In July 2017, the National Council of Teachers of Mathematics (NCTM) released a new mission statement that shifts the organization’s primary focus to supporting and advocating for the highest quality mathematics teaching and learning for all students. A key strategy for achieving this goal is to advance “a culture of equity where each and every person has access to high quality teaching and is empowered as a learner and doer of mathematics” (NCTM, 2017, “Strategic Framework,” para. 2). Increasing equity and ensuring the highest quality mathematics teaching and learning for all students requires systemic change (National Council of Supervisors of Mathematics [NCSM] & TODOS: Mathematics for ALL, 2016). As educators are called to enact NCTM’s new mission, we acknowledge that such change is complex. We also acknowledge that our own experiences conducting equity work that is grounded in an asset-based approach are at different stages of development, ranging from beginning levels to lived experiences as diverse mathematics learners and mathematics education researchers. We see this change in mission as a call to both act politically (Aguirre et al., 2017) and to change story lines (i.e., “broad, culturally shared narrative[s]”; Herbel-Eisenmann et al., 2016, p. 104) that dominate the public perception of mathematics learning and teaching. We acknowledge that systemic barriers are part of a larger educational issue, but for the purposes of this commentary, we focus on mathematics.

We first briefly focus on several systemic barriers that have impeded the equitable development of students’ mathematics knowledge, including school and...
school-system structures that foster the social reproduction of inequity (Boaler & Staples, 2008; Ladson-Billings, 2017; NCSM & TODOS: Mathematics for ALL, 2016; Oakes, 2005). School funding formulae that instantiate inequities or “between-school tracking” (Organisation for Economic Co-operation and Development [OECD], 2016) alter children’s opportunities to learn mathematics. The OECD (2014) report provides continued evidence that differential opportunity to learn starts early (Carpenter, Fennema, Franke, Levi, & Empson, 2014; Clements & Sarama, 2014; Turner, Celedón-Pattichis, & Marshall, 2008; Turner, Celedón-Pattichis, Marshall, & Tennison, 2009; Turner & Celedón-Pattichis, 2011) and is largely a function of socioeconomic status. Practices such as tracking as well as differences in teacher preparedness across communities with varied socioeconomic statuses differentially impact student exposure to mathematics content (OECD, 2016). Teachers’ and students’ beliefs about mathematics and learners of mathematics also serve as barriers to equity in mathematics learning (Horn, 2007; Sztajn, 2003). To develop an equitable context for all students to learn mathematics, we need to change beliefs about students, about particular groups of students, about how students learn, and about grouping students (Berlin & Berry, 2018).

The current system of tracking in the United States that has arisen from these beliefs situates students from historically marginalized communities in lower track classroom instruction that typically does not challenge all students equally. Furthermore, this system fosters inequitable beliefs about both the nature of mathematics and how students view themselves as mathematics learners (Boaler, 2002, 2011; Boaler & Staples, 2008; Oakes, 2005). This instruction often leads to histories of learning that limit opportunities for low-resource communities and students of color. If we are really going to make systemic change, we will need collaborations among mathematics education researchers that include policymakers, lawmakers, and practitioners as well as many others who serve as partners to examine the system and work together toward change. Research has shown the benefits of complex instruction and detracked classrooms (Boaler, 2002, 2011; Boaler & Staples, 2008); however, others have argued that authentic equity work requires a more critical approach (Gutiérrez, 2017; Rubel, 2017). We argue that asset-based approaches to teaching in which students’ language and culture are viewed as intellectual resources to engage with mathematics in the classroom (Civil, 2007; Gonzalez, Moll, & Amanti, 2005) are needed to create change.

