

## **DISCOURSES OF JUSTICE: CONNECTING VISIONS AND PRACTICES TO IDENTIFY AREAS FOR FUTURE RESEARCH AND TEACHING**

Megan Brunner  
Oregon State University  
brunnerm@oregonstate.edu

*This systematic review aims to identify the Discourses (Gee, 2000) invoked regarding justice in PK-12 mathematics education literature, linking visions and practice. The three Discourses of Justice presented in this manuscript draw upon different visions of justice, where the differences arise through the proposed locus of change – the individual (Empowerment), the institution (Transformation), and ideologies around purposes of education (Democracy). However, the Discourses also share similarities across the associated teaching practices for each. There are differences in usage of these Discourses across the literature, which present opportunities for innovations in future research and teaching toward a more just math education system.*

Keywords: Social justice; systemic change; instructional vision

Social justice in mathematics education has been a long-standing and evolving conversation among researchers (Gutierrez, 2002, 2013; Ladson-Billings, 1995, 2021; Martin, 2019; Secada, 1994), teacher educators (Aguirre, et al., 2019; Bartell, 2013; Felton-Koestler, 2019; Wager & Stinson, 2012), and teachers and administrators (Gutstein, 2006, 2013; NCSM & TODOS, 2016). Each of these groups of stakeholders has wondered, what does it mean to do social justice work in mathematics education? How does one teach mathematics, prepare teachers, or conduct research in a way that serves social justice goals?

In response, many have raised the need for identifying classroom practices that can support more just mathematics teaching (Aguirre & Zavala, 2013, Bartell, et al., 2017, Garii & Rule, 2009). Others have talked about the need for teachers to develop critical consciousness and reflective capacity to better attune to the dynamics of power and privilege in their classrooms (Esmonde, 2014, Gutstein, 2006, Harper, 2019, Kokka, 2019, Ladson Billings, 2021, Stinson, 2014). As the field engages in these conversations, a variety of terminology is invoked to problematize the state of mathematics education and identify focal points for change. These differing perspectives can lead to challenges in understanding the outcomes of possible instructional innovations; across the literature, different implications for practice may be aligned to a variety of perceptions of what justice entails (Chubbuck & Zembylas, 2008) Researchers, teacher educators, and teachers look to the literature for insight and inspiration on next steps towards justice. Thus, it is important to be able to parse what members of the field perceive as justice and the connected actions they suggest to make progress towards those aims.

Parsing perceptions of justice and their associated practices can occur by examining the framings researchers link together when discussing justice in mathematics education. Some mathematics education researchers have called out the ways different framings operate to communicate the values, beliefs, and perspectives one might hold and how these perceptions shape their actions, such as Louie's (2017) exploration of a culture of exclusion in a mathematics department. In this study, I use the term "vision" to describe the multifaceted set of values, beliefs, goals, and priorities that guide one's exploration of justice. Many researchers claim that teachers' classroom practice is entangled with their visions of justice (Adiredja & Louie, 2020; Chubbuck & Zembylas, 2008; Gutierrez, 2002; Horn, 2007). Consider that the problem perceived by a researcher influences the focus of their study, the data they collect, and the ways

they interpret that data; the problem articulated by a teacher educator shapes the conversations they facilitate and the facets of instruction they focus on in their teaching; the purpose teachers perceive for shifting their instruction influences the practices they enact and the ways they interact with other members of their institutions. Making visions of justice and the connected practices and actions explicit provides a foundation to unpack the ways researchers, teacher educators, and teachers work towards the goal of a more just mathematics education. Explicitly articulating a vision of justice is challenging, yet without the acknowledgment of problems of injustice one perceives, the instructional choices one makes can become confused or misaligned with their goals toward justice.

This study is a systematic literature review of K-12 mathematics education research regarding justice. First, I overview foundational literature on justice in K-12 mathematics education. Then, I articulate the theoretical underpinnings of Discourses as a way to connect visions of justice and the actions taken to achieve that vision (Gee, 2000, 2008). I discuss my methods for selecting relevant literature and the coding process I applied, through which I found three different Discourses of Justice in K-12 mathematics education research. I present each Discourse of Justice and detail the ways it is invoked across the research base. Finally, I propose implications for research and teaching based on the current status of Discourses of Justice in the field.

### **Theoretical Background**

The ways that people use language and other forms of communication build on those that come before them, which serves to construct sets of meaning or interpretation. Gee (2000, 2008) identifies these sets of meaning as Discourses, where invoking a Discourse can identify one as a certain type of person. Invoking a Discourse involves not just language (written or spoken) but also "...language, other symbolic expressions, and 'artifacts', of thinking, feeling, believing, valuing, and acting" (Gee, 1996, p. 131). These features are considered discourses, or "stretches of language in action" (Gee, 1996). Regarding the research literature, discourses are the ideas and practices captured in stretches of writing. The ways these discourses are used to make an argument across a manuscript draws upon (and simultaneously adds to) particular sets of meaning or framing (Discourses). Invoking a certain Discourse can help position the researcher towards a certain audience or align their work with other researchers in the field.

