MOdelling and data acquisition for continuing vocational training of upper secondary school physics teachers in pupil-active learning of Superconductivity and ElectroMagnetism based on Minds-On Simple ExperiMents

**Type of project**
Multilateral project, Transfer of Innovation

**Project Contractor**
Simplicatus AS, Norway

**Contractual year**
2008

**The Challenge**
Europe needs more competent physics teachers in order to reverse the negative attitude towards physics and science among high-school and vocational training students. Recent investigations point to modelling and quantitative experiments as important activities in this respect.

**Short description**
The MOSEM² project idea was conceived during the SUPER-COMET 2 project. It is closely connected to and builds on the materials developed by its twin project MOSEM. New teacher seminars will promote active learning where students develop models and simulations, and collects data from MOSEM and other experiments. Development in 2009 will be followed by testing and revisions in 2010, and finished versions will be ready by the end of the project.

**Objectives**
Training science teachers how to implement the modelling approach in their teaching activities, trialling this pedagogy and teaching methods with the developed materials and probe how it affects the learning and enthusiasm of teachers and students.

**Target groups**
MOSEM² primarily targets science teachers in upper secondary schools and trainee science teachers. Also teacher training departments at universities that will implement the teacher seminars and new materials developed by the project.

**Partnership description**
The project has 33 partners in 11 countries. 9 universities, 2 foundations and Simplicatus AS will develop the project deliverables. Testing and dissemination is carried out with 13 upper secondary schools and 8 valorisation partners.

**Expected outcomes and when**
The MOSEM² project will augment the experiments and materials from the twin project MOSEM by developing a set of models and simulations covering a series of topics in electromagnetism and superconductivity, and creating a collection of real-life data in the form of pictures, videos, and data-acquisition activities. This is supported by a teacher seminar and a printed teacher guide.

**Valorisation**
Large national organizations for teachers and engineers participate as valorisation partners, among them several teacher organizations in Belgium, NITO, Tekna, the Union of Education and Science Centres in Norway, and the Polish Association of Science Teachers. Simplicatus AS and several other foundations and universities will promote the various products after project completion.

**Web resources**
mosem.no
supercomet.no
youtube.mosem.no

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**Participating countries**
Austria, Belgium, Bulgaria, Czech Republic, France, Italy, Norway, Poland, Spain, UK