



Developing and testing multimedia educational tools to teach Polar Sciences in the Italian school

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In the last few years science education moved forward rapidly by connecting the expertise and enthusiasm of polar educators worldwide. The interest in Polar Sciences determined the creation of a global professional network for those that educate in, for, and about the Polar Regions. In Italy, this cooperation is well represented by APECS-Italy, the Italian section of the Association of Polar Early Career Scientists (APECS) that is composed by young researchers and teachers of the Italian School.

The Polar Regions represent one of the best natural environments where students can investigate directly on global changes. In this sense, the working group UNICAMearth of the Geology Division of School of Science and Technology, University of Camerino (Italy), promotes the arrangement of instructional resources based on real data coming from the research world.

Our project aims to develop innovative teaching resources and practices designed to bring the importance of the Polar Regions closer to home. Consequently, Polar Sciences could become a focus point in the new national school curricula, where Earth Sciences have to be thought and learnt in an integrated way together with other sciences.

In particular, M. Macario is producing a teaching tool package, starting from a case study, which includes a dozen of full lesson plans based on multimedia tools (images, smart board lessons and videos of lab experiments) as well as on hands-on activities about polar issues and phenomena.

Among the resources the teaching tool package is referring to, there is also an App for tablet named CLAST (CLimate in Antartica from Sediments and Tectonics). This App has been designed by a team made up of polar scientists belonging to the University of Siena and University of Padova, two science teachers of the Museo delle Scienze (MUSE) of Trento other than M. Macario. CLAST has been funded by two Research Projects, CLITEITAM ("CLImate-TEctonics Interactions along the TransAntarctic Mountains front, University of Siena) and THERMOCHRON (University of Padova and Fondazione Cariparo) and focuses on the dynamic of the Ross Sea Ice shelf, in Antarctica, that is directly linked to temperature variation. The past history of this glacial system has been reconstructed studying the seafloor sediments recovered by the international drilling project ANDRILL (ANtarctic geological DRILLing), which gathered information about past periods of global warming and cooling. Working with CLAST, students are engaged in inquiry-based and interactive learning experiences, which show the response of the Antarctic glacial system to climatic forcing in the last 150 kyear. Moreover, students deal with the geological key data used to constrain the paleo-environmental reconstructions with glacial-interglacial scenarios. Finally, the students obtain evidence on the role of temperature in causing advance and retreat of ice sheet that are strictly related to global sea level and climate. CLAST will be soon freely downloadable in Italian and in English from App Store and it is supported by a website (http://www.mna.it/italiano/News/notizie_app_set.htm) where it is possible to find references and other teaching tools needed for its correct use in the classroom.