The purpose of this commentary is to extend the message of the 2017 report of the NCTM Research Committee (Aguirre et al., 2017) by providing select examples of asset-based approaches to constructing instructional contexts in which all students may gain mathematics knowledge. We call the mathematics education research community toward an understanding of equitable practices based on asset-based approaches to teaching and learning mathematics that are aligned with this mission from Pre-K–Grade 16. We challenge the mathematics education research community to consider a systems approach when thinking about the complexities and nuances of inequitable practices that limit mathematical
understanding for all children. Students and teachers must be considered within the context of the school, the school system, parents, society, and government. These systems are connected to and networked within policy systems that require mathematics educators to engage with political conocimiento, which is knowledge that involves the understanding of how systems operate to reproduce oppressive discourses and willingness to subvert them, for which many may not be prepared (Gutiérrez, 2017).

Asset-Based Approaches to Mathematics Education Research and Practice

Asset-based approaches to mathematics education are a conscious way to move away from deficit perspectives that view students, parents, and communities as lacking in different aspects that enable them to be ready for schooling (Coleman, Bruce, White, Boykin, & Tyler, 2016). An asset-based approach is grounded in the belief that students’, families’, and communities’ ways of knowing, including their language and culture, serve as intellectual resources and contribute greatly to the teaching and learning of high-quality mathematics (Civil, 2017). This approach draws from funds-of-knowledge work in which researchers and teachers learn with and from students, parents, and communities (González et al., 2005). There is valorization of knowledge (Civil, 2016); that is, different ways of doing mathematics are acknowledged and honored. Thus, funds of knowledge positions the home language and culture as assets that can serve as a foundation upon which educators may construct mathematics lesson plans, for example, or conceptualize research.

The funds-of-knowledge work started as a collaborative research project between anthropology and education in Tucson, Arizona. The research team studied working-class Mexican1 communities’ household and classroom practices. The central purpose of this work was to draw from local household and community knowledge to innovate teaching practices (González et al., 2005). As part of this work, teachers visited the students’ homes to learn about the literacy practices in the home setting of primarily Latinx students (Moll, Amanti, Neff, & Gonzalez, 1992). This work has been extended to include funds of knowledge in mathematics—in particular, engaging parents to participate in the mathematics education of their children (Civil, 2016), integrating funds of knowledge to engage students in Cognitively Guided Instruction (CGI) using their home language (Celedón-Pattichis & Turner, 2012; Turner & Celedón-Pattichis, 2011), and preparing preservice and in-service teachers to integrate funds of knowledge and children’s mathematical thinking through programs such as the TEACH Math project, which is explained below (Bartell et al., 2017).

1 Throughout the article, we have attempted to use the most appropriate terminology to describe people, peoples, and nations. We recognize that naming can be complex and seek throughout the article to prioritize the way communities are naming themselves, recognizing that this too may change with time. When referencing specific bodies of work, we made the decision to use the term used by the authors of that work unless problematic.
Asset-based projects often focus on working collaboratively with community stakeholders to develop culturally based curriculum materials and culturally responsive pedagogical practices (e.g., Dawson, 2013; Lunney Borden, 2013; Nicol, Archibald, & Baker, 2013). The Math in a Cultural Context (MCC) supplemental curriculum resource is perhaps the best known example of such an asset-based approach to curriculum development. These materials were designed by researchers and Yup’ik elders and include “the embedded mathematical knowledge contained in everyday solutions to a subsistence-oriented lifestyle, expert–apprentice modeling that elders use to teach novices, and spatial abilities and reasoning that permeate everyday activities” (Kisker et al., 2012, p. 79). An examination of the impact of using two MCC modules with second-grade students showed that such use resulted in a significant positive effect on student performance for both Alaskan Native students and non-Native Alaskans alike (Kisker et al., 2012).

An asset-based approach calls upon educators to provide high-quality mathematics that draws from strengths of students, families, and communities (Celedón-Pattichis, White, & Civil, 2017) and emphasizes higher order concepts and skills at each grade level as well as foundational knowledge and skills (Clements & Sarama, 2008; Fryer & Levitt, 2004). Students should be afforded opportunities to learn mathematics in their first or second language or languages so that they have multiple opportunities to make meaning for mathematical concepts and engage in problem solving (Celedón-Pattichis, Musanti, & Marshall, 2010; Celedón-Pattichis & Turner, 2012; Espada, 2012; Moschkovich, 2010; Turner & Celedón-Pattichis, 2011).

