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Paper Title Does It Count if We Don't Say It? Concerns for Equity in Mathematics Education Research

Author(s) Imani Masters Goffney, University of Maryland; Laura R. Van Zoest, Western Michigan University

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Does It Count if We Don't Say It? Concerns for Equity in Mathematics Education Research

Abstract

To better understand how researchers with existing research projects that were not designed to address concerns for equity can contribute to current needs in mathematics education research, we investigated one such research team's existing products, including tools designed for use by others, in light of the team's stated goals to support the learning of all students. We identified several ways that existing research can retroactively be modified in authentic ways that explicitly address concerns for equity and justice. These ways range from incorporating explicit language about the project's equity intent in the project dissemination to annotating specific connections with equity for each tool in a way that supports using the tool to disrupt inequities.

Objectives

Our current system of preparing educational researchers to engage in consequential research is uneven, at best, and many experienced researchers have had no formal preparation for engaging in research that explicitly takes into account issues of equity and social justice. This is especially the case for mathematics education researchers who were prepared in mathematics departments that worked under the assumption that mathematics is an objective discipline that is culturally neutral. In response to the increase in discourse around racial situations, such as the death of George Floyd, mathematics researchers whose work has not attended to equity in any substantial way have been faced with the question of whether, and for whom, their research is relevant.

Mathematics serves as a gatekeeper to future opportunities (US Department of Education, 2018)—so much so that being in an algebra class has been called a civil right (Moses & Cobb, 2001; Moses et al., 1989). Since research on mathematics teachers' interactions with Black and Latinx students (e.g., Gholson, 2016; Langer-Osuna & Shah, 2021) makes it clear that recognizing these students' assets and brilliance is not a natural teaching activity for most teachers, lack of explicit attention to equity runs the risk of mathematics education research being used in ways that perpetuate the patterns of participation and differential opportunities for learning and doing mathematics that currently exist. We wondered whether the work of existing and ongoing research projects that did not explicitly attend to equity, or did so in superficial ways, could be modified to be used by teachers to encourage and reward the mathematical ideas of students who have typically been marginalized in mathematics classrooms. This led us to our research question: *How might existing research retroactively be modified in authentic ways that explicitly address concerns for equity and justice?*

Perspectives

We take a critical race theory perspective. Drawing on the work of mathematics education scholars (e.g., Davis & Jett, 2019; Ladson-Billings & Tate, 1995; Ladson-Billings, 1999), we assume the following: racism exists; there is intersectionality among race, gender, class, and other identities; and claims of neutrality, objectivity, color-blindness, and meritocracy must be challenged. Thus, we assume that mathematics education research will perpetuate or protect the

patterns of participation and differential opportunities for learning and doing mathematics that currently exist without intentional and specific efforts to the contrary.

Our perspectives on equity issues within mathematics education classroom research have been influenced by the first author's lived experience as a minoritized individual and by our acquired knowledge about the experiences of minoritized students in mathematics classrooms. In addition to general and mathematics-specific research literature on equity issues, we drew on an analysis of the specialized demands of equitably teaching mathematics (First Author) and on professional documents in mathematics education (e.g., Crespo et al., 2022; NCTM, 2000, 2014; NCTM Research Committee, 2018), keeping in mind that reforms such as those advocated for by NCTM have been shown to be problematic for Black children (Berry et al., 2014).

Methods

To answer our research question, we investigated an existing research project that met several key criteria: (1) it was anchored in student thinking - an important site for equity; (2) it was not designed to focus on equity; and (3) it was producing tools for use in classrooms. There are many research projects in mathematics education that meet these criteria and reasonably could have been used as a site for this study. The Focus Project had the added benefit of being a long-standing, well-recognized project to which we were connected: the first author through their role as an equity-in-action consultant and the second author through their role as a project principal investigator.

Our data was the Focus Project's publically available records and products for over ten years of funded work. This included proposals and reports to the funding source; dissemination (conference proposals, presentations and proceedings, journal articles, and book chapters); and tools that were created for supporting teachers' classroom instruction. Our analysis involved reviewing key project documents to look for opportunities to be explicit about equity issues and assessing how those opportunities were taken up by the project.

