



Focusing on interactions between individuals and their learning environment : a new step forward for Geoscience education

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The scientific literacy level of the whole population has long been focusing the attention of researchers because of its direct impact on many aspects of our lives. As a matter of fact, studies in cognition have both been inspired by educational issues as well as by misconceptions of scientific ideas often based on irrational beliefs, old theories, unscientific reasoning, or unassimilated conceptual instruction. As a result, individual conceptions are now accurately described in many scientific fields, such as geosciences, which has led to improvements in science teaching and learning. However, the community (scientists, academics, high school and primary school teachers, educators) has not yet succeeded in solving all the issues, so some pre-existing misconceptions still persist in the population. We argue that geocognition studies must now focus on the origin of individuals' conceptions and on their modes of acquisition and propagation in order to provide educational tools for acting upstream during their very acquisition. We also present a model (symbolically based on the crystalline structure of silicates) that allows representing and describing the educational context of each student in order to design targeted actions for favoring the acquisition of scientific conceptions.