Table of Contents

Foreword

When my colleague, Dr. Alejandro Gallard Martínez, first approached me about writing this foreword, I admit I was hesitant. I study the way intersections of language, culture, and identity shape educational experiences for bilingual and Latinx folks. I work through arts-integrated methodologies and pedagogies to paint counter-narratives that center the experiences and stories of these often-marginalized communities. I'm not a Latina in STEM.

As I began to interrogate that declaration, I wondered how I'd ever arrived at such a conclusion. Maybe it reflects a limited view of what it means to *do* STEM work. My sister applies her extensive knowledge of human anatomy and chemistry in her daily practice as an aesthetician. But no one thinks of her as a STEM person. My brother, on the other hand, is a STEM person. He holds a Ph.D. in geology and does computer programming for a prestigious university in Switzerland. If I think back, I'm pretty sure he's the only Latino in STEM I could have named, had I been asked before I began my graduate studies. But as for me, I'm not a STEM person.

When I was very young I wanted to be an inventor. I excelled at math, science, and drafting throughout my K–12 education. I enjoyed my required science courses in college. But I never chose to pursue science. Not even for a moment. As a middle school teacher in an inner-city technology magnet school, I supported my students' learning of robotics, computer programming, word processing, rocket

building, and engineering. As a high school teacher of highly diverse students participating in the Advancement Via Individual Determination (AVID) program, I guided tutorials in AP physics, human anatomy, and calculus. I have worked in various extracurricular settings, teaching and leading math projects and science experiments. And I never once thought of myself as a STEM educator.

In my Ph.D. program, I worked as a research assistant on a project that examined teachers' use of technology in schools with one-to-one initiatives. I assisted in designing the professional development workshops, facilitating the coaching sessions, and helped model/co-teach with technology in the science and English Language Arts classrooms. And it never occurred to me to think of myself as a STEM researcher.

Why? What kept me from identifying as a STEM person? I'm not a Latina in STEM. I think I have constructed this identity through a process of elimination and exclusion. And as I reflect on this process, I realize that my relationship with STEM is not even relevant. It's about representation and visibility. After all, I would never have pursued my Ph.D. in education if it hadn't been for a seemingly off-hand comment from a professor in my M.Ed. program. She'd done inspiring work advocating for bilingual and English language learner (ELL) students' rights and once said to me during a conversation about my work, "You should continue on and get your Ph.D." It was this explicit encouragement, coming from a Latina university professor, which first made me consider an academic career. It had literally never occurred to me that this avenue of study, this path, could be for me. It would be a few more years and several devastating acts of legislation before I would act on her recommendation and return to graduate school.

I've been thinking a lot lately about how we see ourselves in others and how representation and narratives impact our understanding of the world and ourselves. In the USA, the disparity between the number of women and men in STEM professions is well-documented and has been a focus of educational research for decades. Even as the nation becomes more racially, ethnically, and culturally diverse, people of color (and most especially Latina/o/x people) continue to be underrepresented in every branch of the STEM fields. Many programs, policies, and interventions have been put in place in an attempt to remedy the dearth of women and people of color in STEM, and it remains to be seen what impact these will have in the long run.

Unfortunately, the dominant narratives around underrepresentation in STEM swirl around deficit perspectives and hide behind flawed meritocratic ideologies. The gaps in STEM achievement and attainment are painted as the natural outcome of a lack of interest, as opposed to the inevitable result of a lack of access. Of course there are innumerable factors that play into the current state of Latina

underrepresentation in STEM education and professions, such that discussions of immigration and migration patterns, residency status barriers, and the history of systemic discrimination create static that often interferes with and obscures the true issue at hand: we need to see more Latinas in STEM, we need to hear their stories.

And then it hit me: *this is exactly the point.* I'd been conditioned my whole life to think of STEM and STEM folks in a very particular way. I was blind to the way that commonly held (narrow) definitions and the lack of Latina representation in STEM had informed my very thinking on the idea. A lot of the conversation around women in STEM, people of color in STEM, and especially women of color in STEM, often focuses on this idea of representation. It's hard to imagine who you can be, and what you can do, without seeing an example to fuel your aspiration.

Even as we make small strides in leveling the playing field and acknowledging the gaps in education and career path choices, there are still entire fields of study that feel inaccessible, even though they may look inclusive (or even claim to be inviting) from the outside. And so the question nags: How do we tell our young Latinas that they can be anything they want? That science is for them? That engineering is absolutely an option? That they are not weird for enjoying math? That coding and video games are for them, too?

As the Latinx population continues to grow, it is crucial that we move beyond proving that a gap does, in fact, exist, and move into an exploration of how best to encourage greater participation in STEM pathways. In the meantime, we can offer these stories of Latinas who persevere and study and succeed. My sincere hope is that one day, seeing women of color (especially Latinas) standing in front of the classroom, leading the laboratory experiments, and modeling that sense of wonder and inquiry into the natural world, won't be unusual. If we truly want to open up pathways for women and people of color, particularly Latinas, we need to rethink what STEM is, what scientists look like, and what it means to belong. And so, until we've reached that real representation of Latinas in STEM, we can share their stories and spark that sense of joy, inspiration, and aspiration.

I love the work I do now and believe that it is deeply important. I prepare practicing and future teachers to work with culturally and linguistically diverse students. I don't regret my education trajectory (other than my poor choices regarding student loans), but now wonder: would it have mattered if I'd ever had a Latina science or math teacher? Or even a Latina colleague in the STEM fields? In my P-12 career, the only Latina teachers I ever worked with were, like me, teachers of English to Speakers of Other Languages (ESOL) or Spanish.

Yet, as I continue my work in teacher education, I increasingly see the importance of valuing and sharing the stories of people from marginalized and underrepresented groups. More than this, it is imperative that we examine their successes and provide personal accounts that counter negative and harmful narratives. The authors of this book aim to do just this—to examine and impart the experiences of Latinas who (unlike me) choose to pursue STEM pathways and find success there.

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