



Ocean Literacy and Ocean Misconceptions in a sample of Italian students

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OCEAN LITERACY: HISTORY AND DIFFUSION

- OCEAN LITERACY means “an understanding of the ocean's influence on you and your influence on the ocean” (Cava et al. 2005)
- Born in the US at the beginning of the 2000s to promote knowledge and awareness of marine issues, the **Ocean Literacy (OL) movement** spread also in Europe by initiative of EMSEA (European Marine Science Educators Association)
- Within EMSEA, the **Mediterranean regional workgroup (EMSEA Med)** is running **educational initiatives** for schools and general public and **education research** among school students
- In 2018 EMSEA - Med performed a **cross-cultural survey on OL** among about 1000 primary school students of **Italy, Greece and Croatia** (Mogias et al., in press)
- In this Conference, we are presenting some unexpected data found in an Italian students' sample partly included in this study

THE OCEAN LITERACY PRINCIPLES

- The Earth has one big ocean with many features.*
- The ocean and life in the ocean shape the features of Earth.*
- The ocean is a major influence on weather and climate.*
- The ocean made the Earth habitable.*
- The ocean supports a great diversity of life and ecosystems.*
- The ocean and humans are inextricably interconnected.*
- The ocean is largely unexplored.*

MODERATE KNOWLEDGE WITH EMERGING MISCONCEPTIONS

In spite of the scarcity of ocean related topics in official school curricula, students revealed an **overall satisfactory knowledge** of most OL concepts:

- ★ the connections between humans and sea
- ★ the biodiversity of marine ecosystems
- ★ the life origin in the sea and the influence of sea on climate

On other OL concepts, though, sample students showed low knowledge level, with presence of **diffuse misconceptions**. In both age groups most students thought that:

- ★ Seas and ocean basins are not all connected
- ★ Forests are the main source of oxygen
- ★ Precipitations originate from water evaporated from neighbouring seas

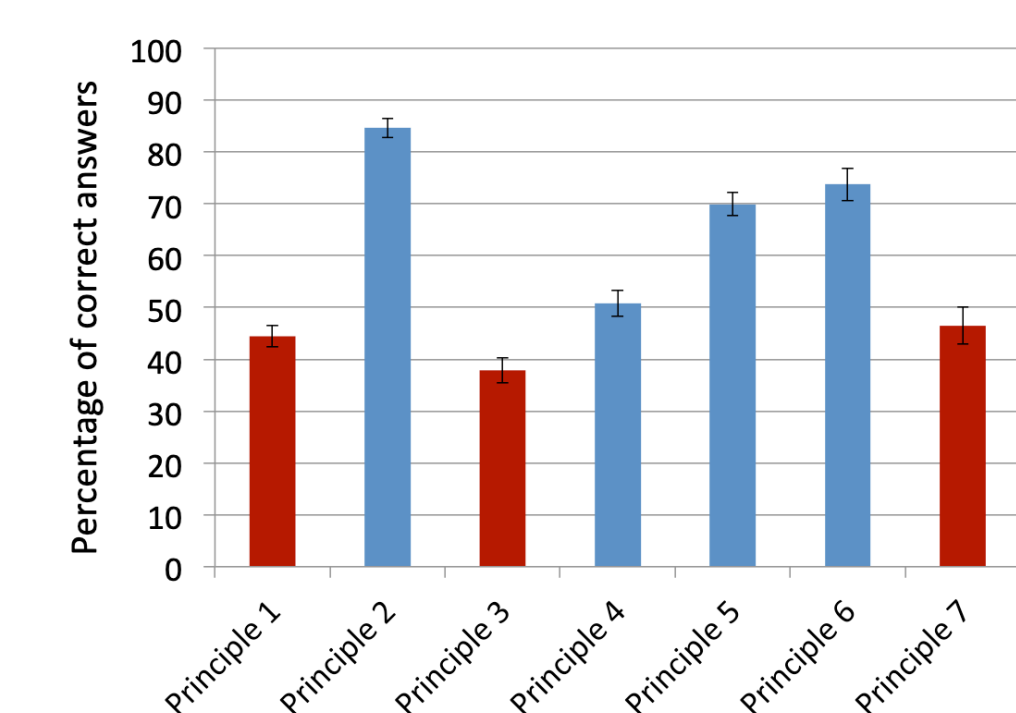
In the secondary school group also emerged the idea that:

- ★ Past sea level was higher than now

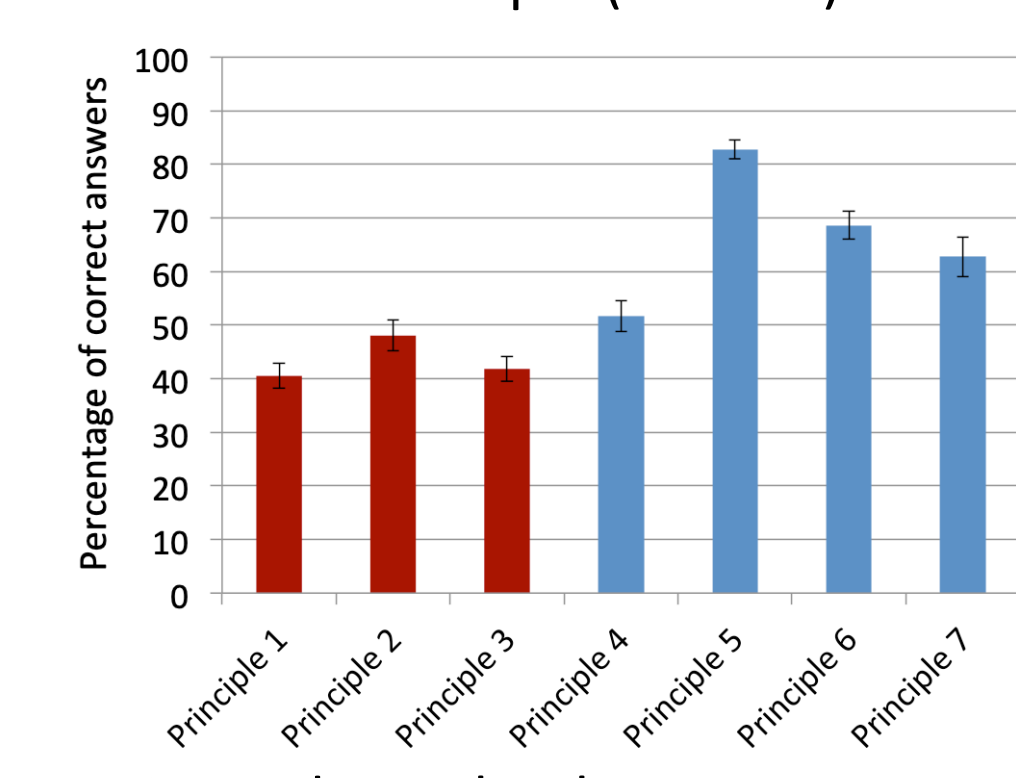
Some of these misconceptions have already been described in literature (Phillips 1991, Cardak 2009, Cook 2018); on the contrary, **misconception** regarding the **connectedness of all seas and ocean** seems quite **new in empirical research**.

This finding may be surprising, considering that “*The Earth has one big ocean*” is stated as the first Ocean Literacy principle. Nevertheless, in Italy this issue is generally misrepresented in primary and lower secondary school textbooks and probably in teaching practice.

