the organizations themselves;

-LMS is purchased as a platform which is adjusted and published on the server of the organization;

-LMS is spread by subscription by the model Software as a service on the basis of cloud services.

Development of the LMS by the organization is a laborious and long-term process and today represents unpopular decision.

Among LMS-platforms published on the server of the organization Open Source software is one of the popular ones. It is open for view, usage, analysis and editing. These LMS-platforms include:

-LMS eFont (www.)

- LMS Moodle
- LMS Blackboard Learn

Nowadays LMS spread by subscription are getting more popular. Among the leading developers of cloud-based learning management software are:

- o Docebo LMS (//www.docebo.com/)
- o Litmos LMS (www.litmos.com/)
- o Torch LMS (torchlms.com/)
- o Mirapolis (mirapolis.ru)

Analysis of the popular LMS-platforms conducted by the authors does not contradict the conclusions from Centre for Learning & Performance Technologies in 2009-2103 (Hart, 2016.).

In the frames of «IT in management» course for the training of the bachelors of economics the authors chose LMS Moodle published on the server of the university. This option was chosen because of several reasons: friendly interface, variety of management elements, open source product etc. Cloud LMS option was not possible because of the subscription fee for 250 students. As cloud SaaS-services of mobile learning support were used applications developed by Google, Microsoft, Youtube etc. which provide variety of possibilities for the work with learning content including interactive access, storage, preview and editing services and organization of the general access to them.

In order to create folders with general access to the documents with the opportunity of collaborative editing the professor provided students with his/her e-mail and the name of the cloud service which is recommended for the future operation. Students' personal clouds were created in Onedrive, Microsoft. With the help of Office Web Apps it is possible to preview and edit Office documents in web-browser with

Internet access. Performance capabilities of Onedrive can be enlarged in case of the operation with Microsoft Office applications package, which was available for students and professors in terms of A2 plan for educational institutions for free.

As a result, of LMS building on the basis of cloud services it was possible to solve following tasks:

-creation of educational groups with the name of address like @groups.live.com;

-organization of the calendar with academic tasks with the possibility of automatic notification of the group about the tasks and its completion;

-discussion of specific lectures with the help of OneNote Web Apps;

-Collaborative editing of the document by several members of the group (the best results were achieved in the process of collaborative tasks completion, as file exchange was not needed for the discussion of the results between members of the groups and professors);

-Learning materials publishing with an opportunity of its update in the current file (additions; comments to the specific elements; inaccuracies editing);

-distribution of tasks and its completion reports in case of the absence of the student for a reasonable excuse, except for the tests, with the help of services accessible 24/7 from any location and mobile devices;

-Monitoring of educational tasks completion during the semester.

Figure 1 shows the elements of interactive methods of learning available with LMS Moodle on the basis of Ondrive, DropBox, Youtube cloud services.
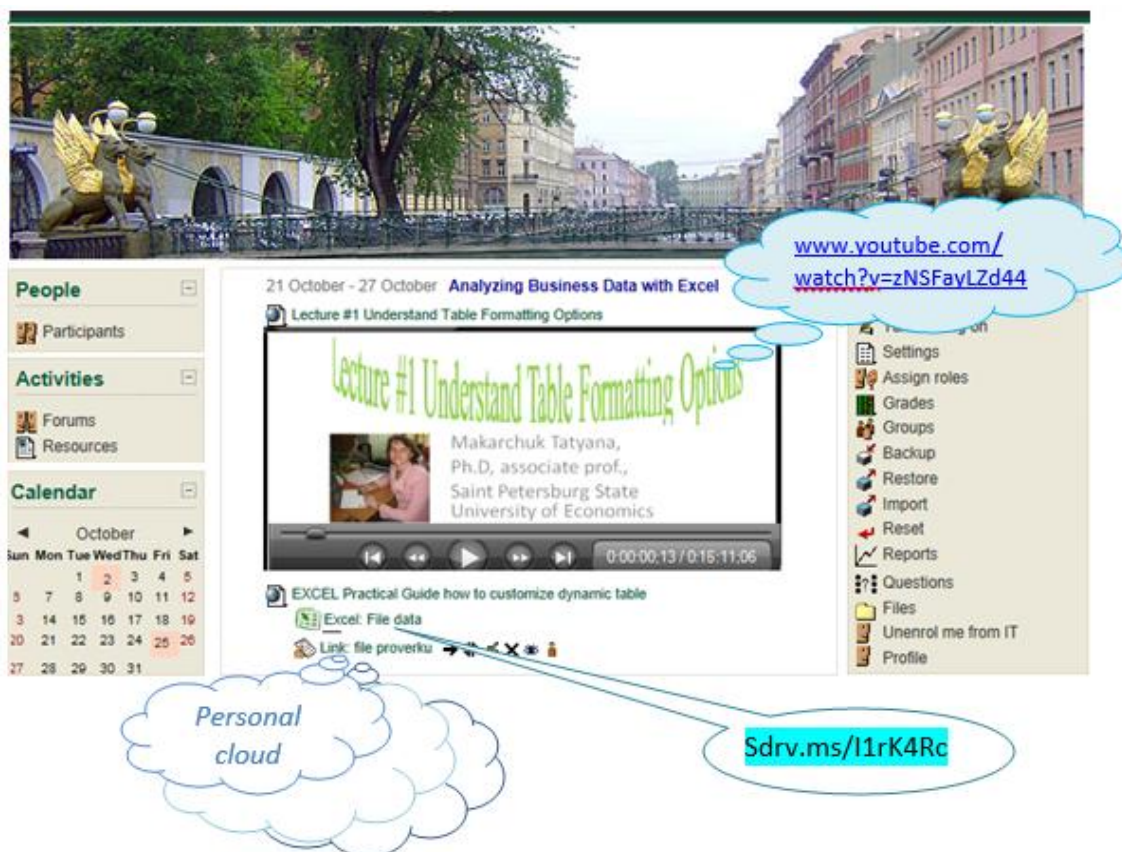

Figure 1. Scheme of interaction of LMS and personal clouds accessible from mobile devices

Mobile learning organization on the basis of cloud services allowed to make educational content active, up-to-date and accessible; to raise the quality of education and to minimize costs of professors.

4. CONCLUSIONS

The article describes a new way to form educational content, which is edited and stored outside of the LMS. Composed and published in different environments, the content becomes «active». Changes in the informational resource are shown automatically in the LMS virtual environment. Thus, the biggest part of professor's and student's activities is conducted in mobile applications with the results of these activities available to the course students on active links in LMS.

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