Taking Back Science

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As I am writing this editorial, the U.S. has just elected a new president. In a recent *Newsweek* article, Sharon Begley (2008) discusses how a climate of distrust of science has prevailed under the Bush administration. Global warming, stem cell programs, and even evaluations of sex education programs have all been under attack by an administration seemingly more interested in discrediting science to support its political agendas rather than in presenting more appropriate economic or moral arguments. Begley asserts that the negative attitude toward science and "inconvenient facts" will take a great deal of work to undo. Compounding the problem, the Department of Education has severely limited acceptable program evaluations to those with experimental and quasi-experimental designs, approaches that are often poorly suited to understanding complex social interactions, like teaching and learning science. I am looking forward to an administration that will value scholarship and bring more credibility to science and science education research. I imagine most science education researchers (regardless of partisan affiliations) are feeling the same way.

The work of science education researchers has never been more important, for both the U.S. and the world. Schools in the U.S. must begin to recover from an over-emphasis on high-stakes testing and the resulting reductionist pressure on curriculum. With renewed attention and energy will come renewed opportunities to implement improved instructional practices and professional development. Throughout the world, people face increasingly complex environmental, economic, and political challenges requiring thoughtful action by leaders and societies that understand and value scientific inquiry and data-driven decisions. All of these offer opportunities for science educators to better understand how school science can prepare us for the future.

The articles in this issue represent a range, depth, and quality of science education research needed to take back a respect for science. They all explore ways to help students understand science and scientific inquiry and/or to support science teacher development that promotes the same. The methods fit the questions and contexts and range from case studies to the use of inferential statistics. Eric Pyle explores a model of inquiry for the Earth sciences. This provides an important perspective for teacher educators who are helping teachers see how inquiry fits into the interdisciplinary and observational nature of Earth science. Su Swarat reports on attribute dimensions that help us understand what makes a science topic interesting to middle school students. Jill Marshall investigates electric circuit

diagrams and helps the reader to see the importance of explicit discussion of representation issues. Tsung-Hui Tu and Wei-Ying Hsiao document the verbal interactions of teachers and their preschool students providing important data on early science learning and is an excellent starting point for preschool teachers to examine and reflect on their own practice. Randy Yerrick, Rebecca Ambrose, and Jennifer Schiller present a case study that explores the complexity of promoting inquiry-based practices and provides important insight into the role of classroom placements, cooperating teachers, and teacher educators' relationships with those teachers. Molly Weinburgh and Kathy Smith also present a case study and report on the complexity of supporting a teacher's growth to more reflective practice. It points to the fact that a teacher's growth may impact his or her relationships with colleagues. Gwen Nugent, Gina Kunz, Richard Levy, David Harwood, and Deborah Carlson compare a field-based and traditional geoscience course for preservice teachers. The findings support the use of a field-based course resulting in better high-level questioning. Gili Marbach-Ad, Randy McGinnis, and Scott Dantley report on base-line data collected in relation to the implementation of a teacher professional development model at both historically black colleges and universities and predominantly white universities and colleges. The baseline provides some interesting differences in the results from the two types of institutions and will provide important data for comparison after for this project and for other science education researchers. Finally, Octavia Tripp and Charles Eick examine the use of a Myers-Brigg type inventory in assigning secondary science education student teachers with their cooperating teachers. Findings reveal important considerations for science teacher educators, including the values of some dissonance in temperaments to foster pedagogical growth and the importance of the relational dimension for the cooperating teacher.

I believe each of these articles helps us meet the challenge of our times: to take back science as a credible and valued endeavor in our global society. Such thoughtful research is critical to understanding the complexities of helping students value, appreciate, and understand the nature of science.

References

Begley, S. (2008, November 17). Bring On the 'Reality-Based Community.' *Newsweek,* pp. 35-36.