The Journal of Mathematics and Science:
COLLABORATIVE EXPLORATIONS

Volume 13, Spring 2013

PART I: SPECIAL ISSUE
Scientific Inquiry and the Nature of Science

PART II: REGULAR JOURNAL FEATURES

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SPECIAL ISSUE
Scientific Inquiry and the Nature of Science

Coordinating Editor
for this Special Issue

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Coordinating Editor's Remarks

The Virginia Mathematics and Science Coalition appointed a task force to study how inquiry-based teaching and explicit nature of science instruction will improve student learning in science. In 2010, the Coalition endorsed the "Scientific Inquiry and the Nature of Science Task Force Report." The Report provides working definitions for both scientific inquiry and the nature of science, describes the rationale for teaching about these important aspects of science, and outlines how scientific inquiry and the nature of science may be effectively addressed in K-12 classrooms. This Report is available here and on the Coalition website (www.vamsc.org).

Numerous national reports from the *National Science Education Standards* (National Research Council, 1996) to *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* (National Research Council, 2012) call for inquiry-based science teaching and learning. This Special Issue on Scientific Inquiry and the Nature of Science in *The Journal of Mathematics and Science: Collaborative Explorations* describes creative instructional approaches for inquiry in the science classroom and practical help for teachers as they conduct inquiry-based teaching and learning.

Teaching students to inquire, think critically, and understand the nature of science are among the most important things we do as science teachers. The ability to inquire, using logical reasoning and critical analysis, is a crucial skill for all citizens. This Special Issue explores inquiry-based teaching strategies and classroom activities that help students develop the skills needed for the twenty-first century.

The Report and these articles address the following questions: How do you define inquiry? What are essential features and principles of inquiry? Are there different kinds or levels of inquiry? How do learners engage in scientifically-oriented questions of public significance and—utilizing available community resources—give priority to evidence in responding to questions, formulate explanations based on evidence, connect explanations to scientific knowledge, and communicate and justify explanations with their peers and the larger public domain? What evidence is there of successful teaching of science inquiry skills and of students having been successful in learning these skills?

The articles are practical applications of inquiry, reviews of literature, theoretical, and policy oriented. Inquiry activities, the theoretical base, student responses, challenges faced, methods of research, research outcomes, and lessons learned are described. We believe that the publication in this Special Issue on Scientific Inquiry and the Nature of Science in *The Journal of Mathematics and Science: Collaborative Explorations* of refereed papers describing work in progress and preliminary research findings will have great value to the field.

Advisory Panel

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Virginia Mathematics and Science Coalition