### **Visions of and Practices Towards Justice**

Discourses can be recognized through the beliefs, values, and goals one insinuates, and the actions, or practices, one engages in towards those goals (Gee, 2000, 2008). In this study, I consider the beliefs, values, and goals one holds about the future of a more just mathematics education as their "vision of justice" (Hyttén & Bettez, 2011; Picower, 2012). A vision of justice can encompass the reasons justice is needed (i.e., the injustice being addressed), the things justice should provide or lead to, and the key features of justice that are seen as necessary and important. Visions of justice refer to the overarching perspectives one holds for what education should look like in a more just world. Visions of justice include macro-level considerations about value systems and perspectives that one considers regarding mathematics education. These values and beliefs are communicated through micro-level interactions as one takes action to achieve their goals (Ryve, 2011). The other component of Discourses is the practices that align with certain beliefs, values, and goals. Practices include the habitual actions of instruction and the pedagogical strategies one might engage in to achieve a teaching goal (Lampert, 2010). Practices may be of a variety of grain sizes, but they are action-oriented and implementable in contextually situated ways. Practices may not be aligned with any one vision of justice. The

combination of visions of justice and the practices one sees as serving that vision are what constitutes a Discourse.

### **Conveying Meaning via D/discourses**

D/discourses (Gee, 1996, 2000) coordinate the ways language is used to construct and negotiate meaning, where language involves not just speech and text but also actions, practices, and ways of interacting. Discourses are sustained through the cultural, political, and institutional recognition that happens within interactions as a result of the ways individuals portray and perceive themselves and others (Gee, 2000). That is, as individuals interact with others, they invoke parts of Discourses that give insight into the meanings they are conveying and the ways they want to be perceived.

Discourses may be invoked in a few ways. First, we can *revoice* language stretches associated with a particular Discourse. Revoicing serves to align intended meanings with the histories and prior uses of that phrasing (Bakhtin, 1981). In research, revoicing occurs through citations or quotations to support an argument; in teaching, revoicing may come through discussing certain pedagogical resources or goals an educator holds for a lesson or task. Framing one's work alongside others who use similar language in their research and teaching raises a set of meanings from which to interpret their current argument. Another way Discourses might be invoked is through similar cues of meaning explicated through new stretches of language (e.g., talk and action), otherwise thought of as *refracting* (Volosinov, 1973). Refracting is the reauthoring of a Discourse into a new context. The power of refracting is important to acknowledge, as discourses are enacted within interactions; individuals need to act in a way that draws upon available Discourses but fits the context in a given moment.

Discourses are macro-level frames for sense-making that get recognized in interaction through combinations of practices, behaviors, values, and tools, among other features. Drawing upon certain Discourses can support utilizing specific tools or practices to achieve objectives. Discourses link perceptions of situations to the actions one may take toward an objective; in pursuing a goal of a more just mathematics education system, the Discourses available to an actor will shape the perceptions of justice they hold and the actions they see as necessary to achieve it. Likewise, holding a certain vision of justice may influence the practices that one sees as accessible at a given moment. This study argues that connecting visions of justice and the practices that achieve those visions will help researchers, teacher educators, and teachers more clearly communicate their goals for education regarding justice.

### **Research Questions**

Identifying the Discourses that are available across the field of K-12 mathematics education research and teaching can be challenging - Discourses are culturally recognized and acknowledged, so they can operate implicitly as well as explicitly in one's actions. However, knowing how researchers, teacher educators, and teachers are invoking Discourses to situate their work of transforming the mathematics education system is necessary to understand their scope and intentions. Further, recognizing different framings of justice (against the perception of injustices currently existing in the mathematics education system) is necessary to continue aligning, innovating, and imagining the actions that are possible to take in creating change and a more just system. Thus, this study explores the questions:

1. What are the Discourses of Justice that exist in the literature on justice in PK-12 mathematics education?

2. How does the literature on justice in PK-12 mathematics education invoke Discourses of Justice? What implications does this have for future research and teaching?

### **Methodology**

Systematic literature reviews provide a synthesis of the research base on a topic, to present arguments for new perspectives or provide insight for future research (Petticrew & Roberts, 2008). This systematic literature review serves to synthesize research on justice in K-12 mathematics education and to present an argument for using Discourses of Justice as an organizational and analytical lens in future research and practice.

