

gain independent funding from programs such as the current NSF ADVANCE program that replaced POWRE.

So who has come a long way, and in what way? The large sample size coupled with lack of disciplinary bias provides data about women of comparable caliber in research, but some questions remain. Do we accept the generalizations derived from this sample population of women, or is this a weakness in the study? What about women scientists who did not seek and receive POWRE and CBL awards? Are they of the same research caliber, or higher or lower? Would their responses fit the patterns established here? Is this a representative sample of women from all universities and colleges? The thorough and systematic approach Rosser uses in this study is certainly repeatable with another population of women scientists and engineers. However, do we need more convincing data? Do women with other sources of funding differ? "The tremendous love for science and technology and extreme dedication to their research and profession strongly characterized the responses of the overwhelming majority of POWRE and CBL awardees. Most seek to have the barriers removed so they can be productive researchers who take creative approaches to the physical, natural world" (p. 147). Perhaps this description fits the majority of women scientists, but this remains to be seen.

Both the convinced and doubters will find Rosser's quantitative and qualitative approach useful, sample size adequate, conclusions supported with evidence, and writing style eloquent. Women have, indeed, come a long way to achieve success in their academic science careers. Now the call is for institutions to actively maintain the momentum started by dedicated individuals so that the hopes and dreams of a diverse and talented science and engineering community are achieved in the future.

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Teaching Science for Social Justice, by Angela Calabrese Barton, with Jason L. Ermer, Tanahia A. Burkett, and Margery D. Osborne. Teachers College Press, New York, NY, USA, 2003. ix + 197 pp. ISBN 0-8077-4383-6.

The stories in this book speak not only to the ways in which power, access to knowledge, equity, social justice, and culture play a role in how youth experience science but also to how youth respond to difficult situations in order to create a practice of science that has power and meaning in their lives. These stories also underscore our core belief that we must understand how science, schooling, and society might intersect in science education settings to help build a more socially just, critically informed, and sustainable society. (Barton et al., 2004, p. 158)

In this book, Angela Calabrese Barton, and coauthors Jason L. Ermer, Tanahia A. Burkett, and Margery D. Osborne explore the ways that children living in high-poverty urban

environments construct their lives relative to the learning, use, and practice of science. The research in the book was conducted over 6 years at two different homeless shelters, one in New York and one in Texas, where Barton and her colleagues ran after-school science programs for resident children. With the goal of telling “the stories of the lives of the youth with whom [the authors] have worked” (p. 5) so as to better understand the concerns of young people living in urban poverty; the ways that these youth construct a practice of science that is enriching, empowering, and transformative; and how science teaching practice might better reflect the lives and concerns of these students, Barton and her colleagues present stories and analysis that help their readers both understand the challenges faced by these young people and begin to see the ways that they use science to take charge of their lives, despite the daunting circumstances they face.

Barton et al. do not shy away from clear-eyed descriptions of the shelters where they worked—places in which children’s lives are constrained by often arbitrary-seeming rules and regulations—nor from sharing details of the economic, social, and emotional challenges faced daily by these children. They tell us about Kobe, a resident of the Southside Shelter in New York City, “a tall, handsome, dark-skinned ‘16-going-on-17’ year old African American young man . . . [who] [d]uring the time [the authors] worked with [him] carefully burned a gang symbol into the top of his left hand . . . [whose] only older brother was ‘in jail down south,’ [and who was left] for days at a time . . . to care for his [younger] siblings” (p. 19). And they tell us about Claudia, a fourth grader who lived at the Hope Shelter in Central Texas because her family had met three conditions for support: “the family income was below the poverty level; they did not have immediate family in the area; and Claudia’s mother was actively seeking better paying employment” (p. 51). Although all of the children living in this shelter experienced hardships, Claudia’s circumstances were particularly difficult—“visits to her shelter home nearly always revealed an empty refrigerator and empty shelves” (p. 51). Against this backdrop of severe urban poverty, where children are often expected to take on adult duties and responsibilities as well as the more typical childhood activities of going to school and growing up, Barton and her coauthors explore the ways that these children define, learn, and practice science.

