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**Promoting Earth sciences teaching-learning in Italian schools: research into learning objects and effective educational approaches, to improve skills and competences**

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In the Italian context, where Earth sciences have a low priority in the education system and in common thinking, a priority is to promote a widespread and deep-rooted culture of natural hazards, the dangers inherent in the geological evolution of the region, the responsible use of the environment, and the perception of phenomena as part of the dynamics of the Earth.

The goal of this work is to promote Earth sciences education in Italian schools, to increase the interest of students towards geosciences and to enhance teacher competences in the use of new and more effective educational approaches.

Starting from research [1] of the Italian Minister of Education into High school lab resources in Earth sciences, this research involves the content of a PhD from UNICAM, which has developed a suite of tools, pathways and learning materials, based on hands-on practices and on inductive and adductive approaches, involving experimentation in schools at all levels of education. The unifying principle is research into models and guidelines to produce effective practice, which are easily shared or used in schools.

All the educational tools have been tested and evaluated and are presented in easy kits now freely available. All the materials and the educational pathways are presented in a working booklet which is freely downloadable. The result is an increasing interest in Earth science teaching and learning, a widespread awareness of the need to promote competences and skills, and a growing knowledge of inquiry approaches. Some of the strategies have been tested on the basis of the acquired skills and competences of the students before and after use.

This experience has also shown the new developments needed in the Earth sciences: the development

of a unique epistemology of the discipline, together with the promotion of Earth science as the discipline that most develops the ideas of system and complexity, the understanding of which is essential in promoting scientific skills.

*References:*

[1] [www.istruzione.it/alfresco/d/.../presentazioneMiur\\_Pubblicazione.pdf](http://www.istruzione.it/alfresco/d/.../presentazioneMiur_Pubblicazione.pdf)