Results

One of the things we uncovered was the completely implicit nature of the Focal Project's attention to equity, even when the first author saw obvious opportunities to be explicit. This speaks to the research team's focus on the quality of student thinking in ways assumed to be neutral and objective. For example, the project work adheres to the core principles underlying productive use of student mathematical thinking during instruction shown in Figure 1. These principles were drawn from ideas about effective teaching and learning as captured in *Principles to Actions* (NCTM, 2014).

Insert Figure 1 about here

We illustrate the nature of the research team’s implicit focus on equity by considering the Legitimacy Principle: *Students are positioned as legitimate mathematical learners*. Here is the project’s description of this principle in a published article:

The overarching Legitimacy Principle emphasizes the importance of positioning students as legitimate mathematical thinkers who are able to engage with mathematical ideas in a deep and meaningful way. Such positioning requires listening to students’ contributions to discern what they are saying mathematically in order to make decisions about the pedagogical potential of incorporating such contributions into the lesson. For example, engaging the class with student mathematical contributions that contain ideas that are too easy or too hard for them would undermine their ability to consider those contributions in an authentic way. (Focal Project research team, 2021)

Although the research team assumed that “all” students included those who have traditionally been marginalized in mathematics classrooms, there is nothing in what was written that would challenge a teacher’s (or teacher educator’s) tendencies to privilege the thinking of the students whose contributions they most easily recognize because the way in which the student shares their ideas—language, behavior, etc.—is familiar to the teacher. We know from research that it requires intentional action for many teachers to recognize the brilliance of Black and Brown students and provide opportunities for mathematics learning that have so often been withheld from them in mathematics classrooms (e.g., Willis, 2020). Based on the perspectives of the current study, it is critical to communicate this information in the project products to increase the chances that the products will be used to interrupt inequities and injustices rather than to replicate them.

We also were able to establish the relationship between equity issues and the tools being developed by the Focal Project. Through interactions with the research team, we identified underlying assumptions and related values of the project and connected them to equity opportunities that revealed actions to make explicit in the project tools. See Figure 2 for an example related to the assumption that discourse is a central component of mathematics teaching and learning.

Insert Figure 2 about here

Scholarly Significance of the Study

Based on this study, we can conclude that existing research can retroactively be modified in authentic ways that explicitly address concerns for equity and justice ranging from incorporating explicit language about the project’s equity intent in the project dissemination to annotating specific connections with equity for project tools in ways that support using the tools to disrupt inequities. These changes could support mathematics teachers (and professional developers and researchers) to encourage and reward the mathematical ideas of students who have typically been marginalized in mathematics classrooms, and thus directly intervene on issues of equity instead

of complicitly supporting the silencing and continued marginalization of minoritized students from rich and ambitious mathematical discussions.

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Figures

Figure 1: Core Principles Underlying Productive Use of Student Mathematical Thinking During Instruction (Focal Project Research Team, 2020).

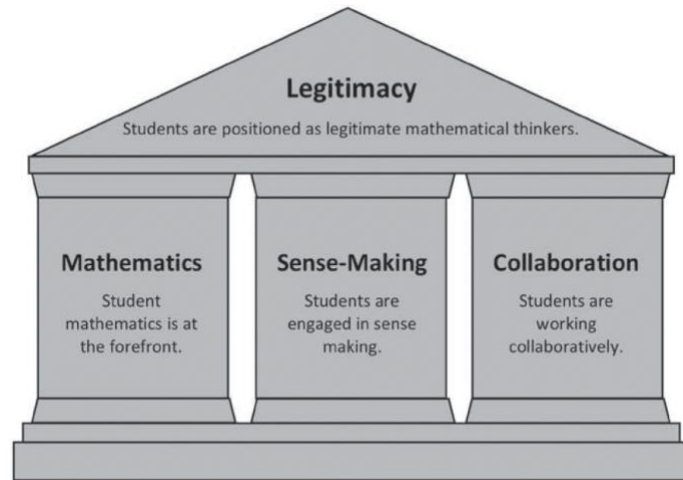


Figure 2: Example of an assumption-value-equity opportunity-action table.

Assumption	Value	Equity Opportunity	Action
Discourse is central to mathematics teaching and learning.	Students' voices, perspectives, strategies, and ideas are important.	To consider which students' voices are being centered and the benefits and consequences of that centering.	Pay attention to who is contributing and make opportunities for those who are not.