BOOK REVIEW

EQUITY IN SCIENCE: REPRESENTATION, CULTURE, AND THE DYNAMICS OF CHANGE IN GRADUATE EDUCATION

REVIEWED BY

LIANNE FISHER
JOINT EDUCATION STUDIES, BROCK UNIVERSITY

Posselt, Julie R. (2020). *Equity in Science: Representation, Culture, and the Dynamics of Change in Graduate Education*. Stanford, CA: Stanford University Press. Pages: 223. Price: 35.09 CDN (paper); 115.00 CDN (hardcover).

If your work is in related to graduate education and you want to contribute to a more equitable education for your graduate students—read this book. In fact, if you are at all interested in equity or university education this book is for you. Although the focus of this volume is equity and graduate education in the STEM fields (in the United States), the research and analyses contained within extend to the broader, interdisciplinary context of graduate education in general.

The research described in this work takes an ethnographic approach utilizing multiple observations and interviews. Comparisons of different equity initiatives are provided, and differences and successes outlined. The descriptions and analyses are rich and detailed and provide many insights and strategies to build inclusive graduate programs and approaches that have been shown to yield success. The need for interdisciplinary approaches that expand and open up the boundaries of a discipline is one such research finding.

Boundary work encourages members of a discipline to reflect on, and examine, the ways in which disciplinary knowledges, practices, and methods can contribute to inequity in graduate programs. Without reflective practices, any equity initiatives remain partial as they do not attend to the limits of disciplinary knowledges and the necessity to engage with other scholars and multiple modes of scholarship. For those working in Ontario, this focus on the limits of knowledge may seem familiar: It is one of the Graduate Degree Level Expectations (GDLEs) endorsed by the Council of Ontario Universities.

The first three chapters (Chapter 1: *Equity Work as Science*; Chapter 2: *Managing Complexity in Institutional Change*; and Chapter 3: *Eroded Boundaries and Everyday Interactions in Geoscience Fieldwork*) situate the research in post-humanism and offer concepts from quantum theory to understand and think about the ways to enhance equity in post-secondary education. The theoretical backdrop is engaging and detailed. For example, when discussing quantum theory, a focus on change as a non-linear process situates the current research and the need to carry these ideas through change implementation. Also, the importance of a focus on people, and people-in-interaction, whose interactions are embedded in social and disciplinary traditions, is kept front and centre throughout the work. As Posselt notes: "A serious conversation about equity . . . should be informed by data about real people, without reducing people to mere numbers or statistics" (p. 23). You will find in this book a holistic analytic approach that integrates theory, quantitative approaches, and story, to move forward the project of a more holistic and equitable graduate education.

The next chapters (Chapter 4: *Impression Management and Organizational Learning in Psychology and Chemistry*; and Chapter 5: *Inclusive Design and Disciplinary Boundary Work in Applied Physics*) provide the backdrop for why equity initiatives that focus predominantly on recruitment and access do not lead to improved quality of life for equity seeking individuals on

campus and beyond. If learning experiences and environments on campus are not designed inclusively, students from diverse backgrounds often find themselves in learning spaces detrimental to their own well-being, and well-being includes academic advancement. Recruitment of students from equity seeking groups is not enough: What happens on campus matters. Mentoring relationships and instructional design are offered as two important areas to address equity needs and foster academic well-being and belonging. In this section of the book, the important contribution of the use of Universal Design for Learning (UDL) might have been enhanced and strengthened by including the principles of UDL designed specifically for educational settings (e.g., see www.cast.org).

The research findings make it clear that graduate students often have to endure and persevere through trials of oppressive, harassing, demeaning, and discriminatory events to demonstrate fitness to be accepted into the "club" once they are in a graduate program. The Applied Physics (AP) program, discussed in Chapter 5, recognized and took seriously this problem. The conditions necessary for learning were examined and used to design for learning. A sense of belonging, with active care for students as whole persons and not only a focus on intellectual development, was found to disrupt detrimental disciplinary structures and practices. This AP program designed inclusively—in this case, from the inside out—did manage to change the learning climate. In addition, social relations and the everyday interactions within the AP program were addressed. The "willingness to alter traditional intellectual, organizational, social, and professional boundaries" (p. 89) was integral to creating a space of access and inclusion: a space where graduate students feel both support and belonging. This program also created new and inclusive admission criteria, discarding exclusionary admission processes that, in the end, defaulted to only numbers (GPAs or GRE scores) to characterize student potential. In this program evidence of *intellectual adventurousness* was used as a criterion for AP program admission.

In the remaining chapters of the book (Chapter 6: *Advocacy and Management in Astronomy and Physics*; and Chapter 7: *Retooling Science for Equity Through Cultural Translation*) Posselt takes us back to theory to contextualize recommendations from the study, cautioning us not to take the recommendations and generate a checklist for completion but rather to engage in processes, build inclusively, and support programs to identify goals and metrics that reflect experience, and not to define equity initiative success by participation metrics.

The comparison of disciplinary cultural beliefs from the perspective of advocacy versus managerial culture provides more insight into why inclusive design is integral to success for equity initiatives. One example is giving time to foster understanding and collegiality and to engage staff, students, and professional organizations in meaningful ways. Advocacy cultures engage students to establish new processes and are not just tokenistic consultation. Managerial culture tends to privilege knowledge, skills, and attitudes in relation to equity initiatives. Advocacy culture was found to have greater success, but it is inclusive design that is garnering the greatest success.

When I finished reading this book I was left with a renewed desire to continue to contribute to access, inclusion, and belonging in academia, and the energy to persevere with this. When individuals take the oppressive stance that the admittance of equity deserving groups into graduate programs diminishes such programs and institutional scholarship, the evidence in this book can be offered to counter such insular and outdated scholarship. The structure of the book, in and of itself, is a beautiful, thorough, and rigorous example of engaged interdisciplinarity and culture translation.

It was such a pleasure to read and learn of the work undertaken across the last decades to design for equity. No longer, as Posselt points out, can we argue that more time and data are needed to initiate change: Data are plentiful. There is much to be done to build equitable graduate education but here, in this book, is the evidence that we should wait no longer for more data or time, nor continue to use outmoded and ineffectual processes. People are working for change and now we can share in their scholarship and contribute to meaningful graduate education for equity seeking students.