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MOBILE LEARNING AS AN INNOVATIVE LEARNING CONCEPT – THE RESULTS OF MODERN PROJECT

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ABSTRACT

The aim of the article is to present the concept of mobile learning as an innovative learning form. One of the key element in m-learning implementation is selection and evaluation of tools (applications) that can be used and contribute to achieve the learning objectives. On the other hand, it is important to increase the usage of such resources by the teacher and to implement innovative learning strategies on the basis of IT environment. Taking into account the above requirements, the results of the international Modern project (Mobile & Digital Elearning Toolkit – Modern Toolkit) will be presented: 1) report: "Audit of Digital and Interactive learning resources for European Vocational Training and Higher Education"; 2) report: "Pedagogic assessment of most promising mobile and digital elearning resources for European Vocational Training and Higher Education"; 3) "Modern Toolkit"; 4) training course concerning the implementation of innovative learning strategies in education ("MODERN Innovation in Teaching Course").

Introduction

The ICT (Information and Communication Technology) development influenced significantly on many aspects of our life, not excluding the education and the ways we learn. Many new learning methods and techniques were proposed and implemented changing the traditional realized didactic process. Focusing on the lifelong learning concept as well as highlighting the personalized approach to knowledge acquisition causes that there are new

requirements stated concerning the ways of didactic materials development and knowledge transferring. For this reasons, the need to complement resource-strained classroom teaching with more flexible, remote and available on many devices anytime and anywhere is becoming more common (Education and Culture DG, 2011).

The mentioned changes caused the continuous growth of distance learning education offer, and within its development, the m-learning concept (mobile learning concept) perceived as a complementary education method both to traditional learning and e-learning. The implementation of m-learning requires the utilization of appropriate applications and services that allow to prepare and develop the learning content, manage the prepared materials as well as engage students to become more active participants of the learning process. However, as shows the research (Empowering educators towards Europe 2020, 2011; Baran, 2014), despite the teachers and trainers understand the need to use modern technologies in education, many of them will have problem to find appropriate resources, use it in practice and adapt their facilities to the learning purposes due to the lack of experiences and professional trainings.

To respond the noticed needs, the Modern project was provided (Modern Project, 2017). The Modern Project (Mobile & Digital Elearning Toolkit – MODERN Toolkit) is co-financed by UE funds under the Erasmus+ Program within the key action "cooperation for innovation and the exchange of good practices" to promote the strategic partnership for vocational education and training. The aim of Modern project is to improve skills and ability to use modern technologies in teaching/learning process and increase teachers and trainers motivation to apply them in daily work. Modern purpose is to arouse interest of mobile devices usability in education among teachers and trainers and root self-confidence associated with the use of a tablet or smartphone in education process. To achieve this goals a few main tasks were defined:

- elaboration the list of applications and services oriented on supporting the implementation of innovative learning strategies, including mobile learning,
- indication the usefulness of selected solutions from the point of view of objectives pursued by the teacher/trainer,
- implementation the toolkit as an environment dedicated to acquire knowledge and skills about modern applications and services,
- elaboration the e-learning training course oriented on motivation the users to implement modern technologies in education.

As a result of defined tasks realization the following intellectual outputs were carried out:

1. „Audit of Digital and Interactive learning resources for European Vocational Training and Higher Education".
2. „Pedagogic assessment of most promising mobile and digital e-learning resources for European Vocational Training and Higher Education".
3. „MODERN Toolkit" with practical guidance to incorporate mobile and digital e-learning resources into daily teaching strategies.
4. MODERN Innovation in Teaching E-learning Course to motivate/guide educators to pursue more innovative pedagogic strategies using mobile and digital e-learning resources.

