Mathematics and science for life

Results in Brief

Inquiry-based learning science and maths learning connected to the world of work

A European team took steps to attract more students to science and mathematics by fostering inquiry-based learning (IBL) and connections to the world of work in science and maths learning. The team also developed a body of professional development (PD) resources for teachers.

SOCIETY

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Many educators feel that teaching subjects is no longer enough, and that students need greater emphasis on process competences in addition. IBL is believed to help build these competencies in science and mathematics.

The EU-funded project MASCIL fostered use of IBL in mathematics and science at primary and secondary levels. In particular, the team connected IBL with the so-called world of work (WoW) by linking science and maths to real-life situations from professional domains. The goals of this teaching approach were to make student learning more meaningful and personal, and to attract more students to science and technology careers.

To change mathematics and science teaching and learning, consortium members chose a multilevel and multi-stakeholder approach. Key elements included:

production of IBL-WOW-based classroom materials and PD materials, implementation of large-scale teacher PD courses, plus evaluation and analysis of project activities and policy contexts. The approach also included professional marketing and substantial dissemination of the project's ideas and free products. Lastly, the team worked to build and foster local and international networks in science, technology, engineering and mathematics (STEM) education.

MASCIL fostered cooperation between teams of STEM researchers and various experts. Networking activities included the initiation of a new conference series 'Educating the educators' linking STEM education research, policy and practice. The team also organised policy workshops and established the first network of European STEM PD centres.

Cooperation is currently continuing in three follow-up EU projects and the newly founded International Centre for STEM Education at the University of Education Freiburg. These initiatives promise to secure scale-up for MASCIL's results and impact.

Further project achievements included a body of freely available and practice-tested PD resources – including implementation guidelines and online/blended learning materials – published along with a collection of ready-to-use classroom materials for teachers in multiple languages.

The outcomes of MASCIL substantially improved European and local networks and various high-quality teacher training and classroom resources will help develop teacher skills in implementing IBL-based STEM teaching with WoW contexts.

Keywords

Inquiry-based learning | science | mathematics | world of work | professional development | MASCIL

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MASCIL

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