# Chapter 5
# Investigating Social Justice Science Education Praxis through Culturally Sustaining Pedagogy

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## ABSTRACT

*Social Justice Science Teaching represents a vision of science education that encapsulates teaching practices that sustain students' cultures, thus working towards all students, especially traditionally marginalized students, being rightfully present in a science classroom. In this chapter, three teacher educators reflect on how they worked to support novice science teachers in teaching science for social justice through a professional learning opportunity called the Social Justice Science Curriculum Writing Summer Institute (Summer Institute). They put forth five dimensions of their social justice science education: 1) desire-based approaches; 2) authority sharing; 3) towards a pluriversal framing of science; 4) meaningful implementation; and 5) critical reflexivity. Descriptions of each dimension are included and connections*

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*to example activities from the Summer Institute to illustrate how these dimensions can be enacted. The authors conclude by inviting the reader to engage in reflection through a series of prompts aligned with their five praxis dimensions.*

## INTRODUCTION

There exists a common vision of a scientist – that of an elite white[1] man who competed against, and rose above, other scientists to arrive at a specific and objectively true piece of knowledge (e.g., Carlone & Johnson, 2007; Prescod-Weinstein, 2020). While this scientist is ascribed a social status, race, and gender, the narrative of science itself is presented as one separated from such socially constructed labels; that is, the discipline of science is commonly seen as neutral, objective, apolitical, and acultural. Taken together, the science of the white man is positioned as the *only* legitimate way of knowing, being, and doing, while simultaneously claiming that other systems of knowledge generation don't belong (see the Listening Letters from New Zealand for a recent example; Stewart, 2024) (e.g, Aikenhead & Elliott, 2010; Bang et al., 2012; Morales-Doyle, 2019; 2024; Warren et al., 2020). Thus, those who do not align with this narrow vision of science are devalued (Kimmerer, 2013), marginalizing scientists who do not conform.

Similarly, science education, and science educators more specifically, often perpetuate the devaluing and erasure of multiple ways of knowing, being, and doing. Typically in science classrooms, only the science knowledge and practices ascribed to predominantly male and European American scientists are valued and treated as "settled" (Bang et al., 2012, p. 303). If students have varying conceptions of what science is or how to conduct science that do not align with these patriarchal Eurocentric ideals, then their ideas are likely to be dismissed by the teacher or other classmates as being off topic, a joke, or even a challenge to the teacher's authority as the scientific knowledge-holder in the classroom. These moments can lead to disengagement from the content (Bang et al., 2012; Greenberg et al., 2025) and have potentially negative consequences for a student's science identity development (Carlone & Johnson, 2007). Thus, students are socialized into thinking that Eurocentric science is the *only* acceptable form of science.

For decades, scholars of color have been studying this phenomenon and designing pedagogical innovations that move beyond assimilation with Eurocentric ideologies towards a (science) education that sustains students' cultures (e.g., Woodson, 2023; Ladson Billings, 1995; Paris & Alim, 2014; Bang et al., 2012; Muhammad, 2022). Calabrese Barton and Tan (2019, 2020) drew on rightful presence as a way to reimagine classroom dynamics to support *all* classroom community members' belonging as their full selves, rather than some students being required to change