Literature review

The progressive development of the concept of open and distance learning (ODL) causes the need to apply more innovative, personalized and engaging learning methods and strategies during the education process

(Różewski, Kusztina, Tadeusiewicz, Zaikin, 2011). Next to commonly implemented and formalized e-learning and b-learning techniques and procedures, the m-learning concept is highlighted as a corresponding channel to formal and informal learning due to the increasing number of users of cell phones, smartphones, palmtops, handheld computers, tablet laptops, and e-book readers etc. (Sung, Chang, Liu, 2016; Docebo, 2014; Hojnacki, 2011). Mobile learning allows to deliver knowledge and education content on any platform and mobile device equipped by appropriate apps and tools to review the material and instructions, upload the assignments and work in online created social groups.

The mobile ecosystem has become the fastest-growing industry ever recorded (Docebo, 2014). As shows Chiang, Zhu, Wang, Cui, Cai and Yu (2013), the number of patents regarding to mobile learning in last decade has been growth dynamically reaching the number of 130 on the field of context creation, stimulation of learners interest, supporting the personalized intelligent pushed content and multidevice, multilocation, seamless learning.

Mobile technology offers a spectrum of tools for teachers and students dedicated to learning management, assessment, interactive content creation, communication between the learning process participants, engagement the students in learning process through the cooperation and interaction during the task realization as well as providing the complementary forms of acquiring knowledge. There are many literature studies (Zydney, Warner, 2015; Sung, Chang, Liu, 2016; Araujo, 2015; Hart, 2016; Classroomaid, 2012), that have on aim the classification of the available on the market applications and services as a possible source of modernization and the implementation of innovations in the education process. However the mentioned research present the short description of tools, they do not offer the expanded multi-criteria analysis of the tools, do not guide the end user how use the tools in practice and to do not suggest how to join the modern resources with the innovative learning and teaching strategies. In this case, the Modern project constitutes the useful supplement to the above.

Method

The Modern project is being carried out in an international partnership (Modern Project, 2017). The research team consists of 6 members: the international consulting company in the field of vocational training and e-learning application – Canice Consulting Limited (Great Britain), two universities – University of Szczecin (Poland), Universitat Politecnica De Valencia (Spain), the training organization oriented on the development of education programs and platform to enable entrepreneurs, employees and young people to actively participate in the labor market – Momentum Marketing Services Ltd. (Ireland), the European interdisciplinary association for lifelong learning – EUCEN (Belgium) and the European association created by and for people involved in vocational education and training in Europe – EfVET (Belgium). Each partner was involved in elaboration of the Modern project intellectual outputs, however there were selected task leaders to prepare the concept, coordinate and navigate the final result of each output (see the outputs listed in the Introduction section).

The first intellectual output -"Audit of Digital and Interactive learning resources for European Vocational Training and Higher Education" (Modern Project, 2017) – was created based on the following steps: 1) review the digital resources for learning including websites, software programs, apps and all other web 2.0 style resources, available in many different languages; 2) evaluation of selected tools in accordance with established criteria; 3) report elaboration and publishing; 4) recommendation of 25 most promising tools.

The following methods were proposed to elaborate the report and recommend the tools:

- the literature review to analyze and summarize the existing taxonomies of applications and services, their availability in partners languages as well as to define the tools supporting different fields of education process,
- discussion panel to select the list of tools, categories and criteria of the assessment,
- validation by usage the selected application and services to categorize and assess them in case of identified criteria,
- discussion panel based on elaborated report as well as personal experiences of the project team members concerning the tools utilization in case of education to recommend most promising resources.

The aim of „Pedagogic assessment of most promising mobile and digital elearning resources for European Vocational Training and Higher Education" was the analysis of strengths and weaknesses of top recommended resources based on potential for innovative pedagogic strategies (Modern Project, 2017). The assessment was made by in depth analysis of selected tools utilization and the literature review taking into account the pros and cons for education purposes and the ability to generate intended teaching-learning outcomes.

The third intellectual output, Modern Toolkit, was planned to offer concise, actionable information concerning the pedagogic contribution of selected tools allowing a trainer/lecturer the quickly review, choose those of most interest, learn and implement mobile and digital elearning resources during the education process. The toolkit was created as a result of partners panel discussion regarding the layout and section of the software environment and analysis of real life examples available in the literature.