#### **Data Collection: Identification of Literature**

To identify literature relevant to the construction of Discourses of Justice, I set a series of selection criteria. I searched the Education Resources Information Center (ERIC) and Google Scholar to look across general education and mathematics databases for manuscripts published after 2000 regarding “mathematics” AND “justice” to yield 409 and 420 initial results, respectively. Subsequent rounds of criteria were applied to the initial results to narrow the focus and applicability of selected papers to answer the research question (Petticrew & Roberts, 2008; Yolcu, 2019). Manuscripts that did not explicitly discuss mathematics *and* justice in these three areas were excluded. Then, I skimmed the entire body of the remaining manuscripts for definitions of justice and explicit focus on teaching mathematics in grades PK-12. Texts that did not make an explicit theorization or definition of justice were excluded. In this stage, I also excluded manuscripts that did not explicitly connect to PK-12 mathematics education in terms of research focus or participants. Finally, I read each of the remaining manuscripts in full, excluding papers from the same author or group of authors which leveraged the same articulation of justice. In my reading of the data set, I kept notes on additional texts that were regularly cited about social justice research but had not been identified in my original search results; I reviewed each of these texts using the exclusion criteria laid out above, and 5 additional manuscripts passed each stage and were added to the data set. Thus, the data set for this study consisted of 70 total manuscripts focused on PK-12 mathematics education and justice.

#### **Data Analysis: Segmenting and Coding for Discourses of Justice**

Once demographic information was identified for all manuscripts in the data set, I segmented each text into sections. Segmenting the manuscripts provides a narrower focus for coding and allows for patterns to arise around how Discourses are invoked throughout manuscripts in the field. The three-section descriptions I used to chunk each manuscript were *Problem Setting*, *Theoretical Framing*, and *Findings & Discussion*. While these sections are aligned with some headers of manuscripts, every paper uses a unique organization for its argument. I only coded the sections of the manuscript that were specific to justice and mathematics education.

I read each manuscript section multiple times and highlighted phrases or sentences that provided answers to each of the analytic questions, color coding for each (Table 1).

**Table 1: Analytic Questions for Eliciting Discourses**

Analytic Questions	Contribution to Eliciting Discourses
Q1. Why is “justice” important?	articulates the problem needing to be solved
Q2. What will “justice” provide?	evidence of the action that should occur
Q3. Who decides what “justice” is?	identifies the stakeholders and responsible actors

Q4. What are the key elements of “justice”?	clarifies the focus and values of the Discourse
Q5. How is “justice” assessed or achieved?	explains what tools and practices will get utilized
Q6. What implications for “justice” are reported?	reports challenges and insights for tools and practices

Adapted from Churchward & Willis (2019)

As this open coding process was completed for each manuscript, I kept memos to track common themes and patterns I noticed in the ways authors discussed justice (Auerbach & Silverstein, 2006). I regularly re-read all the excerpted text across all coded manuscripts for each analytic question to identify new themes in the data or notice outliers in the framing of justice used across manuscripts. Once all 70 manuscripts were coded and entered into the spreadsheet, I created themes of the Discourses of Justice out of my memo-ed patterns. I then re-read the manuscripts and coded the manuscript sections with the Discourse of Justice descriptions. Instances where the text excerpts from coding did not align with the descriptions of the Discourses led to revision across the themes, until all Discourses were able to be applied to the coded data without outliers (Auerbach & Silverstein, 2006).

The resulting three themes, or Discourses, represent sets of meaning that encompassed answers to all six analytic questions. These Discourses stand apart from one another due to the focus placed on what needs to occur to achieve justice in mathematics education. The Discourse of Justice as Empowerment centers on the empowerment of individuals in pursuing justice; the Discourse of Justice as Transformation focuses on taking action to challenge systems, structures, and policies at an institutional level; and the Discourse of Justice as Democracy identifies a need for ideological change to truly achieve justice in mathematics education.

### **Findings: Three Discourses of Justice**

The three Discourses of Justice (DoJ) presented in this manuscript draw upon different visions of justice, where the differences arise through the proposed locus of change. However, the Discourses also share similarities across the associated teaching practices for each. I discuss trends for how each DoJ is invoked throughout arguments in manuscripts in K-12 mathematics education. I connect each trend to potential reasons for their existence and propose future areas of exploration and innovation for research and teaching.

#### **A Discourse of Justice as Empowerment**

The Discourse of Justice as Empowerment (DoJ-E) gains its name based on its focus on the empowerment of individuals via mathematics education. In this frame, justice is achieved through individuals becoming more empowered. this occurs through developing students’ (a) mathematical power (e.g. Gutstein, 2003; Frankenstein, 2013; Nicol et al., 2019; Voss & Rickards, 2016); (b) participation, agency, and identity (e.g. Aguirre, et al., 2013; Hand, 2012; Planas & Civil, 2009), (c) humanity and ethical awareness, (e.g. Atweh & Brady, 2009; Boylan, 2009; Nava et al., 2019; Register, et al., 2020) and (4) awareness of the power and role of mathematics in structuring the world (e.g. Brelias, 2015; Felton-Koestler, 2017; Gutstein, 2016).

