


AGU Fall Meeting 2009

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Evaluating Scientific Misconceptions and Scientific Literacy in a General Science Course

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The data used in this study were collected as part of the course assignments for General Education Science (GSci) 101: "Physics, Chemistry, and the Human Experience" at James Madison University. The course covers the basic principles of physics, chemistry, and astronomy. The primary goals of this study were to analyze student responses to general scientific questions, to identify scientific misconceptions, and to evaluate scientific literacy by comparing responses collected from different groups of students and from questions given during the course versus at the end of the course. While this project is focused on general scientific concepts, the misconceptions and patterns identified are particularly relevant for improving pedagogy in the geosciences as this field relies on multidisciplinary knowledge of fundamental physics, chemistry, and astronomy. We discuss differences in the results between the disciplines of physics, chemistry, and astronomy and their implications for general geology education and literacy, emphasizing the following questions:

- (a) What do students typically get wrong?
- (b) Did the overall scientific literacy of the students increase throughout the semester? Are the concepts discussed in answers provided at the end of class more accurate than those provided during class?
- (c) How do the before- and after- class responses change with respect to language and terminology? Did the students use more scientific terminology? Did the students use scientific terminology correctly?

Contact Information

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