

# The Role of Public Policy in K-12 Science Education

National Association for Research in Science Teaching  
Annual Conference

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## Presenters

- Dennis Cheek, Ewing Marion Kauffman Foundation
- George DeBoer, AAAS Project 2061
- Janice Earle, National Science Foundation
- Noah Feinstein, University of Wisconsin
- Sharon Lynch, George Washington University
- Jonathan Osborne, Stanford University
- Sarah Woodruff, Ohio's Evaluation & Assessment Center for Mathematics and Science Education

*(All are authors for an upcoming volume on science education policy to be published by Information Age Publishing.)*

## Current Interest in Policy

- NARST members are asking: How can science education researchers influence policy?
- A policy strand at NARST with sessions like this one.
- The U.S. Department of Education Institute for Education Sciences Director John Easton is trying to move the Institute more toward an emphasis on applied research that is relevant to policy makers and practitioners.
- A number of schools of education are considering how to make their programs, and their research, more relevant and useful to practitioners.
- An NSF-funded conference on science education policy will be held this summer at the Arlie Center in Virginia, organized by Nancy Brickhouse from the University of Delaware and others.

## What are they saying?

- To influence policy, research needs to be relevant and useful to policy makers and practitioners.
- The results of research have to be communicated more clearly, with the needs and interests of policy makers and practitioners in mind (a model of facilitation vs. a model of dissemination).
- To influence policy, researchers need to understand the fundamental nature and purpose of the institutions where programs will be implemented (i.e. schools as coherent, well integrated learning organizations, not just accretions of programs).
- Research that will be useful requires data systems, especially at the state level, that allow researchers to track student and teacher performance.

(John Easton, IES)

# The Role of Public Policy in K-12 Science Education

*edited by*  
*George E. DeBoer*

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*Series Editors: Editors: Dennis W. Sunal, University of Alabama and*  
*Emmett L. Wright, Kansas State University*

## Chapters and Authors

1. Introduction to the Policy Terrain in Science Education

*George E. DeBoer*

### PART I: MULTIPLE INFLUENCES ON POLICY DEVELOPMENT AND ENACTMENT

2. Science Education Policy and its Relationship with Research and Practice:  
Lessons from Europe and the United Kingdom

*Jonathan Osborne*

3. Science Teacher Education Research and Policy: Are They Connected?

*Jane Butler Kahle & Sarah Beth Woodruff*

4. How do Foundations Influence Science Education Policy?

*Dennis W. Cheek, Julia Holland, and Margo Quiriconi*

## Chapters and Authors

5. How do Funding Agencies at the Federal Level Inform the Science Education Policy Agenda? The Case of the National Science Foundation  
*Janice Earle*
6. *La main à la pâte* : Implementing a Plan for Science Education Reform in France  
*Jean-Pierre Sarmant, Edith Saltiel, and Pierre Lena*
7. The Role of State Education Departments in Science Education Policy Development  
*Dennis W. Cheek, Julia Holland, and Margo Quiriconi*
8. Science Education Policy and Student Assessment  
*Rodger W. Bybee*
9. Influencing the Policy Agenda on Science Education  
*Jodi Peterson*

## Chapters and Authors

### PART II: IMPACT OF POLICY ON CURRICULUM, INSTRUCTION, AND THE EQUITABLE TREATMENT OF ALL STUDENTS

10. How State and Federal Policy Affects What is Taught in Science Classes

*George E. DeBoer*

11. Equity and U.S. Science Education Policy from the GI Bill to NCLB: From  
Opportunity Denied to Mandated Outcomes

*Sharon J. Lynch*

12. The Effect of Educational Policy on Curriculum Development: A  
Perspective from the Lawrence Hall of Science

*Linda De Lucchi and Larry Malone*

### PART III: POLICY IMPLEMENTATION

13. School Leadership for Science Education

*Richard Halverson, Noah R. Feinstein, and David Meshoulam*

# NARST Policy Symposium



- I see this volume as a first step in thinking through what the field of policy research in science education might look like, a field in which the development and implementation of policy themselves are the objects of investigation.

## Next steps:

- If we are serious about having a say in policy as a field, perhaps we need to think about more than just trying to influence policy through research and advocacy. It may be time to think strategically about developing a new sub-discipline within science education focused on policy research and policy analysis.
- Some schools of education already have programs focused on education policy research and policy analysis. (Note that the University of Delaware's College of Education is called the College of Education and Public Policy.) Could schools of education begin to develop specialists in science education policy research?

## Research vs. evaluation vs. policy analysis

- Basic Research (e.g., research on cognition)
- Applied Research (e.g., curriculum research)
- Integrative Research (e.g., synthesis studies)
- Policy Evaluation (e.g., policy effectiveness)
- Research on Policy (e.g., policy as the object of study)
- Policy Analysis (e.g., clarify policy goals, describe alternatives, assess likely impacts, design evaluations)

## Discussion Themes

**Jonathan Osborne:** How the evidence-based policy and practice movement provides an opening for science education researchers to influence policy.

**Sarah Woodruff:** How the research base in teacher education is beginning to "nudge the policy cart forward," but a lack of coherent and accessible data systems to track student outcomes makes policy research difficult. Also, at the state level in particular, it is important to note that policy gets made with or without research support.

**Dennis Cheek (State Education Departments):** The role states play in influencing the national policy agenda in science education. The advantages and disadvantages of a decentralized educational system.

**Sharon Lynch:** The nature of science education equity policy research. How is the effectiveness of equity policy initiatives determined?

## Discussion Themes

**Noah Feinstein:** How policy implementation at the school level has been hampered by the conventional theory of action (content standards + curriculum + PD --> outcomes). How a theory of action in which these factors are mediated by local conditions and school-level leadership could lead to more successful implementation.

**Janice Earle:** How federal funding agencies such as NSF influence the science education policy agenda, how they determine research program directions, and how the role of NSF has changed over the years.

**Dennis Cheek (Foundations):** The role of foundations before and after the federal government became as involved as it is in education. Also, the kind of research that is needed on the role of foundations in science education policy making.