The last of outputs, a short course to motivate/guide educators to pursue more innovative pedagogic strategies using mobile and digital elearning resources, called "The Modern Innovation in Teaching E-learning Course" (Modern Project, 2017) was provided in two main steps. The first one concerned the development of course curriculum and content based on case study examples and literature content analysis. The second on was oriented on online implementation of prepared materials and optimized them for mobile usage. Partners discussion was initiated to verify the content, research the appropriate case studies examples and analyze the tools for each module preparation.

Results

The four intellectual outputs elaborated as a result of Modern project realization let to build the compact picture of potential, that results from the application of the available on the market IT solutions and mobile devices during the learning process. The sequential nature of activities to achieve the substantive results caused that each result from the preceding stage was the basis for the implementation of subsequent steps with a precisely defined scope of work. The short overview of obtained outputs is presented in Table 1.

Each of the results is available free of charge via the project website www.modern.pm. In elaborated reports, there are presented the brief methodologies as well as the fully descriptions of analyzed resources. The value-added issue is the range of applications and services analyzed and assessed to help trainers, teachers and students to select the ones required for supporting the teaching/learning process. Additionally, the range of criteria that have been taken into account during assessment lets to consider many important aspects from the point of view of final user like price, interface language, ease of usage, availability on mobile devices.

Table 1. The results of Modern project

The intellectual output	The output main results	The output form
Audit of Digital and Interactive learning resources for European Vocational Training and Higher Education	More than 80 applications and services classified in 10 categories (Collaboration and File Sharing Tools; Quizzing, Polling and Assessment Tools; Screencasting, Audio and Capture Tools; Course Creation Tools; Presentation and Animation Tools; Bookmark and Curation Tools; Video Hosting and Editing Tools; Blogging and Social Media; Webinar and Meeting Tools; Course Management Tools) and assessed in accordance with the following criteria: languages available, usability, origins, accessibility and compatibility, open access/openness, reliability, cost, security & privacy. 25 tools (minimum 2 in each category) recommended to pedagogic assessment	Report in pdf form in 3 languages (English, Spanish, Polish – only part 1); interactive tools explorer in English
Pedagogic assessment of most promising mobile and digital elearning resources for European Vocational Training and Higher Education	25 tools strengths and weaknesses analysis in case of their usage for learning purposes	Report in pdf form in 3 languages (English, Spanish, Polish)
Modern Toolkit	Interactive environment describing the tools facilities; Guide for self-learning to implement the tool for innovative teaching/learning	Online tutorial; available in 3 languages (English, Spanish, Polish)
The MODERN Innovation in Teaching E-learning Course	5-module interactive course presenting the innovative teaching/learning strategies, elaborated by using the Modern tools	Online tutorial; available in 3 languages (English, Spanish, Polish)

Source: own elaboration based on Modern Project (2017), Malinowska, Niedzielski (2017).

The Modern Toolkit and the training course are the practical solutions to start using the applications and services as a way to enrich the education process (Modern Project, 2017). In attached tutorials, there are presented from one side the training materials with many case studies examples how to use the tools and from other side the ideas for implementing more innovative teaching/learning strategies to attract the didactic process. Both, toolkit and course are divided in predefined section, which allows to systematize the presented knowledge and obtain it by the final user in a small objects.

Conclusions

The implementation of m-learning in education is not easy, because it requires from one hand the professional skills concerning the usage of information and communication technologies and from the other the development of concept introducing the changes in the curricula on the basis of applied solutions. However mobile learning brings many advantages mostly involved with accessing to knowledge portions with no time and location restrictions, it requires to consider such problems like: limited or non-existent direct contact with teacher, providing the appropriate quality of the didactic materials, providing the appropriate engagement of the students in the learning process, inefficient Internet access, difficulties with limited storage capacity of mobile devices, small screen of the tools as well as difficulties connected with applying various applications by the final user. The mentioned issues open the research areas related to the creation the concepts, methods and technology applications for the mobile learning purposes.

