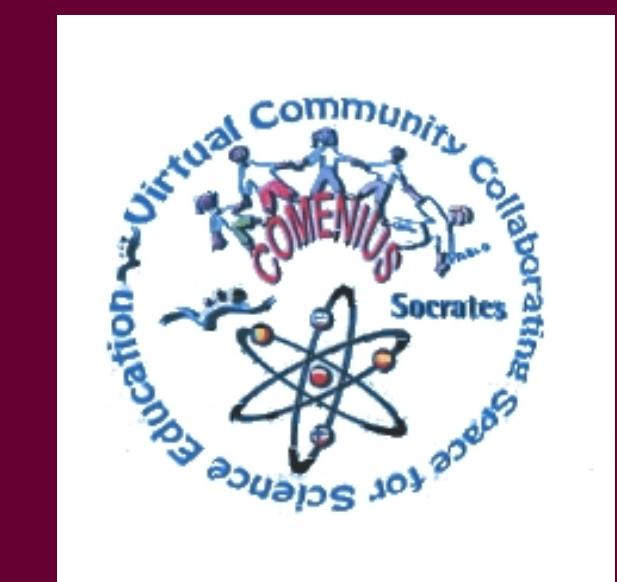


# Virtual Instrumentation Applied to Science Education in Primary and Secondary School. The European Project “Virtual Community Collaborating Space for Science Education.”



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European teaching and educational institutions involved in the project:

Coordinating institution: (2) VALAHIA UNIVERSITY OF TARGOVISTE, Romania;

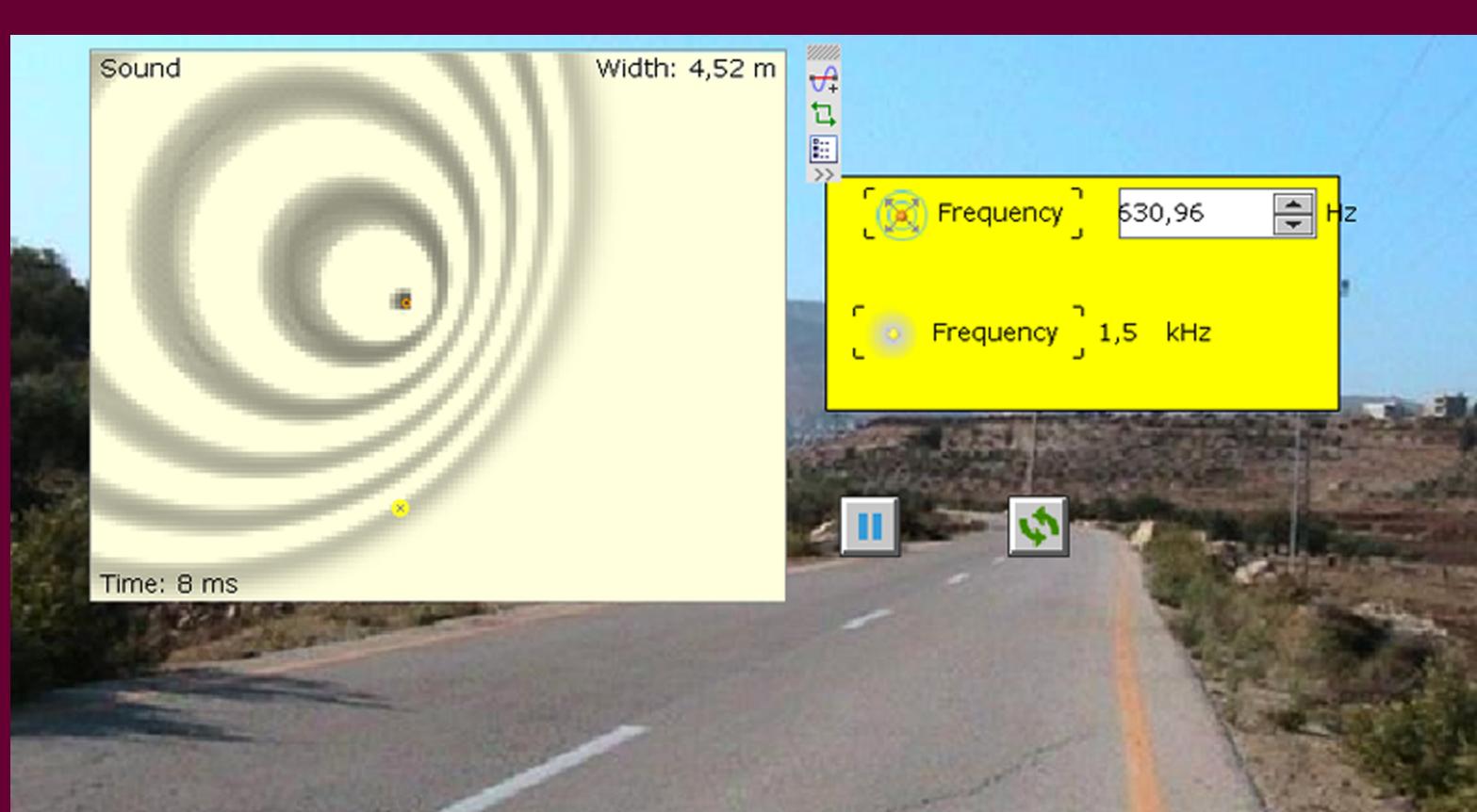
Partners: (1) TEACHER TRAINING AND EDUCATIONAL INNOVATION CENTRE VALLADOLID II, Spain; TEACHER TRAINING CENTRE OF GIJON, Spain; TEACHER TRAINING CENTRE OF ZARAGOZA 1, Spain; WARSAW UNIVERSITY OF TECHNOLOGY, Poland; REGIONAL IN-SERVICE TEACHER TRAINING CENTRE "WOM" IN BIELSKO-BIALA, Poland; UNIVERSITY OF JOENSUU, Finland; BABES-BOLYAI UNIVERSITY CLUJ NAPOCA, Romania; UNIVERSITY OF PATRAS, Greece.

