

ENJOY PHYSICS CLASSES WITH YOUR OWN DEVICES

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Abstract

In the last few years the educational use of own mobile devices has increased considerably even in higher education. M-learning devices are very useful for learning, for reading and finding relevant content on the Internet, for assessing acquired knowledge and for performing real measurements. Their use in experiments is based on the rich set of built-in sensors in the smart phones (Kuhn, J., & Vogt, P., 2013). If we want to let our students leave universities, colleges or even secondary schools with an adequate knowledge and with applicable skills in Physics, we should take the advantage of the ICT, multimedia and m-learning devices (laptops, smart phones, tablets) and their applications (Jarosievitz, 2015, 2011, 2009).

In this presentation we would like to show a research program designed for first-year students in Physics at the Dennis Gabor College from Budapest. The objectives were to learn about the impact of the use of own devices of the students and to answer questions:

- Do the students understand better the Physics phenomena?
- Are they more motivated doing experiments with their own devices?
- Can they get better grades in the examination period?

The following student activities have been developed and tested, where they used their own devices:

- Responding the quiz "wake-up" questions, (review of a chapter, assessment of acquired knowledge) during the Physics lectures (30-hour course)
- Use of devices for sound recording in real experiments (determining the gravitational acceleration via free sound analysing program Audacity; a voluntary group)
- Recording of a free falling object on video via their m-learning devices, and analysing the record via free program, called Tracker (a voluntary group)

This experimental teaching with mobile learning devices involved 188 students who were enrolled in the course. In the beginning of the course 43 % students filled in the general questionnaires sent to them via internal communication system. During the lectures 5 different surveys have been filled out, each of them was related to the Physics chapter taught previously. The 6th survey included mixed questions which were already asked during the previous surveys. Students used their mobile devices to fill in the online survey, turning to their neighbours, discussing the results and using the program Socrative real-time questioning tool.

Students enrolled in distance education 120 students have been used as a control group, who had only 9 contact hours. Entire course material was available to them in ILIAS internal content management system.

The results show an increase in the class average score and better understanding of Physics phenomena by the experimental group, which learned by doing, discussed with the neighbour and used own devices.

The final general feedback questionnaires will be sent and be evaluated by the EvaSys program, the results will be presented during the conference.

Keywords

BYOD, m-learning, interactive experiments, ICT, multimedia,

References

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