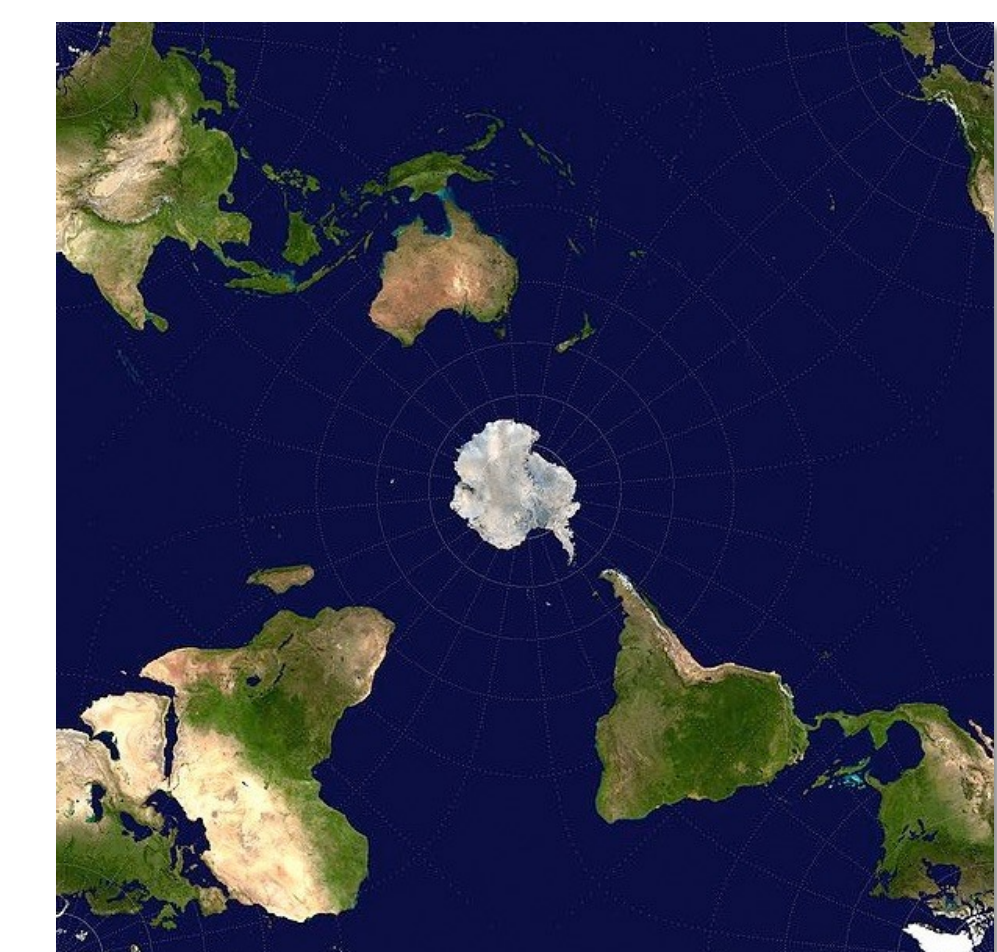
Intending to extend our research, we developed specific hands-on teaching activities to overcome these misconceptions and are currently testing their impact on students' OL.



Primary school test scores per OL Principle (N = 198)



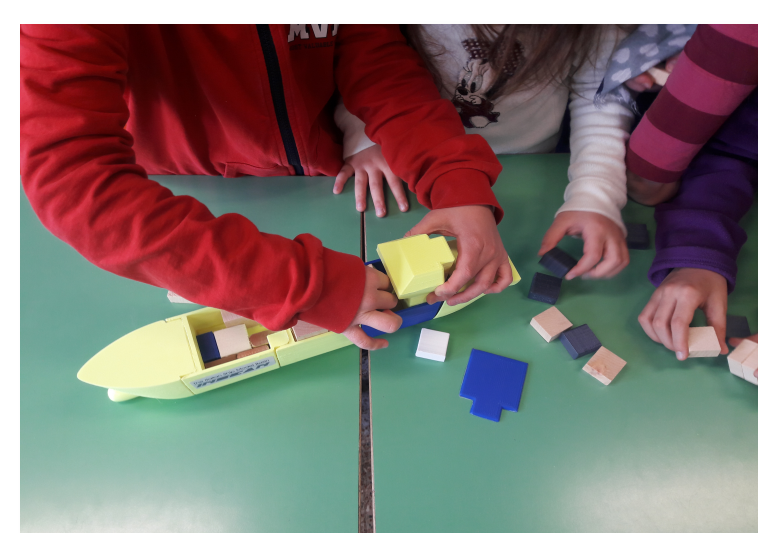
Secondary school test scores per OL Principle (N = 153)



The ocean from the South Pole, by David McCandless, InformationIsBeautiful.net.

OCEAN LITERACY AMONG STUDENTS OF AN ITALIAN REGION

- The Italian sample included **351 students** from of **primary** (4th-5th grade) and **lower secondary school** (8th grade) students of the coastal area of **Friuli Venezia Giulia** (North-Eastern Italy)
- The students were enrolled through a project, linked to European Maritime Day, aimed at promoting higher education and careers in the maritime sector
- The research tools were two structured questionnaires developed within EMSEA – Med and **addressing knowledge and opinions regarding the seven OL principles**



Images, from bottom left: sample students participating in the project, by MARE FVG; European Maritime Day logo, by European Commission; Region Friuli Venezia Giulia in the map of Italy, by Wikipedia;

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