<http://www.vccsse.ssai.valahia.ro/>

**Abstract:** In this poster we present the project “Virtual Community Collaborating Space for Science Education”. Its main purpose is to adapt, develop, test, implement and disseminate training materials, teaching new methodologies and pedagogical strategies based on the use of Virtual Instrumentation in primary and secondary education. The project involves nine European teaching and educational institutions that work cooperatively to build a virtual space that will provide technical and pedagogical support for teachers in order to ensure effective implementation of virtual experiments in the classroom at these levels.

## Introduction

The project “Virtual Community Collaborating Space for Science Education” (VccSSE n.d.) aims to extend the use of virtual experiments to primary and secondary schools. The way to apply virtual instrumentation at these levels is different from the university, now the objective is to understand phenomena and concepts. These virtual tools provide a space where knowledge is constructed from an empirical base where pupils can experiment modifying parameters and conditions, thus interpreting the results. Moreover, the virtual laboratory characteristics need to be adapted to this objective – allowing to use it easily and to design guided experiments in a friendly and attractive environment.



## The project

The project started in October 2006 and will be carried out for three years.

The final-result will be the *Products Matrix*, a web-based virtual laboratory made up of several virtual experiments, with the lesson plans to use them, organized in four areas: **mathematics** - created using Cabri Geometry II and Geogebra -**physics, chemistry** and **digital electronics** - created using Crocodile Clips and Labview -

We have designed one training module for every tool in order to train teachers interested in developing virtual experiments. They are implemented by Moodle course management system. By the end of the school year 2007-2008, 160 in-service teachers from primary and secondary school in five different countries have been trained. Furthermore, they have designed and implemented their own experiments. The *Products Matrix* will be made up of these experiments. Together with the training materials, evaluation tools have been developed to draw conclusions on every aspect of the project.



## Conclusion and Foreseen Work

The main contribution of this project is the application of virtual experiments in primary and secondary schools in order to improve the understanding of science concepts. Furthermore, project success will be measured through the analysis of the evaluation data provided by teachers and pupils. This study will allow us to draw conclusions on different fields, such as in which subjects virtual instruments are more appropriate to use, to what extent they improve students' conceptual understanding, what ages are they best suitable for, etc.

Training material, virtual experiments and lessons plans will be available in the Project web site, together with an Exhibition section where the use of virtual experiments will be demonstrated by means of video-tutorial

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