**Patterns of Empowerment.** The DoJ-E centers on the improvement of individual learning opportunities and personal growth in awareness and agency. This Discourse was the most commonly invoked of the three, with 100 percent of analyzed papers containing at least one section that referenced this Discourse (Table 2). Only 13 papers did not cite a notion of justice based on the DoJ-E in the problem setting section. Almost every single manuscript analyzed in

this study leveraged a theoretical background (64 of 70) or presented findings or implications (68 of 70) that invoked a DoJ-E. Further, this Discourse was consistently invoked throughout manuscripts, with 56 out of 70 papers drawing upon a DoJ-E in every section. This implies that many researchers in mathematics education are envisioning justice as empowerment from their initial conceptualizations of problems for study, through their articulation of justice and the theories that guide their study and return to notions of empowerment in their presentation and interpretations of findings.

**Table 2: Discourse of Justice Across Manuscript Sections<sup>1</sup>**

	Problem Setting	Theoretical Framing	Findings & Discussion	At Least One Section <sup>2</sup>	All Sections <sup>3</sup>
Empowerment	57	64	68	70	56
Transformation	31	43	32	51	17
Democracy	19	14	17	28	7

<sup>1</sup>n=70 total manuscripts reviewed

<sup>2</sup>number of papers that invoked the Discourse of Justice in at least one section of the manuscript

<sup>3</sup>number of papers that invoked the Discourse of Justice in every section of the manuscript

This focus on individual empowerment draws from the research base, which has a strong focus on identity, participation, and practices as evidence of learning. In 2000, Lerman invited the sociocultural turn in mathematics education, followed by Gutiérrez's (2013) call to take up sociopolitical perspectives in teaching and research. Research from these perspectives regarding teaching practice and social justice naturally involves some focus on impacting individuals. Researchers, teacher educators, and teachers alike must focus on supporting all students' growth as mathematicians and as people in the pursuit of justice. True systemic justice cannot happen without individual empowerment and changes within interpersonal interactions (Gutiérrez, 2009). It is challenging to do social justice work (Gregson, 2013; Gutstein, 2003) and discussing specific practices and principles that impact learning and classroom interactions can seem more manageable (Bartell, et al., 2017), as well as provide more opportunities for evidence of change. However, researchers and practitioners must be able to connect practice to the broader visions for justice and the mechanisms for change they are working through; without this explication, the impact of these practices may not address structural issues past those at the micro-level of classroom interactions.

### **A Discourse of Justice as Transformation**

The Discourse of Justice as Transformation (DoJ-T) resonates closely with ideas from foundational critical theorists and mathematics educators who discuss justice such as Freire (1993) and Gutstein (2003, 2006). Researchers who discuss notions of justice using the DoJ-T focus on taking action to challenge and transform unjust systems, structures, and policies. These researchers move past building awareness of inequities or providing access for success within inequitable systems to discuss actions to shift the systems themselves. This Discourse is invoked as researchers frame goals of social justice teaching towards transforming (a) the norms and practices of the discipline of mathematics (e.g., Felton-Koestler, 2019; Hughes & Laura, 2018; Povey, 2002, (b) structures and policies in schools (e.g., Kokka, 2015; Raygoza, 2020; Rands, 2013), and (c) societal organization and systems (e.g., Gutstein, 2013; Leonard & Moore, 2014; Martin et al., 2010).

**Patterns of Transformation.** The DoJ-T was regularly evoked across literature on justice in K-12 mathematics education. This Discourse encompassed conceptions of justice that focus on the

disruption of unjust systems, structures, and policies – and acting to right those wrongs. Fifty-one manuscripts cited a DoJ-T at least once across possible sections (Table 2). Of these instances, 43 manuscripts invoked a DoJ-T in the Theoretical Framing sections (84%). Some of these manuscripts elaborated a DoJ-T from their initial conceptualization of a problem through to their results or implications (n=17). Of those 43, 10 manuscripts invoke a DoJ-T only in their theoretical framework, and not in any other section of their argument. This pattern shows that DoJ-T is most commonly referenced through explication of theoretical foundations and is less likely to be drawn upon in setting up studies or interpreting findings.

The predominance of DoJ-T in the Theoretical Framework sections of manuscripts, whether in conjunction with other DoJs or on its own, speaks to the power of envisioning structural change in mathematics education. Much of the foundation for this power can be traced back to critical theorists in mathematics education, such as Freire (1993), Frankenstein (1983, 1990), and Gutstein (2003, 2006). These theorists all identify some component of transforming society and schooling in their conceptions of justice. As researchers, teacher educators, and teachers build on these foundational ideas of justice in math education, they are revoicing notions of transformation. The revoicing of DoJ-T consists of the vision of justice and fair systems, as well as the call to action. Less common in this revoicing is a variety of practices and implications of what this call to action might entail. The literature emphasizes the use of real-world, open-ended tasks within which students construct alternative solutions that rectify inequities, which are still challenging to incorporate effectively (Bartell, 2013; Gregson, 2013; Gutstein, 2003, 2016; Harrison, 2015). However, because of the hesitation to turn “justice” into a set of teaching practices – instead choosing to talk about justice as a sliding signifier (Larnell, et al., 2016; Stinson & Wager, 2012) – it is challenging to communicate how to act towards transformation in their environments. Transformation is a lofty vision, and the steps to achieve it are not clearly defined. Future research should support the linkages between micro-level interactions and structural transformations necessary for achieving system-wide justice.

