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Spreading Geodiversity awareness in schools through field trips and ICT

Alessandra Magagna (1), Marco Giardino (1,2), Elena Ferrero (1,3)

(1) Earth Sciences Dept., University of Turin, Italy (alessandra.magagna@unito.it), (2) NatRisk, Interdepartmental Centre for Natural Risks, University of Turin, Italy (www.natrisk.org), (3) CISAO Interdepartmental Research and Cooperation Centre, University of Turin, Italy (elena.ferrero@unito.it)

Geodiversity, unlike Biodiversity, is not a topic included in the Italian schools curriculum. Nevertheless, Geomorphology is taught at all levels, and it seems to be the right tool for introducing the students to the concepts related to Geodiversity. In this context, a research on the use of field trips and Information and Communication Technologies (ICT) is being carried out for spreading the value of Geodiversity in Secondary Schools.
Relevant international literature states that field trips are effective didactic tools for Earth Science education, because they stimulate an active learning process and allow students to appreciate the geological complexity of an area. On the other side, ICT allow students to get knowledge about the variety of landforms of their own territory by staying indoor, using virtual field trips and free software like Google Earth, Google Maps, Bing etc. In order to connect the two strategies, an innovative educational project is proposed here; it involves both the indoor and the outdoor activities, by enhancing a critical approach to the complexity of geological processes.
As a starting point, a multimedia product on 20 Italian geological tours, designed for analyzing Geodiversity at a regional scale, has been tested with teachers and students, in order to understand its effectiveness by using it solely indoor.
In a second phase, teachers and students have been proposed to compare and integrate indoor and outdoor activities to approach Geodiversity directly at a local scale, by means of targeted field trips. For achieving this goal, during the field trips, students used their mobile devices (smartphone and tablet) equipped with free and/or open source applications (Epicollect, Trimble Outdoor Navigator). These tools allow to track field trips, to gather data (geomorphological observations and related photographs), and to elaborate them in the laboratory; a process useful for reasoning on concepts such as spatial and temporal scales and for comparing the real and the virtual experience.
Particularly, the geological history of an Alpine Piedmont area West of Torino (NW Italy) has been investigated. A one-day educational field trip has been performed starting from the man-made features of the Sangano town, walking on the present-day, historical and pre-historical fluvial landforms of the Sangone River, and finally climbing up the Pleistocene glacial landforms of the Rivoli-Avigliana Morainic Amphitheatre. The track offers samples of the Geodiversity of the area by showing a variety of landforms and including panoramic views to the Alpine chain. Students collected geomorphological data and carried out research-type activities, such as mapping and describing landforms, making hypotheses on geomorphic processes and gathering useful elements for the reconstruction of the geological history of the area.
By taking awareness of the spatial and temporal scales related to landforms and geomorphic processes, as well as to the Man-Nature interactions, students realize the “dynamic dimension” of Geodiversity. As a consequence, students can perceive the geomorphological landscape as a changeable system over time, and therefore worthy of protection.