

Elements

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On the Cutting Edge Teaching Mineralogy, Petrology, and Geochemistry

David W. Mogk, Guest Editor



New Directions at the Intersection of Research about Earth and Research on Learning

David W. Mogk



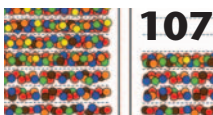
Improving Instruction in Mineralogy, Petrology, and Geochemistry—Lessons from Research on Learning

Cathryn A. Manduca



What Should Our Students Learn?

Dexter Perkins



Teaching for Deeper Understanding and Lifelong Learning

Karl A. Wirth



Using Alignment and Reflection to Improve Student Learning

Alan P. Boyle



Visual Communication: Do You See What I See?

Barbara L. Dutrow

ABOUT THE COVER: Students exploring columnar basalt at Hepburn Mesa, north of Yellowstone National Park, Montana, USA. Geologists use active-learning techniques every time they bring students in the field. Learning in the field occurs as students construct their own knowledge base through inquiry, discovery, application of scientific concepts and content, practice of technical skills, and use of the cognitive strategies employed by “master” geologists. These approaches to learning can be applied throughout the curriculum in mineralogy, petrology, and geochemistry. PHOTO COURTESY DEXTER PERKINS

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