### **A Discourse of Justice as Democracy**

The Discourse of Justice as Democracy (DoJ-D) attends to a broader ideological motivation for pursuing justice. The ideological purpose of general education discussed concerning social justice work is to prepare well-developed and successful persons to sustain society. This vision of justice entails pursuing democratic societies constructed and maintained by civically engaged persons (Apple, 1992). Achieving justice involves the organization of teaching and learning to serve these democratic ideals. In mathematics education scholarship, researchers who discuss justice through a DoJ-D identify ideals of preparing members of society who take up (a) democratic participation and environments (e.g., Frankenstein, 1990; Panthi, et al., 2018; Reagan, et al., 2011) and (b) citizenship and civic engagement (e.g., Bond & Chernoff, 2015; Kokka, 2019; Ndlovu, 2011; Tanase & Lucey, 2017).

**Patterns of Democracy.** The DoJ-D was the least likely of the three Discourses to be invoked across the research base. The DoJ-D was found in 28 unique manuscripts (Table 2). Papers often leveraged notions of justice as democracy when constructing their problems for research (n=19) or in discussing implications of their arguments (n=17). A further 14 papers mentioned democracy in their theorization of justice. However, only 7 papers invoked a DoJ-D across every section, which implies that 13 of the 28 total articles referencing democracy only utilized a DoJ-D in one section and did not carry this thread consistently across their argument. I see this trend of DoJ-D as evidence that phrases like “democracy,” “citizenship,” or “civic/political engagement” are connected to broader ideologies around the role of education in preparing

students to be meaningful participants in society. This ideology is useful to justify the attention to social justice in mathematics, but there is a lack of connection to clear theorizations and aligned practices to achieve it.

The role of democracy and citizenship as central principles of teachers' pedagogy requires critical thinking and analysis, not just the incorporation of specific teaching practices into classrooms. The DoJ-D lacks consistent refracted in manuscripts such that it is challenging to understand how one should work toward goals of democratic justice. Many manuscripts do not as clearly link instructional practices to visions of justice through the lens of DoJ-D (e.g., Turhan Turkan & Karakus, 2018), or they identify instructional practices that overlap with those suggested in other DoJs. Ladson-Billings (1995) notes that citizenship can be achieved best by the practice of critically analyzing societal injustices, which connects DoJ-D to Transformation. Other researchers echo this call, articulating that TMfSJ practices, which emphasize transformation, are essential to creating a democratic society (e.g., Gutstein, 2003; Reagan, et al., 2011). Register and colleagues (2020) theorize about the role of mathematics literacy in public policy and decision-making for the democratic preservation of society; however, when discussing implications for teaching, these authors recommend practices around identity work and participation, rigorous mathematics, and other forms of empowerment. Other manuscripts simplify their calls for democracy by building democratic participation through group work and complex tasks (Kokka, 2015) or equitable turns of talk (Hung, 2015), similar to strategies aligning with the DoJ-E. Researchers need to explicate connections they see between the DoJs or provide more context to facilitate discussion on how teaching practices might be different in action when attending to different visions of justice.

### **Conclusion: A Call to Action**

This study is a systematic literature view of the ways justice is discussed in research on K-12 mathematics education. It provides a theoretical lens of Discourses (Gee, 2000, 2008) to connect visions of what justice provides with the actions necessary to achieve it. The three DoJs that arose from the analysis of the literature represent different articulations of justice around different mechanisms of change (the individual, the institution, and ideologies, respectively). This manuscript posits that these DoJs are invoked inconsistently across research arguments, with some Discourses more fully connected and articulated than others. The patterns of use led to the identification of areas for future scholarship and exploration. The purpose of establishing this lens is not to prioritize one DoJ over another, nor is it to critique the existing research's current innovations towards constructing a more just mathematics education system. Rather, this perspective provides an opportunity for intentional reflection in scholarship on justice in mathematics education and identifies areas for further exploration and clarification of how to move, together, towards a more just system.

### **Acknowledgments**

Many thanks are extended to Dr. Rebekah Elliott for their ongoing support around the ideas expressed in this paper.

### **References**

- Adiredja, A. P., & Louie, N. (2020). Untangling the web of deficit discourses in mathematics education. *For the Learning of Mathematics*, 40(1), 42–46. <https://doi.org/10.1080/07370008.2019.1677664>
- Aguirre, J. M., Anhalt, C. O., Cortez, R., Turner, E. E., & Simic-Muller, K. (2019). Engaging teachers in the powerful combination of mathematical modeling and social justice: The Flint water task. *Mathematics Teacher Educator*, 7(2), 7–26.



