



Humanizing Disability in Mathematics Education: Forging New Paths. Paulo Tan, Alexis Padilla, Erica N. Mason, and James Sheldon (Eds.)

The National Council of Teachers of Mathematics Inc.,

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Abstract

This book review of *Humanizing Disability in Mathematics Education: Forging New Paths* highlights the main contributions of a bold and unique book that dares shine a light on traditional dehumanizing mathematics education of disabled students. The review found the theoretical contributions offered by the authors to be an excellent foundation for mathematics educators and special education specialists to shift the paradigm in their classrooms to one where the mathematics of students with disabilities is at the focus. However, this review found the practical applications of these theories to be somewhat lacking.

Keywords Book review · Disability · Mathematics education · Humanizing disability · Social disability theory

Trust the collective wisdom of your students. (p. 68)

This advice from the authors of *Humanizing Disability in Mathematics Education: Forging New Paths* (referred to hereafter as *Humanizing Disability*) lies at the very heart of the book, which dares to shine an illuminating beacon of light on the traditionally bleak, dehumanizing conception of disability in mathematics education. Paulo Tan, Alexis Padilla, Erica N. Mason, and James Sheldon offer seven brief but dense chapters introducing the reader to an alternative perspective of disability, one that is social rather than medical.

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This review will first discuss the main contributions of each chapter, followed by a general critique of topics *Humanizing Disability* leaves untouched.

Part 1: The nature of mathematics: its learners, its policies, and its practices

Part 1 of *Humanizing Disabilities* contains four chapters setting the stage for an alternative model of what mathematics is and what humanized mathematics classes look like. With a long tradition of conceptualizing mathematics *for* disabled students (Carnine, 1997; Gersten et al., 2009; Montague, 1997), this book begins strong with a paradigm shift towards a “mathematics *of* students with disabilities” (p. viii). With detailed examples of humanized classrooms taught by one of the authors and several other classroom teachers, the opening chapter illustrates student-centered mathematics classrooms. Elements of these classrooms include mathematical tasks that have a low floor and high ceiling, a focus on student constructions, and moving beyond verbal ascetic care for students to authentic care (Rector-Aranda, 2019). This is only possible when teachers focus on their students’ mathematical constructions rather than their deficits.

The second chapter addresses the negative beliefs undergraduate teachers often hold about mathematics, beliefs which are held beyond their studies and well into their teaching careers. The “fear, anxiety, and adverse emotions, which ultimately permeate to their students” exist because the teachers have encountered only “limited forms of mathematics – forms that do not belong to them” (p. 19). *Humanizing Disability* reminds readers that these conceptions too often lead to computer-based algebra programs that are deficit focused, teachers who regulate students with disabilities to low expectations, and students who see no use for mathematics beyond economic gain. But when mathematics belongs to students, they can make connections beyond the classroom, beyond economics, to their own experiences and to the world. While these first two chapters provide mathematics teacher readers with the foundation needed for a paradigm shift in their practice, these chapters would have benefitted from some additional visual elements. For example, teacher vignettes in the first chapter allude to what makes a high-quality mathematics task, but an explicit table of quality task elements would have been beneficial to practitioners. Connections to task design in NCTM’s momentous work *Principles to Action* were needed but unfortunately overlooked.

The third and fourth chapters of *Humanizing Disability* retheorize disability as social, rather than medical, where we see that dehumanizing classrooms and inaccessible mathematics position students *in* mathematics disabilities rather than *with* mathematics difficulties. With NCTM’s equity principle at the foundation, the authors argue that when teachers and IEP teams fail to use their collaborative power to transform their schools with open-door, humanizing, track-free policies, then it is truly a violation of human rights for disabled students. While the medical definition of disability treats students as having “inherent defects” preventing them from performing “normally” in mathematics (Heyd-Metzuyanim, 2013, p. 83), the social definition of disability instead focuses on the deficiencies in mathematics classroom environments that create impairments for some students.

The transition between these two chapters is arguably disjointed, leaving readers unable to connect how the social definition of disability aligns with both NCTM's equity principle and humanizing mathematics as a human rights issue. The so-called RTI (response to intervention) process through which struggling K-12 students in the USA are identified and assisted is mentioned briefly in these chapters. Practicing mathematics educators hoping to gain applications for these theories in their classroom would benefit from a step-by-step humanized version of the RTI process.

In summary, Part 1 of *Humanizing Disability* does its job in setting the theoretical foundations for reconceptualizing disability in mathematics education, leaving the reader anxious for the more detailed paths towards enacting these theories in the classroom.

