

Dark grains of sand: a geological storytelling

Magda Gallo Maresca

Liceo Scientifico Statale "E. Fermi" Bari, Italy (mmaresca@libero.it)

In the secondary Italian school the Earth science learning begins at first year, in synergy with other natural science subjects such as Astronomy, Chemistry and Biology. Italian teachers have to focus on the landscape geomorphological aspects and often Earth processes are difficult to display since they are related to certain phenomena happened during the past and often far from the involved country.

In order to better understand the environment surrounding us, very simple and poor materials, like sands, allow the teachers to create attractive lab experiences.

According to the IBSE (Inquiry Based Science Education) approach, a learning unit has been implemented starting from a walking along the light carbonate beaches of the Adriatic sea: a smart look to the sands ("engage step"), stroke the students fantasy pushing them to explore some strange black grains on the sands. Dirty sands? Or rock landscape, soil degradation and Ofanto river and coastal processes (erosion, transportation and deposition)? This was the teaching challenge.

Due to the youngest age, a third level, guided inquiry, was adopted so the teacher is the "guide of inquiry" encouraging the students using the research question ("Why is the sand dark?", "Do all sands look the same?", "Where does it come from?") and driving the students around their investigation plans ("How can I measure grain size?"). A procedure to answer the above questions and validate the results and explanations has been implemented to allow the students to be proactive in their study. During the learning activities will be the students to ask for field trip to elaborate their new knowledge, verify and visualize the speculated processes.

The teaching skills allow to address several geosciences domains such as mineralogy, petrology, regional geology and geodynamics as well as other scientific disciplines such as mathematics (more specifically statistics), forensic science and even life sciences (the presence of bioclasts might provide some sense of local biodiversity), opening the mind and the culture to the Earth and its environment, using as drivers a poor material such as the sand and its story telling hidden inside a simple color (black or white).