

Organising the Scientific Paper for Successful Publishing: IMRaD Format
(Introduction, Methods and Materials, Results, Discussion—“a” stands for **analysis**,
applied throughout the paper)

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INTRODUCTION Observed trends in education: the focus is set no longer on how to acquire the technical skills of using mobile apps, but on the methodological skills of using mobile apps, which requires continuous support from the school’s administration and a significant amount of time to invest directly in developing the teachers’ professional competence, which in turn can be realized with appropriate learning resources. When using technologies to develop young people’s skills necessary for the labour market, it is not enough to invest in the acquisition of technology; the use of technologies should be aligned with both the specific content of the subject and its teaching methodology. Teachers of physics do not have sufficient methodological support and practice in the purposeful use of mobile apps in the learning process. Frequency of technology use and purposefulness in the learning process are often discussed. It is also necessary to consider that their integration in the learning process takes time - so that the teacher can acquire the opportunities offered by technologies both technically and methodically.

Limitations of the Study: Reaching Physics teachers who had experience in mobile app integration, more specifically, using mobile apps in Physics subject context was quite difficult since education, indeed, mobile app use in Physics education is relatively new for Latvian education context. The small number of the participants (teachers) limited a diversity of the data collected in terms of criteria referred while selecting mobile apps.

METHODS AND MATERIALS For further analysis, all the responses of the participants for the interview were imported to SPSS qualitative data analysis software. The utilization of a qualitative data analysis tool allowed for easily storing, organizing and analysing data. In addition to the data analysis of qualitative data, quantitative data gathered from the evaluation form was also included. Quantitative data gathered in the study was imported, organized and analysed through Microsoft Excel.

RESULTS For mobile app used in Physics education, teachers were asked to share for which purposes they integrated mobile apps into education and, they were asked to explain what affordances mobile apps had in Physics subject context. Teachers generally used apps for content presentation, assessment, communication and sharing, measurement.

	Affordances of mobile apps for Physics subject context were explained in terms of authenticity and personalization.
DISCUSSION	How do Physics teachers used mobile apps in education? For mobile app used, the teachers were asked to describe how integrated mobile apps into education and which affordances they thought mobile apps had within Physics subject context. Teachers were asked to explain what kind of mobile apps and for which purposes (communication, interaction, content presentation, sharing, collaboration, etc.). For example, for students to develop content or educational product, teachers preferred apps such as App Inventor, Scratch & Arduino. The number of participants: 1547 students' and 67 physics teachers. Almost all the teachers (n=64) agreed that mobile app integration into Physics subject activities could promote personalization that meant students could reach content with ease, they could perform autonomous learning making research, calculations or measurements during activities and they could continue learning without time or place constrictions spending less time.
CONCLUSION	Mobile apps are constantly and rapidly evolving, and there is practically no social domain where they would not be used, including education. The use of different mobile apps resources offers a lot of possibilities: <ul style="list-style-type: none">• organizing an interactive learning process;• demonstrating and simulating physical processes;• providing access to a wide variety of resources;• processing the data - both for calculations, for the visualization of results and for modelling processes. When deciding to use mobile technologies in the physics learning process, the teacher should be sure that this is the most effective tool in the situation.

Additional information

TITLE	Mobile Apps for teaching Physics: using applications in Latvian schools
KEY WORDS	Mobile Apps, Physics education process, Skills
ABSTRACT	The acquisition of mobile technology skills is an integral part of the learning process in a modern school. Education experts are now placing the emphasis on not only integrating mobile technologies into the learning process but also on improving the efficiency of the learning process for both teachers and students. Success is based not only on what one knows or

how much one knows, but on one's ability to think and act creatively. mobile apps based educational learning process has the basis of Educational Technology Competency Standards for Teachers. Currently, educators confront with a great challenge of dealing with the change's technology brings. Thus, alternative ways of teaching should be considered to solve the problem of preparing today's students for a changing future. Mobile apps feature in Physics education as they have immense potential for facilitating more innovative educational methods. They extend learning activities such as practice and application out of the classroom. Teachers need to be guided to maximize capabilities of mobile apps so that the potential for mobile learning could be reached. While mobile devices are extensively used by almost all spheres of the society, Physics teachers are expected to utilize their affordances for educational context and guide learners for productive usage of mobile apps. It is significant to show regard to the mobile app's environment with learning experiences. When deciding to use mobile apps in the physics learning process, the teacher should be sure that this is the most effective tool in the situation. For example, when studying the working principles of sound measuring instruments, a student, having watched the demonstration, should conclude what process underlies its operation. The teacher should be able to determine whether the students understands the working principles of the measuring instruments. Four significant points for mobile apps evaluation:

- being congruent with the current approaches about learning;
- taking into consideration the influence of context;
- recording and analysis of various data and measurements;
- allowing learners to participate as co-designers or co-researchers.

Two main research questions are addressed in this study:

1. How do Physics teachers utilize mobile apps in Physics education?
2. Which criteria do Physics teachers consider while selecting mobile apps for education?

Significance of the Study

It is significant to clarify how teachers affectively integrate mobiles apps in Physics education. It is significant to understand Physics context and be aware of the affordances of educational technologies before implementing them in educational practices.

The research was conducted using surveys, external observations of lessons, and focus group discussions.