Creating Opportunities to Learn High-Quality Mathematics Beginning With Young Learners

Research focused on understanding children’s mathematical thinking can inform educators about how to create learning opportunities for students. For example, Clements and colleagues (Clements, Sarama, Spitler, Lange, & Wolfe, 2011; Clements, Sarama, Wolfe, & Spitler, 2013) provided a learning-trajectories-based, conceptual, problem-solving curriculum for preschoolers. This curriculum explicitly supported African American students’ participation in increasingly sophisticated forms of mathematical communication and argumentation (e.g., asking “How do you know?”) and maintained a language-rich environment that expected each child to invent solution strategies (cf. Carr, Steiner, Kyser, & Biddlecomb, 2008; Fennema, Carpenter, Jacobs, Franke, & Levi, 1998). This intervention supported preschoolers from low-resource communities to learn substantially more mathematics than students who experienced the existing mathematics curriculum. Also, African American students made greater gains than students in other groups (Clements et al., 2011, 2013).

Using asset-based approaches to plan instruction focuses teachers’ attention on students’ thinking and learning of mathematics and what children are capable of doing and aids teachers in avoiding biases that impair teaching and learning (Alexander, Entwisle, & Thompson, 1987; Martin, 2007; McLoyd, 1998;
U.S. Department of Health and Human Services, Administration for Children and Families, 2010). That is, including enthusiastic interaction with children that focuses teachers on mathematics that they believe children can learn can change their views of African American students’ mathematical capabilities (Jackson, 2011). A key point is that young children’s capacity to engage in challenging mathematical thinking and problem solving is often underestimated (Carpenter et al., 2014; Carpenter, Franke, Jacobs, Fennema, & Empson, 1998; Clements & Sarama, 2014; Leonard, in press; Sarama & Clements, 2009; Turner & Celedón-Pattichis, 2011; Turner et al., 2008). This is especially true for children in historically marginalized communities for whom estimates are perniciously low.

A broad body of research has shown that CGI positively impacts students’ learning when teachers use it to inform their teaching (Carpenter, Fennema, Peterson, & Carey, 1988; Carpenter, Fennema, Peterson, Chiang, & Lofel, 1989; Fennema et al., 1996; Franke, Carpenter, Levi, & Fennema, 2001). CGI prioritizes a particular area of mathematics (i.e., number and operation) as well as a particular theoretical framing (i.e., cognitive). Asset-based approaches to teaching also implement research that has shown, for example, that not all communities and families focus on counting and operations in the specific way that CGI has described. For instance, some researchers who study mathematics learning in Aboriginal communities have shown that some of the students with whom they work quantify (Meaney & Evans, 2013) in ways not captured by CGI and tend more toward the use of spatial reasoning in quantifying (e.g., Hunting, 1987; Lunney Borden & Munroe, 2016; Macpherson, 1987). Although the CGI approach builds on children’s informal knowledge and invented processes, its descriptions of those processes can inadvertently mask other mathematical strengths that children might bring to the classroom.

Additional research using CGI as a framework has been conducted in culturally and linguistically diverse settings in the United States, particularly with Latinx students in bilingual and English as a Second Language classrooms (Celedón-Pattichis & Turner, 2012; Secada, 1991; Turner et al., 2009; Turner & Celedón-Pattichis, 2011). For example, when Latinx kindergartners learned mathematics problem solving using the CGI framework, all children showed growth, and those whose teachers spent more time on challenging problems, provided consistent access to students’ native language, and used storytelling twice as much learned the most (Turner & Celedón-Pattichis, 2011). Furthermore, CGI in combination with culturally responsive instruction (CRI; see Closing the Mathematics Achievement Gap [CMAG] project) improved the mathematics performance of Native American students with learning disabilities (Hankes, Skoning, Fast, & Mason-Williams, 2013). These studies provide examples of how culturally and linguistically diverse students can engage in complex problem solving when given the opportunity to do so and when teachers draw from language and culture as intellectual resources (Celedón-Pattichis et al., 2010; Turner et al., 2008).

