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# Preface

As coauthors of this book, we are closely connected to disabilities, be it as a disabled individual or as a parent of an autistic teenager, and we care deeply about the mathematics education of those with disabilities. We have taught in public schools and have worked alongside students from richly diverse cultural and linguistic backgrounds and lived experiences. However, we struggled to leverage these rich experiences in our mathematics classroom, especially when it came to students with disabilities. During the past few years, we have worked with current and future teachers of mathematics to advance their practices, and in doing so, often learned about their desire to become better teachers of students with disabilities. These teachers told us that they lacked the confidence, knowledge, and skills needed to achieve that goal. Not enough is offered in teacher education programs or after. What is offered typically falls short in terms of drawing on the powerful experiences of students with disabilities and shortchanges these students as mathematics doers and thinkers. Instead, in practice and in research, we often find that individuals with disabilities are dehumanized.

By dehumanization, we mean that disabled students are usually not offered opportunities to engage in mathematics in meaningful and connected ways. Rather, on the basis of narrow but “valid” educational assessments, they are presumed to have knowledge and skill gaps that must then be remediated in a disengaging, meaningless, and disconnected manner (e.g., rote, parroting, “drill and kill,” and so on). In other words, they are held to low expectations and taught accordingly. This book addresses, in relatable ways, very complex issues that contribute to the dehumanization of students with disabilities in and out of mathematics education; but more important, it offers ways that teachers of mathematics can enhance and humanize their practices when it comes to this particular group of students. The power of humanizing mathematics education lies in the opportunities that we afford students to show us how they are making sense of the discipline and how they may expand their mathematical sense making.

We use the concept of humanizing mathematics education as a matter of human rights to counter conventional, deficit-centered forms of education involving students with disabilities. Educators, of course, do not intend to dehumanize or deny the rights of any student. Most educators join the profession to do good, and most would like to improve their practices on a continuous basis. This book is about enhancing the practices of mathematics teachers of students with

disabilities. We use the word *of* strategically as one way to think about the mathematics *of* students with disabilities instead of *for*. This minor word substitution has a deeper meaning connected to the humanization of students with disabilities in mathematics

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classrooms. The word *of* signals that the mathematics belongs to the students. In contrast, the word *for* is less clear, but it typically means that others decide what is appropriate and necessary mathematics *for* students with disabilities. This often involves telling the students the exact way to do mathematics and have them mimic the said procedure or fact. Similarly, mathematics “for” is also used to justify the types of mathematics that will be “useful” or “functional” for this very diverse set of students after they have completed school. This often plays out as building competence in mathematics for life skills such as going to the grocery store, paying bills, paying public transportation fares, and so on. In turn, the meaning of the “of” versus “for” distinction matters so much to us that we have designated the “of” as a main theme of *Humanizing Disability in Mathematics Education*.

As classroom teachers of mathematics, we could not quite pinpoint the issues we had with such forms of instruction for students with disabilities, but we knew something was not quite right. So, through our research as graduate students and teacher educators, we started to try to better understand this issue. Over the past few years, we’ve seen tremendous progress in humanizing mathematics education in research and practice. This progress points to two other big themes in this book: (1) students with disabilities are mathematics doers and thinkers and (2) we must resist the idea of disability as tragedy. So particularly for those, like us, who care deeply about persons with disabilities and their experiences in and out of mathematics classrooms, this is an awesome time to be a teacher of mathematics. In this book, we are thrilled to share some of this recent progress and to provide ways for you to join us in advancing the humanization of the mathematics education of each and every student.

Throughout the book, we share our individual experiences and ideas to support your own learning and practices involving persons with disabilities and those “at risk” of being identified. These ideas and experiences often revolve around students we worked with as teachers of mathematics, teacher educators, and even our own experiences as learners of mathematics with an identified disability. (Unless otherwise specified, names of students, parents, and all actors in our stories are to be regarded as pseudonyms.) The main purpose of sharing these stories is to highlight the power of humanizing the mathematics of students with disabilities.

In this book, we also refer to disabilities very broadly to encompass the full range of categorical disabilities as recognized by the Individuals with Disabilities Education Improvement Act (IDEA, 2004) in the United States as well as students who have not received a disability label (e.g., students with mathematical learning difficulties, students “at-risk” of mathematics failure) and to students who may be categorized differently in countries across the globe. The term *pan-disability*<sup>1</sup> captures this full range of categorical descriptions and experiences. In several regions in the U.S., special education and dual-credential teachers are licensed according to the severity of disability categories. For example, the lingo that one may come across in these regions goes something like “I’m licensed ‘mild-to-mod’” (meaning mild to moderate disabilities) or “severe-profound.” These categories are typically but not always associated with the location of the special education services: “mild-mod” being identified with special education services provided within general education classrooms<sup>2</sup> and “severe-profound” students served in segregated settings, commonly referred to as “fully self-contained classrooms.” Similar special education placements are common outside<sup>3</sup> of the United States. In some cases, due to discriminatory practices, school-age disabled individuals across the world<sup>4</sup> do not have the opportunity to attend schools at all (Plan International 2013). We want to emphasize that when we refer to disabilities, we really mean *all* and do not focus solely on the mild-to-mod student, who is more likely to be in the general education mathematics classroom, but rather we keep the severe-profound group not only in mind but clearly signal the urgency of humanizing their mathematics education. We intentionally draw on stories of students in the severe-profound categories because traditionally, they have been denied opportunities to engage in humanizing forms of education,<sup>5</sup> including in mathematics. This category overlaps in some ways with “low-incidence disabilities,” which is another cluster category utilized in the United States. As the term suggests, low-incidence disabilities are the types typically not found in regular schools (e.g., blindness, “low-functioning”<sup>6</sup> autism, multiple disabilities) and requiring significant support. Regardless of disability type, severity, membership occurrence in typical schools, or levels of needed support, we also challenge ideas and perceptions of disability hierarchies<sup>7</sup> that claim that certain categorical disabilities are “superior” than others on the basis of how close or how far the disability is to not having a disability, that is, being “normal.” We wish that we would not have to explicitly state that all disabled individuals are humans and should be treated accordingly with dignity. Yet, in practice this fact is not obvious to many, and so we must continue to state it. Think of a typical school setup where “normal” students and those who are not “normal” are taught separately on the basis of the supposed unbridgeable differences between the two. Mathematics teaching and learning practices are notoriously at fault for creating and reinforcing these divisions by tracking students based on mathematics ability.