The theoretical framework adopted by the authors as they struggle to make sense of the contradictions that emerge in the lives of these children draws on research in the critical/feminist tradition. They reject the “deficit model” adopted by many researchers who focus on urban science education, literature that, as they put it, “draws our attention, for the most part, to what it is that urban youth lack in terms of achievement, resources and educative opportunities” (p. 24). The authors propose instead to find “a more positive, empowering, and epistemologically consistent way of understanding” young people’s participation in and achievement of science (p. 27). This approach focuses our attention on understanding what these students bring to learning situations, rather than on what they lack in terms of achievement, resources, or educative opportunity. Instead of framing questions about academic achievement on student performance on high stakes tests, they urge us to “consider the kinds of things youth do in out-of-school contexts such as organized clubs” (p. 30). Instead of framing questions about resources and opportunities on the physical resources and educative opportunities these students *cannot* access, they urge us to consider the “individual knowledge, skills and expertise” that students bring to learning contexts (p. 32), and to consider what it would mean to “begin science instruction from the standpoint of the learner rather than from the standpoint of the state standards or even from the standpoint of scientists” (p. 33). While the authors caution us not to forget that there are serious disparities in the resources and opportunities available to these youth, they also encourage us to look more carefully at the

lives of these young people as we begin to rethink the goals and practices of science education.

While the book does not include specific practical recommendations that could be implemented in urban school classrooms, the authors leave readers with a new question—“What kinds of science events, structures, and relationships help students view science as a transformative influence in their lives and communities?”—and identify three themes that frame the experiences of the youth whose lives they have shared: thinking about events through multiple points of entry, thinking about structures through recognizing networks, and thinking about identities and relationships through a desire for change (pp. 162–163). In their conclusion, Barton et al. urge us to acknowledge that science education has a central role in any of our efforts to build a more just world. They remind us that “Science education is political; it promotes particular images of power, knowledge, and values by rewarding particular forms of individual and institutional behavior” (p. 168). And they encourage us to look closely at the lives and experiences of those students we hope to teach.

As an educator who firmly believes that it is the responsibility of all educators to work for a more just society, I commend the authors for listening closely to the voices of these children; for reconsidering some of the often taken-for-granted assumptions about the lives, interests, and experiences of poor urban youth; and for presenting readers with an alternative way to think about the role of science education in helping these young people transform their lives and their communities. As the authors explain, “Youth can and do influence the domain of science and schooling and they are and can be shapers of policies on a local (home, neighborhood, school, city) and broader level, if we only listen” (p. 168).

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Rethinking Scientific Literacy, by Wolff-Michael Roth & Angela Calabrese Barton.
 RoutledgeFalmer, New York, USA, 2004. xiv + 240 pp. ISBN 0-159-4843-6.

The most striking passage for me in *Rethinking Scientific Literacy* is also one that encapsulates a central theme of the book, “[E]nacting scientific literacy hinges on much more than the content of the educational activities explored. It hinges on the expression of community from moment to moment” (p. 122). This passage lucidly bridges a major idea in the book, scientific literacy as collective praxis, with the lived experience of science teachers. The suggestion of “moment to moment” elicited my own episodic memories of those lessons that exemplified a good day in science class. During those lessons, the interaction of conversations, questions, tasks, and materials combined in such a way that the science learning of the group was almost tangible to the senses. The learning evolved not from the nature of

Teaching science with a critical lens that is aware of the dynamics of racism and that exposes the hidden and master narratives may elicit the practitioner to be often displaced. This session aims to affirm that racial / social justice approaches to science teaching are needed and how these approaches necessitate spaces that aid in cultivating and galvanizing these frameworks to science. Affinity spaces centered in racial / social justice praxis help educators to reflect on pedagogical practices; promote a sense of collective rejuvenation, unhinging feelings of being the "only one"; and inspire Social justice is the relation of balance between individuals and society measured by comparing distribution of wealth differences, from personal liberties to fair privilege opportunities. In Western as well as in older Asian cultures, the concept of social justice has often referred to the process of ensuring that individuals fulfill their societal roles and receive what was their due from society. In the current global grassroots movements for social justice, the emphasis has been on the breaking of Looking for social justice lesson plans? These free resources are a great help in helping to teach social justice topics and themes in your classroom. With no federal standards for the topic in place, teachers are left to their own devices for creating or finding social justice lesson plans. Our country's history is rich with resistance, organizing, and civil rights campaigning—but for many teachers, these movements seem new. If you want to guide your students through conversations about inclusion, diversity, and equity, it's important to both teach the history and build upon the work of the countless people who contributed to social justice movements throughout the years. Colleges can teach science through a social justice lens and turn curricular challenges into opportunities for inclusive excellence, write Laura W. Burrus, Audrey Parangan-Smith, Blake Riggs and Cathy Samayoa. What those activities have in common is that they teach biology through a social justice lens. For example, one activity explores the disproportionate burden of COVID-19 among communities of color, giving students the opportunity to analyze publicly available, real-time COVID-19 sequence data. The activity also highlights the efforts of Dr. Kizzmekia Corbett, a Black viral immunologist leading COVID-19 vaccine development efforts at the National Institute of Allergy and Infectious Diseases.