- Aguirre, J. M., & del Rosario Zavala, M. (2013). Making culturally responsive mathematics teaching explicit: A lesson analysis tool. *Pedagogies: An International Journal*, 8(2), 163–190.  
<https://doi.org/10.1080/1554480X.2013.768518>
- Atweh, B., & Brady, K. (2009). Socially response-able mathematics education: Implications of an ethical approach. *EURASIA Journal of Mathematics, Science & Technology Education*, 5(3), 267–276.
- Auerbach, C. F., & Silverstein, L. B. (2003). *Qualitative data: An introduction to coding and analysis*. New York: University Press.
- Bartell, T. G. (2013). Learning to teach mathematics for social justice: Negotiating social justice and mathematical goals. *Journal for Research in Mathematics Education*, 44(1), 129–163.  
<https://doi.org/10.5951/jresmetheduc.44.1.0129>
- Bartell, T., Wager, A., Edwards, A., Battey, D., Foote, M., & Spencer, J. (2017). Toward a framework for research linking equitable teaching with the Standards for Mathematical Practice. *Journal for Research in Mathematics Education*, 48(1), 7. <https://doi.org/10.5951/jresmetheduc.48.1.0007>
- Bond, G., & Chernoff, E. J. (2015). Mathematics and social justice: A symbiotic pedagogy. *Journal of Urban Mathematics Education*, 8(1), 24–30.
- Boylan, M. (2009). Engaging with issues of emotionality in mathematics teacher education for social justice. *Journal of Mathematics Teacher Education*, 12(6), 427–443. <https://doi.org/10.1007/s10857-009-9117-0>
- Brelias, A. (2015). Mathematics for what? High school students reflect on mathematics as a tool for social inquiry. *Democracy & Education*, 23(1), 11.
- Chubbuck, S. M., & Zembylas, M. (2008). The emotional ambivalence of socially just teaching: A case study of a novice urban schoolteacher. *American Educational Research Journal*, 45(2), 274–318.  
<https://doi.org/10.3102/0002831207311586>
- Churchward, P., & Willis, J. (2019). The pursuit of teacher quality: Identifying some of the multiple discourses of quality that impact the work of teacher educators. *Asia-Pacific Journal of Teacher Education*, 47(3), 251–264.  
<https://doi.org/10.1080/1359866X.2018.1555792>
- Esmonde, I. (2014). “Nobody’s rich and nobody’s poor ... it sounds good, but it’s actually not”: Affluent students learning mathematics and social justice. *Journal of the Learning Sciences*, 23(3), 348–391.  
<https://doi.org/10.1080/10508406.2013.847371>
- Felton-Koestler, M. D. (2017). Mathematics education as sociopolitical: Prospective teachers’ views of the what, who, and how. *Journal of Mathematics Teacher Education*, 20(1), 49–74. <https://doi.org/10.1007/s10857-015-9315-x>
- Felton-Koestler, M. D. (2019). “Children know more than I think they do”: The evolution of one teacher’s views about equitable mathematics teaching. *Journal of Mathematics Teacher Education*, 22(2), 153–177.  
<https://doi.org/10.1007/s10857-017-9384-0>
- Frankenstein, M. (1983). Critical mathematics education: An application of Paulo Freire’s epistemology. *The Journal of Education*, 165(4), 315–339.
- Frankenstein, M. (1990). Incorporating Race, Gender, and Class Issues into a Critical Mathematics Literacy Curriculum. *The Journal of Negro Education*, 59(3), 336–347. <https://doi.org/10.2307/2295568>
- Freire, P. (1970). *Pedagogy of the oppressed* (M. B. Ramos, Trans.; 30th anniversary ed). Continuum International Publishing Group.
- Garii, B., & Rule, A. C. (2009). Integrating social justice with mathematics and science: An analysis of student teacher lessons. *Teaching and Teacher Education: An International Journal of Research and Studies*, 25(3), 490–499. <https://doi.org/10.1016/j.tate.2008.11.003>
- Gee, J. P. (2000). Identity as an analytic lens for research in education. *Review of Research in Education*, 25, 99.  
<https://doi.org/10.2307/1167322>
- Gee, J. P. (2008). *Social linguistics and literacies: Ideology in discourses* (3rd ed.). Routledge.
- Gregson, S. A. (2013). Negotiating social justice teaching: One full-time teacher’s practice viewed from the trenches. *Journal for Research in Mathematics Education*, 44(1), 164–198.
- Gutiérrez, R. (2002). Enabling the practice of mathematics teachers in context: Toward a new equity research agenda. *Mathematical Thinking and Learning*, 4(2–3), 145–187.  
[https://doi.org/10.1207/S15327833MTL04023\\_4](https://doi.org/10.1207/S15327833MTL04023_4)
- Gutiérrez, R. (2009). Framing equity: Helping students “play the game” and “change the game.” *Teaching for Excellence and Equity in Mathematics*, 1(1), 5–7.
- Gutiérrez, R. (2013). The sociopolitical turn in mathematics education. *Journal for Research in Mathematics Education*, 44(1), 37–68.
- Gutstein, E. (2003). Teaching and learning mathematics for social justice in an urban, Latino school. *Journal for*

