

## 1 - Learning Science: Conceptual Understanding | Empirical

### SP - (16206) - “ONCE UPON A TIME IT WAS ALL SEA”: TEN-YEAR-OLD CHILDREN’S REASONING ABOUT ROCK FORMATION

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#### Short Abstract

The presence of fossil shells in a sample of sedimentary rock collected in the mountains was the starting point for the construction of an educational research on children’s concept about rock formation.

The comprehension of the processes that lead to the formation of rocks is linked to two of the most important concepts for geosciences: the idea that the Earth is continuously undergoing through changes, and the idea that the Earth has a long history (deep time).

As for many other science concepts, students develop their own ideas both from formal and informal education. The identification of students’ spontaneous ideas and the misconceptions that may be behind these ideas is an important step for the design of effective teaching activities.

In this study we investigated the ideas about the rock formation of a group of 123 ten-year-old students through semi-structured interviews. Each interview started from the observation and the description of a sample of sedimentary rock containing fossil shells. The interviews were analyzed to look for common features and for the emergence of ideas about the transformations of the natural environment in time.

The findings of this study suggest that at the age of ten there is, in most of the children, the idea that some sort of changes occurred over time caused the presence of shells in the rock. Some students go a step further by indicating the idea that rocks and mountains have not always existed, but they were formed. One implication of this finding is that this age begins to be adequate for teaching these concepts, but some spontaneous ideas that pupils have at this age (e.g., all mountains that exist today formed when the Earth first formed) should be addressed directly by teachers before it becomes a misconception.