



Research on teaching and learning processes in Earth Sciences education, particularly centred on the awareness on natural risks and hazards

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This research, main subject of a PhD now in progress, aims to promote the teaching – learning of Earth Sciences in schools of all levels of educations, with the interesting opportunity to experience innovative and effective practices in our local contest, sharing them between all the teachers as a community of practice and all schools as an open laboratory.

Based on experiences already acted in other branches of science, we have made a work notebook freely downloadable from the internet, containing an archive of teaching tools, kits, interactive lessons, easy or complex, common and new, developing contents in a vertical approach, which are now shared and used by nearly all the teachers of our Region.

The most important is that each teacher, if request, is initially supported in the practices, then trained and, finally, able to carry out the activity on his own.

All the materials and kits necessary for carrying out the various activities are freely available at the regional Science Centre and ready to be used, with clear instructions for the use. Traditional educational scientific instruments, trolleys and trays with all the necessary materials, but mostly models and kits, organised in structured paths, sometime a bit naive but highly effective and able to interest, intrigue and involve, are proposed to students of all ages, sometimes in a peer-to-peer exchange of knowledge.

Topics are linked to the curricula of Earth Science, such as minerals and rocks, air and water, plate tectonics, volcanoes and Earthquakes, but a special attention has been paid to the topic of natural hazards and risks: dealing with natural hazard and risks, so common in our Country, requires that local communities, starting from schools, become more and more aware of the natural phenomena, beneficial or catastrophic as they are, but always making a direct impact on the quality of life.

For example, students can experience how and why landslides and floods occur, by varying on hands-on models natural and physical parameters, the usage of the landscape in known territories and the human impact of the local community, and identify appropriate solutions.

The effort is now directed to transform the traditional hands-on methods used to manage instruments and laboratories, in an innovative inquiry-based approach.

A quantitative monitoring is now in place to check the results of comprehension, learning and acquiring skills and sensitivity in many classes, even comparing results obtained by traditional practices and by inquiry-based approach. All these data and all the materials are available to all interested parties, thanks to already existing networks, as Unicamearth, ANISN- National Associations of Science Teachers, and IGEO, International Geoscience Education Org- promoter of IESO.