- Research in Mathematics Education, 34(1), 37–73. JSTOR. <https://doi.org/10.2307/30034699>
- Gutstein, E. (2006). “The real world as we have seen it”: Latino/a parents’ voices on teaching mathematics for social justice. *Mathematical Thinking & Learning: An International Journal*, 8(3), 331–358. [https://doi.org/10.1207/s15327833mtl0803\\_7](https://doi.org/10.1207/s15327833mtl0803_7)
- Gutstein, E. (2013). Whose community is this? Mathematics of neighborhood displacement. *Rethinking Schools*, 27(3), 11–17.
- Gutstein, E. (2016). “Our issues, our people—Math as our weapon”: Critical mathematics in a Chicago neighborhood high school. *Journal for Research in Mathematics Education*, 47(5), 454–504.
- Hand, V. (2012). Seeing culture and power in mathematical learning: Toward a model of equitable instruction. *Educational Studies in Mathematics*, 80(1–2), 233–247. <https://doi.org/10.1007/s10649-012-9387-9>
- Harper, F. K. (2019). A qualitative metasynthesis of teaching mathematics for social justice in action: Pitfalls and promises of practice. *Journal for Research in Mathematics Education*, 50(3), 268–310.
- Harrison, L. (2015). Teaching social justice through mathematics: A self-study of bridging theory to practice. *Middle Grades Review*, 1(1), 13.
- Horn, I. S. (2007). Fast kids, slow kids, lazy kids: Framing the mismatch problem in mathematics teachers’ conversations. *The Journal of the Learning Sciences*, 16(1), 37–79.
- Hughes, A., & Laura, R. (2018). The contribution of aboriginal epistemologies to mathematics education in Australia: Exploring the silences. *Educational Philosophy and Theory*, 50(4), 338–348. <https://doi.org/10.1080/00131857.2017.1359782>
- Hung, M. (2015). Talking circles promote equitable discourse. *The Mathematics Teacher*, 109(4), 256–260. <https://doi.org/10.5951/mathteacher.109.4.0256>
- Hyttén, K., & Bettez, S. C. (2011). Understanding education for social justice. *The Journal of Educational Foundations*, 25(1/2), 7.
- Kokka, K. (2015). Addressing dilemmas of social justice mathematics instruction through collaboration of students, educators, and researchers. *Educational Considerations*, 43(1), 13–21.
- Kokka, K. (2019). Healing-informed social justice mathematics: Promoting students’ sociopolitical consciousness and well-being in mathematics class. *Urban Education*, 54(9), 1179–1209. <https://doi.org/10.1177/0042085918806947>
- Kokka, K. (2020). Social justice pedagogy for whom? Developing privileged students’ critical mathematics consciousness. *Urban Review: Issues and Ideas in Public Education*, 52(4), 778–803. <https://doi.org/10.1007/s11256-020-00578-8>
- Ladson-Billings, G. (1995). But that’s just good teaching! The case for culturally relevant pedagogy. *Theory into Practice*, 34(3), 159–165.
- Ladson-Billings, G. (2021). Does that count? How mathematics education can support justice-focused anti-racist teaching and learning. *Journal of Urban Mathematics Education*, 14(1B), 1–5.
- Lampert, M. (2010). Learning teaching in, from, and for practice: What do we mean? *Journal of Teacher Education*, 61(1–2), 21–34. <https://doi.org/10.1177/0022487109347321>
- Larnell, G. V., Bullock, E. C., & Jett, C. C. (2016). Rethinking teaching and learning mathematics for social justice from a critical race perspective. *Journal of Education*, 196(1), 19–29. <https://doi.org/10.1177/002205741619600104>
- Lerman, S. (2000). The social turn in mathematics education research. In J. Boaler (Ed.), *Multiple Perspectives on Mathematics Teaching and Learning* (pp. 19–44). Greenwood Publishing Group.
- Leonard, J., & Moore, C. M. (2014). Learning to enact social justice pedagogy in mathematics classrooms. *Action in Teacher Education*, 36(1), 76–95. <https://doi.org/10.1080/01626620.2013.861371>
- Louie, N. L. (2017). The culture of exclusion in mathematics education and its persistence in equity-oriented teaching. *Journal for Research in Mathematics Education*, 48(5), 488. <https://doi.org/10.5951/jresmetheduc.48.5.0488>
- Martin, D. B. (2019). Equity, inclusion, and antiblackness in mathematics education. *Race, Ethnicity and Education*, 22(4), 459–478. <https://doi.org/10.1080/13613324.2019.1592833>
- Martin, D. B., Gholson, M. L., & Leonard, J. (2010). Mathematics as gatekeeper: Power and privilege in the production of knowledge. *Journal of Urban Mathematics Education*, 3(2), 13.
- National Council of Supervisors of Mathematics & TODOS: Mathematics for ALL. (2016). *Mathematics education through the lens of social justice: Acknowledgement, actions, and accountability*. [mathedleadership.org](http://mathedleadership.org)
- Nava, I., Park, J., Dockterman, D., Kawasaki, J., Schweig, J., Quartz, K. H., & Martinez, J. F. (2019). Measuring teaching quality of secondary mathematics and science residents: A classroom observation framework. *Journal of Teacher Education*, 70(2), 139–154. <https://doi.org/10.1177/0022487118755699>