You will also notice that throughout the book, we shift between using person-first language (e.g., individual or students with a disability) and identity-first language (e.g., disabled person, autistic, blind individual, crip). We do this intentionally to honor the different preferences of those with disabilities or disabled individuals (Dunn and Andrews 2015). In the case of identity-first, the language signals pride<sup>8</sup> in their uniqueness and the richness they bring as individuals rather than shame, deficit<sup>9</sup> or perhaps tragedy, for example, as well as a movement toward self and group empowerment.

In terms of number of pages, this is a relatively short book, but there are some dense concepts that may require you to stop, reflect, and if needed, reread certain passages. We attempted to make these packed concepts accessible to all our readers through the sharing of stories and examples. We also recommend that you read the book in sequence as each chapter builds on concepts from previous chapters.

In the first part of this book (chapters 1 to 4), we explore some of the core ideas we have about mathematics, disabilities, and the practice of mathematics education of disabled individuals. We challenge the justification of deficit-centered mathematics teaching and research involving disabled students. If you look for problems, that is

what you are going to find. If “Rosalie” is a student who has “special needs,” this often leads to a deficit trap. Specifically, those around her will tend to focus on her deficits in order to fix them and then explore all the ways in which Rosalie as a person needs remedying. Moreover, such focus has connotations of disability as tragedy, which is explored more deeply in chapter 5. In sum, Rosalie disappears as a unique and creative learner. She becomes a problem category that matches all the deficiencies associated with whatever impairments she really or purportedly has. Her assets, learning strengths, lived experiences, and the unique ways she thinks and reasons mathematically get overlooked. These are not what they are trying to find and understand. Rosalie’s worth and potential areas of pride as a disabled individual are suppressed. We share with you what can happen if we instead humanize the mathematics education of Rosalie and other disabled students.

We hope that you embrace the complexity of this work as it requires embracing the diversity of knowledge and the ways of knowing as the basis for mathematics (plural form) rather than math (singular form). In other words, mathematics is not one thing, practiced in one way;

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rather there are many forms of mathematics and many ways of knowing and doing them, which is explored further in chapter 2 and is a big takeaway of this book. To embrace this diversity in mathematics knowing and doing, we recommend incorporating a crucial principle that could be summarized as follows: The very sense of identity of each student with a disability, their experiential sense of power, and their sense of belonging enrich the collective experience of mathematics by all individuals inside and outside the classroom. Every time that one partakes in an exclusionary and dehumanizing practice toward students with disabilities (no matter how symbolic or marginal it might seem), one is also hurting the collective body of mathematics learners in that group. This is at the very core of active learning practices, as we shall see throughout *Humanizing Disability*. In chapters 6 and 7, we share some practical examples to further support your learning and unlearning in teaching and learning mathematics involving disabled students in and out of schools.

At the end of the book, there is a section of endnotes as additional reflections and informational ways to expand on some of the issues addressed within the chapters. You can go through the book without interruption or flipping pages and explore the references as convenient. Readers thirsty for additional materials and reflections will find them handy.

You may be reading this book as someone who works alongside disabled students already supporting mathematics teaching and learning that empowers them, and would like to enhance your practice. You may be a teacher (or a prospective one) designated as a general or special educator who wants to better understand ways to support students with disabilities in more meaningful types of mathematics teaching and learning. Or you may be a teacher educator committed to sustaining teachers and teacher candidates to better assist the mathematics learning of each and every student. You may be a district or site leader or a mathematics coach who would like to transform mathematics practices to better serve all students and their families. You may be a family member of a person with a disability who would like to learn more about how to encourage your Individualized Educational Plan (IEP) team to craft more powerful goals and support. Perhaps most important, you may be a disabled person who would like to learn more about ways to work alongside educators and other advocates to leverage mathematics in order to make our world a more just<sup>10</sup> and humane place for all. Whatever your role, we hope that *Humanizing Disability in Mathematics Education* and the stories we share fit all these roles and have enough vigor to spark ideas to enact more powerful mathematics teaching practices of disabled students.

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