Part 2: Paths to humanizing mathematics of students with disabilities

Perhaps better aligned with Part 1, the fifth chapter criticizes society's treatment of disability as tragic, with entertainment too often "portraying individuals with disabilities as miserable and suicidal" (p. 44). The authors use a real classroom example to develop somewhat vague definitions of dark funds of knowledge and funds of identity. These stories of classroom teachers enacting principles of humanized mathematics education and the impact on their disabled students dispersed throughout the book are perhaps one of the book's greatest strengths. However, teacher readers are often left to extrapolate from these stories specific actions they can emulate in their own practice.

It is in the final two chapters of *Humanizing Disability* that readers are given some of the more concrete action items that can be done in their classrooms to create these humanized experiences for disabled students. Chapter 6 outlines strategies for rethinking individual education plans (IEPs) that align with NCTM's process standards (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010) and treat students with disabilities as individual thinkers with the ability to reason, explain, analyze, and conjecture. Perhaps most innovative is the idea of a new, humanizing rubric for evaluating IEP goal outcomes (found on page 54).

The final chapter is piloted by the story of Isabella's mother, who fought relentlessly for her disabled daughter to be included in the regular classroom, despite pushback from elementary teachers and administration. Through a detailed description of the classroom setting of Ms. Peng, the first teacher who finally sided with Isabella's mother, we see how full inclusion of disabled students in mathematics classrooms is beneficial to all.

Humanizing disability overall

The authors' collective passion for the humanizing of mathematics education is evident throughout, no doubt a result of each author's close connection to disability in school mathematics through personal experience, or as parents and educators of disabled students. The primary audience of mathematics teachers and special educators will

no doubt complete *Humanizing Disability* inspired and energized, ready to enact the book's principles in their own classrooms. However, the book too often fails to move from the general and theoretical to the practical. It is unfortunate that the specificity of Chapter 6 in designing, implementing, and evaluating IEP goals was not mirrored in other chapters. How can each of the process standards (NCTM, 2000) be used to create these classroom environments where students thinking is at the center? How can the five practices of facilitating meaningful mathematical discourse (Smith & Stein, 2011) be utilized? Where should classroom teachers look for curriculum and quality tasks that support this type of learning? Too often in the preceding chapters, readers are invited as quiet observers into humanizing classrooms through compelling vignettes, but are left wondering how to emulate and recreate these experiences themselves. *Humanizing Disabilities in Mathematics Education* is a well-edited, easy-to-read book that will leave mathematics and special education teachers with a powerful alternative paradigm of what disability is, and the theories underlying our need for reform mathematics classroom practices that empower, challenge, value, and humanize disabled students. Their toolbox for doing so might be left wanting.

Declarations

Ethics approval This book review satisfies all COPE guidelines.

Consent for publication The author gives full consent to publish this work, and it is the sole work of the author. This submission has not been submitted elsewhere.

Conflict of interest The author declares no competing interests.

References

- Carnine, D. (1997). Instructional design in mathematics for students with learning disabilities. *Journal of Learning Disabilities*, 30(2), 130–141.
- Gersten, R., Chard, D. J., Jayanthi, M., Baker, S. K., Morphy, P., & Flojo, J. (2009). Mathematics instruction for students with learning disabilities: A meta-analysis of instructional components. *Review of Educational Research*, 79(3), 1202–1242.
- Heyd-Metzuyanim, E. (2013). The co-construction of learning difficulties in mathematics—teacher–student interactions and their role in the development of a disabled mathematical identity. *Educational Studies in Mathematics*, 83(3), 341–368.
- Montague, M. (1997). Cognitive strategy instruction in mathematics for students with learning disabilities. *Journal of Learning Disabilities*, 30(2), 164–177.
- National Council of Teachers of Mathematics (NCTM). (2000). Principles and standards for school mathematics. Reston, VA: National Council of Teachers of Mathematics.
- National Governors Association Center for Best Practices, Council of Chief State School Officers. (2010). *Common Core State Standards for Mathematics (CCSSM)*. Washington, DC: National Governors Association Center for Best Practices and the Council of Chief State School Officers.
- Rector-Aranda, A. (2019). Critically compassionate intellectualism in teacher education: The contributions of relational–cultural theory. *Journal of Teacher Education*, 70(4), 388–400.
- Smith, M. S., & Stein, M. K. (2011). *5 practices for orchestrating productive mathematics discussions*. Reston, VA: National Council of Teachers of Mathematics.

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