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UPSIDE DOWN – Designing and implementing a science exhibit with students about soil structure and conservation

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"Scienze Under 18" is an event that takes place every year in different cities of Italy and is dedicated to science communication entirely designed and performed by students to other students and general public.

A class of 11 years old students (first grade of lower secondary school) took part to the 2018 event with an exhibit about soil's structure and role in ecosystems, soil consumption and effects of massive soil sealing on hydrogeological instability (the latter being an outstanding issue in Italy). The exhibit title was: "Upside-down: soil-the world under your feet"

The students were first investigating soil nature and structure at school: they were studying the different soil layers and their origin, and they were carrying on observations of soil components and different degrees of permeability related to grains' size.
They also held in the classroom a quite big sample of layered, partially natural, soil in a transparent container with earthworms and other organisms living in it, in order to try to analyze the interactions among the biotic and the abiotic elements.
Finally the class deepened the study of soil consumption and the effects of massive soil sealing on hydrogeological instability and the possible containment actions.

When they were asked to design an exhibit for the "Scienze Under 18" event, they prepared posters on soil structure (and a sample of it), a practical demonstration of different degrees of permeability related to grains' size, diagrams and three functional models showing the relation between the increase in soil coverage and consumption and the decrease of average permeability, and the consequences on hydrogeological instability.

On the event day they coped with the exhibit during 4 hours, working in turns giving demonstrations and explanations to the visitors, trying to understand and, if possible, answer to their questions.

The designing and managing of a science exhibit open to public is a quite demanding task, which requires both good knowledge and communication skills. The students have to repeat the same explanations or demonstrations to pupils of different ages (some younger, some older) or to adults (including science teachers) adjusting from time to time the language and the deepening of the topic.
All the students involved in "Scienze Under 18" are usually very committed and improve their performance as the event goes on in a quite dynamic learning process, reinforcing their knowledge of the topic (the soil issues in this very case) and developing good learning (and teaching!) skills such as representing, outlining, cooperating, explaining, modeling, and so on.