



## Experiential learning for education on Earth Sciences

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The Laboratorio Divulgazione Scientifica e Attività Museali of the Istituto Nazionale di Geofisica e Vulcanologia (INGV's Laboratory for Outreach and Museum Activities) in Rome, organizes every year intense educational and outreach activities to convey scientific knowledge and to promote research on Earth Science, focusing on volcanic and seismic hazard.

Focusing on kids, we designed and implemented the "greedy laboratory for children curious on science (Laboratorio goloso per bambini curiosi di scienza)", to intrigue children from primary schools and to attract their interest by addressing in a fun and unusual way topics regarding the Earth, seismicity and seismic risk.

We performed the "greedy laboratory" using experiential teaching, an innovative method envisaging the use and handling commonly used substances. In particular, in the "greedy laboratory" we proposed the use of everyday life's elements, such as food, to engage, entertain and convey in a simple and interesting communication approach notions concerning Earth processes. We proposed the initiative to public during the "European Researchers Night" in Rome, on September 26, 2014. Children attending the "greedy laboratory", guided by researchers and technicians, had the opportunity to become familiar with scientific concepts, such as the composition of the Earth, the Plate tectonics, the earthquake generation, the propagation of seismic waves and their shaking effects on the anthropogenic environment. During the hand-on laboratory, each child used not harmful substances such as honey, chocolate, flour, barley, boiled eggs and biscuits. At the end, we administered a questionnaire rating the proposed activities, first evaluating the level of general satisfaction of the laboratory and then the various activities in which it was divided. This survey supplied our team with feedbacks, revealing some precious hints on appreciation and margins of improvement. We provided a semi-quantitative assessment with a questionnaire focused on the appreciation, on the emotional and cognitive learning and trying to test the issue we addressed when we built up the performance. The questionnaire are set in a semi-structured way, keeping free only a few questions.

One hundred of both boys and girls attended the laboratory, seventy-one of whom completed the questionnaire. As a general results, we register a very high level of satisfaction and interest. We analyzed the questionnaires, using as first the variables "age" and "gender". Children 5 to 11 years old completed the questionnaire, about 72% were girls.

This experiential teaching for primary schools intrigues and involves child using the methodology of "learning by doing". Our experience demonstrates that this teaching approach may represents a successful and effective method to transfer useful information about geo-hazards strengthening the culture of prevention.