- Ndlovu, M. C. (2011). Re-envisioning the scholarship of engagement: Lessons from a university-school partnership project for mathematics and science teaching. *South African Journal of Higher Education*, 25(7), 1397–1415.
- Nicol, C., Bragg, L. A., Radzinski, V., Yaro, K., Chen, A., & Amoah, E. (2019). Learning to teach the M in/for STEM for social justice. *ZDM: The International Journal on Mathematics Education*, 51(6), 1005–1016. <https://doi.org/10.1007/s11858-019-01065-5>
- Nolan, K. (2009). Mathematics in and through social justice: Another misunderstood marriage? *Journal of Mathematics Teacher Education*, 12(3), 205–216. <https://doi.org/10.1007/s10857-009-9111-6>
- Panthi, R. K., Luitel, B. C., & Belbase, S. (2018). Teachers' perception of social justice in mathematics classrooms. *REDIMAT - Journal of Research in Mathematics Education*, 7(1), 7–37.
- Picower, B. (2012). Teacher activism: Enacting a vision for social justice. *Equity & Excellence in Education*, 45(4), 561–574. <https://doi.org/10.1080/10665684.2012.717848>
- Planas, N., & Civil, M. (2009). Working with mathematics teachers and immigrant students: An empowerment perspective. *Journal of Mathematics Teacher Education*, 12(6), 391–409. <https://doi.org/10.1007/s10857-009-9116-1>
- Povey, H. (2002). Promoting social justice in and through the mathematics curriculum: Exploring the connections with epistemologies of mathematics. *Mathematics Education Research Journal*, 14(3), 190–201.
- Rands, K. (2013). Supporting transgender and gender-nonconforming youth through teaching mathematics for social justice. *Journal of LGBT Youth*, 10(1–2), 106–126. <https://doi.org/10.1080/19361653.2012.717813>
- Raygoza, M. C. (2020). Counting the experiences and beliefs of secondary teachers striving to teach mathematics for social justice in urban schools. *Urban Education*, 55(8–9), 1142–1171. <https://doi.org/10.1177/0042085916672289>
- Reagan, E. M., Pedulla, J. J., Jong, C., Cannady, M., & Cochran-Smith, M. (2011). Measuring practices of teaching for social justice in elementary mathematics classrooms. *Educational Research Quarterly*, 34(3), 15–39.
- Register, J. T., Pugalenthi, P., & Stephan, M. (2020). Designing for ethical reasoning in mathematics [and STEM] education. *Electronic Journal for Research in Science & Mathematics Education*, 24(2), 1411–157.
- Ryve, A. (2011). Discourse research in mathematics education: A critical evaluation of 108 journal articles. *Journal for Research in Mathematics Education*, 42(2), 167–199.
- Stinson, D. W. (2014). Teaching mathematics for social justice: An ethical and moral imperative? *Journal of Urban Mathematics Education*, 7(2), 1–5.
- Tanase, M. F., & Lucey, T. A. (2017). Pre-service teachers' awareness of interdisciplinary connections: Mathematics, financial literacy, and social justice issues. *Investigations in Mathematics Learning*, 9(1), 2–18. <https://doi.org/10.1080/19477503.2016.1245027>
- Turhan Turkkun, B., & Karakus, M. (2018). The opinions of middle school mathematics teachers on the integration of mathematics courses and social issues. *European Journal of Educational Research*, 7(2), 397–406.
- Voss, R., & Rickards, T. (2016). Using social justice pedagogies to improve student numeracy in secondary school education. *Journal of Education and Practice*, 7(15), 40–47.
- Wager, A. A., & Stinson, D. W. (Eds.). (2012). *Teaching mathematics for social justice: Conversations with educators*. National Council of Teachers of Mathematics.
- Yolcu, A. (2019). Research on equitable mathematics teaching practices: Insights into its divergences and convergences. *Review of Education*, 7(3), 701–730. <https://doi.org/10.1002/rev3.3163>