



Miroslava R. Ristić¹, Sanja R. Blagdanić
University of Belgrade, Teacher Education Faculty

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New Trends in Education – Out-of-Classroom Teaching and Learning in Digital Environment

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Extended summary

Over the past decade there has been a growing concern regarding physical inactivity of students and the amount of time they spend with digital devices during school hours and outside the school. This gives rise to the question as to whether out-of-classroom teaching and learning in digital environment can resolve the tension created by the students' and teachers' too frequent, time-consuming, and often inadequate use of digital technology.

Out-of-classroom activities include all types of curricular and extracurricular activities that are organized outside the school building with the aim of realizing the objectives of one or several school subjects during different time intervals and providing different opportunities for learning (Wattchow & Brown, 2011). The results of all studies carried out to this day have shown that (extra)curricular outdoor activities have a positive effect on students' attitudes and beliefs, their interpersonal and social skills, as well as the development of a positive self-image and creativity (Fienneset et al., 2015; Rickinson et al., 2004). Considerably fewer findings indicate that out-of-classroom activities contribute to improving student achievement (Rickinson et al., 2004; Christie, Higgins & McLaughlin, 2014) and increasing their interest in natural phenomena (Martin, 2012).

On the other hand, digital competence is among the fundamental competences required for lifelong learning and it implies the competence for the safe and critical use of information and communication technology (ICT) for work, in personal and social life, as well as in communication. Extracurricular activities supported by digital technologies require digital maturity of educational institutions (Durando et al., 2012), digital competences of teachers and digital teaching environment (ISTE, 2015). Technology (both in the classroom and outside the classroom) should not serve only as a "delivery technology" (Pešikan, 2016), but also as educational technology that

¹ miroslava.ristic@uf.bg.ac.rs

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supports the creation of educational situations which will contribute not only to student achievement (Kralj, 2008; Ristić, Radovanović, 2013) and cognitive development, but also to the development of other aspects of personality. The paper analyses the educational values common to digital technology and out-of-classroom activities in the context of the current strategies and laws regulating the area of education in Serbia – The Law on Primary Education (2013), The Education Development Strategy 2012-2020 (2012), and The Standards for General Cross-Curricular Competences at the End of Secondary Education (2013).

The research focused on mobile applications as the most readily available digital educational resource in the out-of-classroom environment that provides access to educational contents anywhere and at any time. The proposed criteria for the evaluation of mobile applications are based on the Quality Standards for Textbooks and the adapted CEELTES and CARNET software quality scales. The criteria were grouped into six segments: scientific-professional criterion; pedagogical-psychological and didactic-methodological criterion; ethical criterion; language criterion; security criterion and technological-graphic criterion. The criteria were further broken down into a number of indicators. The goal of the research was to carry out, based on the set criteria and the indicators, a qualitative analysis of mobile applications that can be used outside the classroom in the early primary school education, as well as to evaluate their educational value and potential. The analysis included ten mobile applications suitable for out-of-classroom teaching of children in early primary education. The suitability of the applications for teaching the school subjects The World around Us and Scientific, Environmental and Social Education and the user rating higher than 4.00 were two additional criteria applied in the selection of the mobile applications. The applications were evaluated by the teachers and teaching associates of the Teacher Education Faculty in Belgrade who were instructed to assign grades 0,0.5 or 1 to each indicator.

The analysis of the mobile applications used in out-of-classroom activities indicates that free mobile applications of satisfactory technical, didactic and methodological quality are available to teachers, given that all tested applications received an average grade higher than 0.76 (on the scale from 0 to 1). On the other hand, a reduced physical activity and insufficient use of natural environment as a source of learning are the two disadvantages of the tested mobile applications. Good quality mobile applications developed by local designers, more applications with diacritical support in Serbian Language, and the development of digital-methodological competences of teachers are three prerequisites that will certainly improve the out-of-classroom teaching and learning in digital environment.

Key words: digital environment, out-of-classroom environment, mobile applications, students, teachers.

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