



Inside Science Education Reform: A History of Curricular and Policy Change. J. Myron Atkin and Paul Black. *Ways of Knowing in Science and Mathematics* series. Richard Duschl, ed. New York: Teachers College Press, 2003. 208 pp.

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Inside Science Education Reform employs a unique approach to characterize the scope, nature, depth, and impact of changes in science education initiated from World War II to the beginning of the 21st century—the integration of the perspectives and participation of two active participants in the reform movements. This literary device allows the reader to experience the sense of "being there" as authors Mike Atkin and Paul Black share their experiences. Instead of a dry retelling of reform history represented as independent of human agency, we see what happens when real classroom teachers, university researchers, and policymakers shape and become shaped by curriculum modifications, radical changes in student assessment practices, and increasing demands on teachers and students.

Chapters are structured both thematically and chronologically. Beginning with a discussion of how the aims of science education and the accompanying curriculum provide the context for what goes on in science classrooms, the authors examine issues associated with the boundaries of science education, the association between teaching and learning, and the repositioning of student assessment in connecting the two. Discussion of how the work of science teachers is juxtaposed between the immediacy of classroom realities and student needs, on the one hand, and the abstraction of science education reform and research, on the other, leads to implication for how policy must focus on the complex ways these two domains affect classroom life.

Inside Science Education Reform makes important contributions to the literature by providing exactly what the title suggests: an "inside" look at reforms. The first-person "stories" provide depth and integrity because the authors feel deeply about events they experienced and helped to shape. Further, we read about reform from multiple perspectives: from Mike, as elementary and high schoolteacher to curriculum developer and policymaker; from Paul as physics researcher to teacher educator. Further, as the professional lives of Paul and Mike developed in very different settings—Britain and the United States—we see the often parallel and sometimes disparate evolution of international science education reform movements. We also see how the wider politics of society impact these reforms. Thus, we join Paul as he designs and implements the Nuffield Advanced-level Physics curriculum, and Mike as he looks in classrooms to evaluate the alphabet-soup reforms of the Sputnik era, and



reflects back on his early experiences as an elementary teacher. As Mike describes Stanford's experiment with boundary crossing, we see the challenges in implementing the thematic approach to science education initiated in California. When Paul recounts his involvement in the Secondary Science Curriculum Review, we reflect on the key elements of professional development for teachers.

The text offers implications for policy, practice, and research. It allows readers to see the resonance of current science education developments with those of the second half of the 20th century. In doing so, the book exposes the importance of involving teachers as partners in designing, implementing, and evaluating educational innovations. This is not to suggest that top-down is inappropriate, nor that bottom-up is the right answer. Instead, it emphasizes the necessity of working in both directions simultaneously. The authors' careers demonstrate this complexity, as both were characterized by a mix of teaching and research, with useful tools and skills from each contributing to success in both. Thus, effective reform in science education will be more effective in changing practice when it is organized around the collective participation of teachers and researchers, focused on active learning activities for both partners, and focused on what goes on in classrooms as teachers and students negotiate the content and form of curriculum, instruction, and assessment.

My only wish is for more stories, recounted from the perspectives of many more storytellers. I want more detail from the United States' perspective, and I am sure that those in Britain would like more detail about their national reform efforts. Mike and Paul provide a foundation for further representations of this kind. As we add more first person accounts of science reforms to our knowledge base, we will then be able to analyze the similarities and differences in those accounts, and use that analysis to better understand how policy, research, and practice are interrelated.

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