Globally, there has been a focus on transforming mathematics education for Indigenous students by integrating Indigenous ways of knowing, being, and doing
Asset-Based Approaches to Equitable Mathematics Education

(Aikenhead, 2017; Meaney, Trinick, & Fairhill, 2013). Many of these projects have focused on integrating cultural practices as a starting point for learning mathematics (Beatty & Blair, 2015; Wagner & Lunney Borden, 2011). The Show Me Your Math (SMYM) project in Canada stands as an example of shifting story lines to center community knowledge as a place in which mathematics can emerge (Wagner & Lunney Borden, 2012). In this program, the researchers shifted their own positioning to remove themselves as the central characters in the research and instead worked with community-based teachers to create a program in which the students interact with community elders and knowledge keepers to explore the ways of reasoning in their own community contexts that align with school mathematics. Similar use of positioning theory in equity-based research has been employed by Turner, Dominguez, Maldonado, and Empson (2013) to examine the impact of positioning students as competent problem solvers in mathematics classrooms. In SMYM, the work has been extended to position students as researchers who learn from elders and share their learning with their teachers and the wider community at an annual mathematics fair (Lunney Borden, Wagner, & Johnson, 2018). Projects such as making paddles, maple syrup, and drums have become commonplace in the Mi’kmaw schools that participate in this program, and this, in turn, positions community knowledge not only as an asset but as a place from which rich learning may emerge (Lunney Borden & Wiseman, 2016).

Collectively, these research studies change the story line of who can do mathematics and whose mathematics is learned because culturally and linguistically diverse students are positioned as doers of mathematics, and the programs take an asset-based approach that honors and acknowledges the ways of knowing and using mathematics in communities (Civil, 2007, 2016; González, Andrade, Civil, & Moll, 2001). The studies documenting mathematical learning in Latinx, African American, Indigenous, and multilingual settings provide powerful examples of projects that affect professional practice. These asset-based approaches do not ask “Is the child ready to learn?” but accept that every child is ready (Institute of Medicine [IOM] and National Research Council [NRC], 2015) and eager (NRC, 2001) to learn—and have substantial potential and competencies on which to base future learning. Asset-based approaches similarly build on funds of knowledge (González et al., 2001; Moll et al., 1992) in which linguistic and cultural resources in the child and community are viewed as intellectual resources to engage with mathematics in the classroom.

There are pedagogical strategies that promote equitable instruction, but equally important are approaches to modify systems at the school, district, state, and national levels that maintain inequitable structures. Equitable practices focused on asset-based approaches must be implemented comprehensively so that all students’ experiences are devoid of labeling, prejudice, and unequal access to opportunities to learn (Bishop & Forgasz, 2007).
Supporting Teachers to Engage in Teaching and Learning Mathematics
From an Asset-Based Approach

There have been a number of studies that take up the important work of providing teacher preparation to support teachers to enact equitable, asset-based approaches to mathematics education. Using Gutiérrez’s (2012) framework, Rubel (2017) identified four common equitable teaching practices that are often used to bring about greater equity in the classroom. She argued that practices such as standards-based teaching and complex instruction address what Gutiérrez referred to as the dominant axis, where the main focus is on supporting access and achievement of historically marginalized students. She also argued that strategies such as culturally responsive pedagogy and teaching mathematics for social justice are better aligned with Gutiérrez’s critical axis in that they address issues of identity and power in the mathematics classroom. Many teachers in this study identified as White and were teaching in hyper-segregated schools. Although the teachers that she observed seemed adept at using the more dominant practices, they struggled with the critical approaches to teaching mathematics. Rubel argues that there is a need to address the more critical approaches in teacher development so that teachers are better prepared to build the necessary knowledge of community and engage with more complex notions of equity, identity, and power.