The Modern project was initialized as a response for interest related to mobile learning tools and the ability to implement innovative teaching and learning strategies in education. The prepared results were concentrated to provide the comprehensive environment to encourage teachers and trainers to use digital learning resources to

more effective, relevant teaching causing a positive impact in their students (learning outcomes and engagement) and in the sector as a whole (ability to provide relevant training, keep pace with the technological changes taking place around them). All resources are available free of charge at the project webpage www.modern.pm (resource tab).

References

Araujo, S. (2015). 76 apps educacionais gratuitos para usar com tablets por professores do ensino médio. Retrieved from: https://edshelf.com/shelf/sergioaraujo-76-apps-educacionais-gratuitos-para-usar-com-tablets-por-professores-do-ensino-medio (5.07.2017).

Baran, E. (2014). A Review of Research on Mobile Learning in Teacher Education. *Educational Technology & Society*, *4* (17), 17–32.

Chiang, F.-K., Zhu, G., Wang, Q., Cui, Z., Cai, S., Yu, S. (2016). Research and trends in mobile learning from 1976 to 2013: A content analysis of patents in selected databases. *British journal of educational technology*, *47*, 1006–1019.

Classroomaid (2012). The 50 Best Mobile Apps for Teachers. Retrieved from: http://classroom-aid.com/2012/08/21/the-50-best-mobile-apps-for-teachers (5.07.2017).

Docebo (2014). E-Learning Market Trends & Forecast 2014–2016 Report. Retrieved from: https://www.docebo.com/landing/contactform/elearning-market-trends-and-forecast-2014-2016-docebo-report.pdf (10.07.2017).

Education and Culture DG (2011). Supporting growth and jobs. An agenda for the modernisation of Europe's higher education systems. Retrieved from: http://ec.europa.eu/dgs/education_culture/repository/education/library/policy/modernisation_en.pdf (8.07.2017).

Empowering educators towards Europe 2020 (2011). Retrieved from: http://www.online-educa.com/OEB_Newsportal/empowering-educators-towards-europe-2020 (8.07.2017).

Hart, J. (2016). Top 100 Tools for Learning 2016. Retrieved from: http://c4lpt.co.uk/top100tools (5.07.2017).

Hojnacki L. (eds.) (2011). Mobilna edukacja. M-learning, czyli (r)ewolucja w nauczaniu. Przewodnik dla nauczycieli. Retrieved from: http://edustyle.pl/mobilna-edukacja (6.07.2017).

Komorowski, T. (2013). M-learning – wykorzystanie urządzeń mobilnych w procesie kształcenia – stan bieżący, potencjał i bariery. Retrieved from: https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=8&cad=rja&uact=8&ved=0ahUKEwiu_snEhsXVAhXLK8AKHbJ5BcQQFghTMAc&url=https%3A%2F%2Fwww.ur.edu.pl%2Ffile%2F50164%2F07.pdf&usg=AFQjCNHY3wlCJDXbEjHv0TQb6l7D_CFCfA (16.07.2017).

Malinowska, M., Niedzielski, P. (2017). Proces kształcenia a mobile learning – koncepcja i wstępne wyniki projektu Modern. *EduAkcja. Magazyn edukacji elektronicznej*, *1* (13), 65–74.

Modern Project (2017). Mobile & Digital E-learning Toolkit. Retrieved from: http://www.modern.pm (20.07.2017).

Różewski, P., Kusztina, E., Tadeusiewicz, R., Zaikin, O. (2011). *Intelligent Open Learning Systems: Concepts, models and algorithms.* Berlin–Heidelberg: Springer–Verlag.

Sung, Y., Chang, K., Liu, T. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education*, *94*, 252–275.

Zydney, J.M., Warner, Z. (2015). Mobile apps for science learning: Review of research. *Computers & Education*, *94*, 1–17.

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