

FOREWORD

THE FIELD OF SCIENCE education research is often criticized by practitioners in classrooms as being disconnected from the everyday realities of working directly with young people. Practitioners consistently complain that they cannot bring the work being produced by academics into classrooms because of how it is said. For teachers, academic research seems to ignore real-life contextual factors that directly affect teaching. This circumstance, coupled with the impression that researchers seem to enjoy the esoteric nature of academic research at the expense of connecting with real people, creates a chasm between the researcher and the teacher. In general, STEM education researchers focus intently on the language of science, mathematics, and engineering in order to gain acceptance into content communities that are not invested in K-12 education. There is a misperception among academics that scientific language denotes academic rigor, and in the search to be seen as serious and rigorous they must adopt language that alienates the teacher.

Science in the City: Culturally Relevant STEM Education champions a different type of STEM education. The work challenges established ideas about what it means to engage in education research through a merging of research, personal narrative, and general observations about how the world works. In each chapter, the book's themes are anchored to the present day in a profound way. A "new era" is explored through Brown's critique of long-standing academic traditions;

how STEM education operates in the present day; and how it should work moving forward. There is a “presentness” to this work that is provocative in an era where most academic research in the field is a rehashing of what has been said or done before. Current work related to language in science discusses its variance from everyday English; however, it doesn’t account for the importance of culture, creativity, or syntax in the conversation about science language. *Science in the City* probes these critical dimensions and discusses factors like *belonging* and *generational trauma* as factors to consider in STEM education. It is mind-boggling that topics so logically related to underachievement are absent in the literature, and it is powerful that they are brought to the fore and seriously considered in this book.

Brown uses accessible language to describe the problems within STEM education and shows the ways that language and context affect children who are learning science. The work offers both subtle and overt critiques of the status quo in science education, along with possible solutions. We learn about how television shows reinforce stereotypes about who can be a scientist; how different cultures define science; how science identity is shaped over time; how neutrality in science language is an impossibility; and how perceptions of “whiteness” and “blackness” play a significant role in our relationships to and perceptions of who can or cannot engage in academic science. We learn how an overarching hierarchy that exists both within and outside of STEM education equates content language to content knowledge. *Science in the City* also shows us that the language of science has been coopted by those who seek power even when they have no true command of the subject and makes the case that everyone can “do science” if there is a recognition of their entry point into the discipline.

One of the most significant offerings in the text is *disaggregate instruction* pedagogy. This is not the crux of *Science in the City*, but a powerful overture for the field offering a distinct method to good science teaching that scholars can appreciate and that teachers can

follow. Brown models this powerful idea in his writing. His introduction to the concept is masterful, taking the reader through the process of understanding, self-assessing, and developing clarity; connecting to our everyday experiences; formulating it in the language of disaggregate instruction and scaffolding it to other concepts. It is through this type of work—one that models while teaching—that we transform STEM education.

When scholars and practitioners are offered details about what students need without being too prescriptive or too general, good work takes root. To make this type of substantive contribution to an area of study that hangs on tightly to its exclusionary traditions is challenging. Yet this is what this book accomplishes. *Science in the City* provides a focus on populations that have been made to feel that they do not matter by showing us why and how we STEM educators are complicit in this process. Bryan Brown convinces the field that focusing on young people feeling and sounding good—and paying attention to the details in their language and contexts—will contribute to the mastery of science content.

The new frontier in STEM education is academic work that is equally as focused on the traditional mechanisms of how the content is delivered and a concurrent consideration of the context in which it is being delivered. Brown's work spearheads this new direction through a consideration of a more robust and holistic approach to science education that retains academic rigor while holding tightly to the important humanistic element of teaching and learning. His considerations of language and content are cutting-edge and transgressive, yet in line with what many STEM educators profess to be their intention—to have all young people develop a relationship with STEM disciplines that have historically been made to be inaccessible to too many.

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