Wiseman, Glanfield, and Lunney Borden (2017), in a systematic review of literature relating to Indigenous knowledge in mathematics and science education in Canada, highlighted the significant need for teacher learning that counters the deficit views of Indigenous peoples and communities that have been perpetuated by colonial systems of education. In the 2017 Research Committee report (Aguirre et al., 2017), mathematics education researchers were called to acquire the knowledge necessary to do equity work; this is also a need for mathematics teachers who must unlearn the deficit views to be open to asset-based approaches. In this section, we highlight two projects—Access, Agency, and Allies in Mathematical Systems (A3IMS; Larnell et al., 2016; LópezLeiva, Herbel-Eisenmann, Yolcu, & Jones, 2015) and Teachers Empowered to Advance Change in Mathematics (TEACH MATH; Turner et al., 2012)—that are striving to advance work on equity in mathematics education by supporting such teacher learning. We include these two projects because they involve cross-site researchers in equity and mathematics education who also draw from asset-based approaches and because they engage K–Grade 9 teachers in critically reflecting on equitable teaching practices to improve students’ outcomes. (See the Center for the Mathematics Education of Latinos/as [CEMELA] at http://cemela.math.arizona.edu for more examples that draw from an asset-based approach to preparing teachers.)

The stated goal of A3IMS is to design professional development (PD) that makes central an equitable system (Larnell et al., 2016; LópezLeiva et al., 2015). An equitable system, according to this project, comprises intersecting levels of mathematics education that “function synergistically to support the fair distribution of opportunities to learn (Hand, Penuel, & Gutiérrez, 2012)” (Scroggins, Herbel-Eisenmann, Harper, & Bartell, 2017, p. 847). The PD involved a summer
institute in which teachers considered access, agency, and ally work in relation to four strands: mathematical discourse practices such as argumentation and justification, algebraic thinking, culture and community, and positionality. Following the institute, participating teachers engaged in action research related to ideas from the strands that they wanted to systematically study to better support opportunities to learn. In particular, A3IMS is researching the nature of students’, teachers’, and mathematics teacher educators’ opportunities to learn with respect to access, agency, and allies. Such work is critical in developing teachers’ and mathematics teacher educators’ political conocimiento for teaching mathematics (Gutiérrez, 2017) and is the first step needed for teachers and mathematics teacher educators to recognize and challenge their own privilege to empower all students in the classroom. This ongoing National Science Foundation (NSF) funded research and PD project is representative of the work needed to forward preservice and in-service teacher learning opportunities in mathematics education that hold promise for supporting equitable practice more broadly.

TEACH MATH was a 5-year multi-institution collaborative NSF-funded project focused on transforming K–Grade 8 mathematics teacher preparation and early career teaching so that new generations of teachers are equipped with equity-based, culturally responsive mathematics pedagogies to increase the mathematics learning and achievement of youth in the United States. The TEACH MATH project researched and developed instructional modules for teacher education and PD settings to support teachers to connect to children’s mathematical thinking and cultural-, linguistic-, and community-based funds of knowledge, or what the project called students’ multiple mathematical knowledge bases in instruction (see Bartell et al., 2017; Drake et al., 2015; Turner et al., 2012). The pedagogical tools and strategies embedded in these modules facilitate an asset-based orientation to mathematics teaching that supports students’ mathematical learning and engagement. The Case Study Module affords preservice teachers an opportunity to get to know one student from a culturally or linguistically different background from their own by interviewing the student and conducting problem-solving interviews. The ultimate goal is to support preservice teachers in advancing that child’s mathematics learning. In an empirical study of 96 mathematics tasks developed from these mathematics learning case studies, 97% of the tasks directly attended to children’s mathematical thinking and knowledge of the child’s interests. Furthermore, almost half (46%) of the mathematics tasks aimed to foster the child’s mathematical reasoning and connect to specific knowledge about the child’s out-of-school experiences to leverage mathematical learning (Turner et al., 2016).

