



## ICT for the Science Classroom

In the recent years there has been, at European level, an increase in the implementation of Information and Communication Technologies in Education, due to different strategies and policies implemented in several projects since the 80s. It is necessary, in this context, to analyze, reflect on the current situation and produce guidelines pointing towards the improvement of teaching and learning with ICT. In particular, looking at the teaching of Sciences, where ICT tools can replace, in part, expensive laboratories. Thus, this project has as main objective to draw a roadmap of the implementation/use of Information and Communication Technologies in Primary, Secondary and Vocational Schools in order to assess their use and thus design guidelines in order to find best practices of ICT use in teaching-learning processes in the Sciences domain. This will be achieved through an extended discussion of practitioners and decision makers gathered on a Community of Practice supported by virtual and social tools.

The project's expected results are: (1) to provide an inventory of existing ICT in primary and secondary schools in Europe and the existing gaps in software and hardware, in particular in Sciences (2) to show the impact of the introduction of ICT in the classroom for that purpose, (3 ) to analyze training procedures for teachers in ICT use and to assess the motivation of students and teachers to use ICT in the classroom (4) and to recommended best practices for using ICT in the Sciences classroom.

The realization of this project meets the Digital Agenda 2015, whose focus is to "promote the use of next generation networks for educational communities by providing services and educational content of interest, enhancing the infrastructure and technological equipment in existing public schools "and the Technological Plan for Education that identifies the need for training and certification of teachers for school modernization in Europe.

---

# Current Project Activities

The consortium is currently on working on:

- The production of National, Local, European reports on the use of ICT for Science, Technology and Maths education. The goal of this reports is to understand how ICT is being used and to establish a starting point to work from.
- Reports on national ICT teaching trainer's procedures. These reports will be used to assess how ICT is a part of the teachers training process and on how it is being used in these programs;
- A list of local workshops related to ICT in Science teaching for the next six months. The goal is collect that information and make it accessible to those who are interested in acquiring new skills and knowledge in this field of expertise;
- Identification of current best-practices. Through initial or continuous training, teachers develop new skills and strategies, which they apply in their everyday practice. These examples are valuable to the project;
- Identification of 10 software applications that can be used to teach Sciences, Math and Technology - Creating a small catalog of software applications and multimedia resources that are currently available, so that teachers can start to use ICT in their classes.



---

# Some perspectives about the current use of ICT in Science Education

One of the current project activities is to understand the how ICT is being used Science Education, in Europe and in each partner's country. Some highlights from the reports:

- *[...]The use of innovative teaching methods such as the use of hardware and software in classrooms, can increase student engagement and improve their results. While in Mathematics computers are more used to practice skills, in Sciences their use inside in search of information and are rarely used to perform experiments.[...]ICT can also contribute to help students with special needs to increase its autonomy, as well as students with difficulties to improve their self-esteem.*  
*[...] - ["Key Data on Learning and Innovation through ICT at School in Europe 2011"](#)*
- *[...]There are various advantages from the use of ICT in teaching, but they bring changes that affect students, teachers and the institution itself. The use of ICT in classrooms provides greater motivation and attention from students, especially when using multimedia contents. There is a greater independence and responsibility once they take work for themselves. Improvements are also seen by pupils with special educational needs and pupils with difficulties in learning. Regarding teachers can highlight two important aspects: have a more positive attitude in relation to ICT, plan their lessons more efficiently and effectively[...]* - *["The ICT impact Report - A review of studies of ICT impact on schools in Europe"](#)*
- *[...]The use of ICT in primary schools brought advantages, but there are also some areas of concern as is the case of unequal access to ICT in small primary schools and the lack of appropriate pedagogical training for teachers and principals.*  
*Schools are an important place to balance the inequalities between access and knowledge of ICT. Note that primary schools mainly play the important role in digital literacy and other relevant issues such as Internet safety. They should capitalize on students' ICT competence, enhance the use of ICT, developing a*

culture of open knowledge sharing with external stakeholders, and explore the potential of ICT as a catalyst for change and an instrument through which to fulfill educational goals.[...] - ["Study of the impact of the technology on primary schools"](#)

- [...] This study suggests some recommendations at EU, national and institutional levels. At European level the recommendations are linked to facilitation and dissemination of experiences and good practices. At national level, the recommendations focus in strategies and action plans regarding the use of e-learning in iVET\*. And as regards the institutions, the recommendations are related to the development and implementation of IT strategies and e-learning, Initiate I-twinning and the motivation and training of teachers.[...] \*(initial Vocational and Educational Training) - [The use of ICT for learning and teaching in initial Vocational Education and Training](#)
- [...] By this approach, which follows the methodology "Learning by doing", students are no longer a passive element in the learning process but become active ones. In mathematics there are several methods of ICT uses: spreadsheet integrated which allows you to transform the student from being the creator of simple programs into a user of a working environment oriented to fill in the data into tables and their graphical representation.[...] - [Use of technology in mathematics' education](#)
- [...] Key benefits of using ICT in science: ICT can make science more interesting, authentic and relevant; ICT allows more time for observation, discussion and analysis; Using ICT increases opportunities for communication and collaboration.[...] - [ICT in science](#)



Facebook



Twitter



LinkedIn



Website

*Disclaimer:*

*This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein*

*Copyright © 2013 Instituto Superior de Engenharia do Porto, All rights reserved.*

[unsubscribe from this list](#)   [update subscription preferences](#)

MailChimp