ICT and Multimedia in Physics Education

Many research papers, studies confirm that attitudes of students to physics has been decreased all over in Europe. In order to rise up students' interest to science many efforts has been done already.

"In 21 European Schoolnet member countries research demonstrates that increasing students' interest in pursuing STEM studies and careers is still very much an issue of importance for Ministries of Education across Europe"[1].

In order to improve our students' researching, questioning, critical thinking, problem solving, decision making and computational competencies we should focus more on different types of activities (hands-on experiments, ICT, multimedia based activities, educational games, study of simulated phenomena).

For increasing of students motivation we can use different types of educational methods like cooperation, project method, peer instruction or flip classroom [2] etc.

The aim of this work is to show some examples of the best practices which I prepared to teach physics more attractively, and understandably. They are online courses, and made them freely available on the web. All of the courses - or parts of them - can be used separately to teach physics in high schools or at BSc level. We should note that all courses should be updated as soon as the technology, use of ICT is changing behind.

Each course and activity - including gamification and group-work activities -, contains students' and teachers' guides and self-evaluation tools, like multiple choice questions, interactive exercises with simulation, theoretical exercises etc. All courses are related to study of the Physics.

If we want to let our students leave high schools, universities and colleges with an adequate knowledge and with applicable skills in physics we should use the advantage of the ICT, multimedia and their applications.

During the presentation concrete examples, different methods, resources will be shown which are used in quite a big part in physics teaching.

[1]: Caroline Kearney:Efforts to Increase Students' Interest in Pursuing Science, Technology, Engineering and Mathematics Studies and Careers National Measures taken by 21 of European Schoolnet's Member Countries - 2011 Report, Insight

[2]: B. Jarosievitz (2015): The impact of ICT and multimedia used to flip the classroom (Physics lectures) via Smart phones and tablets, In: Proceedings of the 20th International Conference on Multimedia in Physics Teaching and Learning, Edited by Lars-Jochen Thoms and Raimund Girwidz, Published by the European Physical Society; September 9–11, 2015; at LMU Munich, Germany; Volume number: 39 B.; pp. 357-363.