The Classroom Practices Module supports teachers in observing and reflecting on their own practice (or that of others) related to learning, teaching, mathematical tasks, and power and participation (see Roth McDuffie, Foote, Drake, et al., 2014, for ways to use these lenses to analyze mathematics teaching using video cases). The researchers found that preservice teachers’ use of these lenses to analyze videos of instructional practice deepened their capacities to notice children’s multiple mathematical knowledge bases and instructional moves and interactions.
that promote mathematics learning. In prior studies, teachers’ noticing was found to be challenging to develop with in-service teachers (Roth McDuffie, Foote, Bolson, et al., 2014). The Community Exploration Module engages teachers in learning about the mathematical practices in students’ families and communities and drawing from these to create standards-based mathematics lessons that are meaningful and culturally relevant to the students (see Aguirre et al., 2013; Turner et al., 2014). An empirical study that analyzed 70 Community Mathematics Exploration projects representing the work of 113 preservice teachers found that almost half of the projects (47%) attended to multiple mathematical knowledge bases in ways that demonstrate that preservice teachers can be supported to design and implement standards-based instruction from an asset-based approach, an often-cited challenge for in-service teachers to incorporate into their practice (Aguirre & Zavala, 2013). Given the theoretical, empirical, and practice-based contributions of the TEACH MATH modules, more institutions continue to field-test the modules in mathematics methods courses throughout the United States and currently use them to support in-service teachers at different institutions (www.teachmath.info).

What is common across these two projects is the continued support that is needed for teachers to develop asset-based pedagogical dispositions over time through PD that addresses equity in mathematics education. Although the first project is still in the early stages, teachers have the potential to make statistically significant changes in student achievement (Marzano, 2003), and we believe that the mathematics education research community needs to consider teacher dispositions as we work toward greater equity. We now turn to research strands that are needed to advance the work on equity in mathematics education.

**Research Needed in Equity in Mathematics Education**

Having considered examples of projects that forge a path toward equitable teaching and learning through asset-based approaches and teacher education programs that foster equitable instructional practices, we now turn toward areas of need within mathematics education research. The research community is called to build our collective understanding of instructional practices, political acts, and teacher education efforts that hold potential to support more equitable instructional practices that create powerful learning experiences for all students. Asset-based approaches are equally applicable for both practice and research. In the 2017 Research Committee report, the mathematics education research community was asked to consider the following four questions:

1. What is my researcher positionality?
2. What theoretical frameworks and literature will I draw from and why?
3. How will the research design be informed by the communities with whom I work?
4. How do I engage the community or population in the findings I report in the research? (Aguirre et al., 2017, pp. 133–134)
These questions can guide researchers to use an asset-based lens in planning, designing, and engaging in research alongside communities. We have described examples above that demonstrate the contributions of asset-based approaches to the field and identify the implications of such asset-based approaches to research. Though not an exhaustive list, the literature reviewed shows that such research must begin with:

1. believing that all students can engage with challenging mathematics,
2. engaging the community to build relationships in meaningful ways so that the strengths of the community are seen as a starting point for research and teaching,
3. drawing upon the linguistic and cultural strengths in the community (funds of knowledge) to inform mathematics education research and practice, and
4. critically examining and challenging systemic inequities within existing practices.

Below, we point toward five areas of research necessary to move discussion and practice forward toward equitable mathematics education that has the potential to support all learners to learn significant and powerful mathematics. These include research that (a) explicitly reveals effective practices that have successfully changed outcomes for mathematics learners, (b) supports our understanding of asset-based approaches, (c) builds understanding of effective teacher education and induction programs, (d) renews efforts to problematize what we mean by mathematics and mathematics competence, and (e) takes up the political acts that we were challenged to consider within the 2017 Research Committee report (Aguirre et al., 2017).

First, the mathematics education community is encouraged to continue important work related to reversing systems of inequity. The negative impacts of tracking on historically marginalized students, for example, are well documented (Oakes, 2005), but there are far fewer studies that support our understanding of effective, equity-focused, detracked classrooms and schools (e.g., Burris, Wiley, Welner, & Murphy, 2008). We also have little understanding of the work required to truly transform a school context into one that supports the mathematics learning of all students, including historically marginalized populations. We call for more case studies that contextualize mathematics education research within systemic barriers that continue to perpetuate and reinforce inequities in mathematics teaching and learning. Rich descriptions of efforts to provide such equitable instruction that take into consideration the systems in which these inequitable practices exist will provide exemplars that may support future efforts to effectively educate all students for future mathematical success.

Second, we call for more asset-based research that embraces and sustains culturally responsive and relational pedagogy (Aikenhead, 2017; Glanfield, Sterenberg, & Donald, 2013; Leonard, Napp, & Adeleke, 2009) and expands our understanding of cultural ways of knowing as well as the impact of such work. This research
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highlights the necessary step of educators building relationships with communities and coming to understand ways of knowing and doing mathematics within these communities (Wiseman et al., 2017). To do such work, we need to build genuine collaborations as we conduct research to deeply understand communities and their ways of knowing (Aguirre et al., 2017; Wiseman, Glanfield, & Lunney Borden, 2017). Moreover, we acknowledge the importance of teaching mathematics for social justice as a means of honoring communities of color and addressing the challenges that these communities face in obtaining educational parity and accessing equitable mathematics instruction (Leonard, Brooks, Barnes-Johnson, & Berry, 2010). Finally, we call for longitudinal studies of these equitable teaching practices to begin to understand the sustained benefits of learning mathematics for all students.

Third, we call on the mathematics education community to deeply examine teacher education programs that foster real change through long-term immersion within communities of traditionally marginalized (Seidl et al., 2015) and Indigenous peoples (Lunney Borden & Wiseman, 2016). Teachers need to develop a rich store of knowledge relative to the ways of being or ways of knowing in mathematics as well as the cultural tools that students bring to the classroom that facilitate their learning (Lunney Borden, 2011, 2013). Both teachers’ and students’ beliefs about mathematics as a discipline and the purpose of school mathematics need to be reconsidered to create equitable contexts for all students to learn mathematics (Aguirre et al., 2017). Further, we know that much of the learning in teacher education programs can be dissipated if it is not supported with rich and supportive induction programs. We encourage the examination of powerful induction programs that rely on hybrid contexts for busy teachers to create multiple opportunities to engage with colleagues during the early years of a teacher’s career (Kobett, 2016).

Fourth, in addition to the political acts described in the 2017 Research Committee report (Aguirre et al., 2017), we call on the mathematics education community to change the narrative (Herbel-Eisenmann et al., 2016) around what it means to be mathematically competent and the ways in which mathematics classrooms foster conceptions of competence (Gresalfi, Martin, Hand, & Greeno, 2009). The mathematics education community not only needs rich descriptions of pedagogy that challenges all students to learn mathematics but also examples that challenge what it means to be mathematically competent or to engage in a mathematics community. We must take up the important work of changing story lines about what it means to do mathematics (Aguirre et al., 2017; Herbel-Eisenmann et al., 2016). Parents and other influences on mathematics teaching, such as the news media, must be supported to understand the importance of thinking differently about mathematics (Herbel-Eisenmann et al., 2016).

Finally, we urge the mathematics education community to seriously consider and to take up the call of the 2017 Research Committee report (Aguirre et al., 2017) to “enhance mathematics education research with an equity lens” (p. 128), “acquire the knowledge necessary to do genuine equity work” (p. 129), “challenge
the false dichotomy between mathematics and equity” (p. 130), and “expand the view of what counts as ‘mathematics’” (p. 132). It is through these political acts as well as the call for the research outlined above that we will expand our understanding of and ability to foster the development of mathematics classroom contexts that support the readiness of all students to engage in high-level mathematics that opens future opportunities.

References


