Discourse practices warrant the attention of mathematics educators because discourse is the primary medium of education. Though conceptions of mathematics and academic language may often avoid the identification of values, discourse practices can give evidence about whether particular hopes or expectations are being met – no matter if the goal is performance of mathematical procedures, creativity in problem solving or a classroom environment that uses the diversity of voices as a resource. Language, with its associated implicit and explicit actions, is the medium of mathematical development and, consequently, the medium through which equities and inequities are structured and sustained.

We begin this chapter and this book with a statement about what we value – equity in mathematics education. We want it all – equity and mathematical learning.

We think that equity is something for which most mathematics educators strive.

Nevertheless, differences abound in relation to how equity is conceived and how these conceptions are manifested in classroom practices, with consequences for the opportunities to learn for every student. These consequences demand a diligent and sustained focus on equity and discourse.

There is no singular way to conceptualize and explore how discourse and equity are related and how these complex notions play out in mathematics classrooms. Consequently, we feel it is important to bring together perspectives from diverse demographic and geographic contexts and widely spread theoretical orientations.

Two shared concerns bring the contributors to this book together: an interest in equity and the recognition that equity (and inequity) is expressed, sustained and developed in and through discourse practices. Within these similarities, we note differences in the way that discourse and equity are relatively emphasized. Although every chapter here relates to discourse and equity, some authors have oriented their work around equity and from there were drawn to consider discourse practices, while others have oriented their work around discourse and from there subsequently engaged with equity issues.
In the context of complex notions like ‘discourse’ and ‘equity’, both of which can be taken in a variety of ways, definitions of important words, and the ways these words are used, reveal what is valued. The next two sections of this introduction give an overview of our orientations toward the words ‘equity’ and ‘discourse’, which were used for determining the scope of the book and to invite contributors.

For these central terms we aimed for broad conceptualizations, in order to include diverse perspectives. These two sections are followed by an overview of some essential literature that relates to the connections between discourse and equity, and finally by an overview of the structure of the book.

1 Equity

Attention to equity is part of a larger movement in mathematics education attending to research on sociocultural factors that influence students’ experiences (e.g. Brenner 1998; Forman 2003; Gay 2000; Lee et al. 2005). In particular, a considerable body of research on ‘funds of knowledge’ (Moll et al. 1992) identifies the value of culture and experiences students bring to the classroom to complement the culture and experiences within the classroom and its disciplines. The identification of intersecting (and sometimes competing) systems of knowledge is important to the interrogation of the cultural relevance of mathematics and science instruction. In this regard, Bishop (1988) sought to identify the values embodied in mathematics, while D’Ambrosio (1994) promoted reflection on the effect mathematics and sciences have on society by identifying both horrible and wonderful things that have been enabled by these disciplines. Others have sought to understand and build from the values within given communities by identifying culturally-relevant mathematics teaching (e.g. Brenner 1998; Ladson-Billings 1995b; Warren and Rosebery 1995).

Differences between home and mathematics classroom cultures are also evident in the kinds of practices that are valued, differences which relate to the conceptualization of mathematics. Ethnomathematics research pushes the boundaries of mathematics to include practices that may not have been thought of as mathematical. Barton (2008) made a helpful distinction between “near-universal, conventional mathematics” (p. 10) that is practiced in academic settings internationally (which he called NUC-mathematics) and systems that help people “deal with quantity or measurement, or the relationships between things or ideas, or space, shapes or patterns” (p. 10), which he called QRS-systems. NUC-mathematics or any system is a form of mathematics set in a particular cultural trajectory. While ethnomathematics is contentious, challenged both by Dowling (1998) and by Vithal and Skovsmose (1997) for instance, ethnomathematicians (e.g. Gerdes 1988) claim that identifying mathematics outside academia serves to counter the inequitable privileging of certain cultures.

Language exemplifies and creates culture and, consequently, the language of instruction privileges culture associated with that language. Thus, attention to language issues at work in multilingual mathematics classrooms (e.g. Adler 2001) is another important part of efforts to make mathematics culturally relevant and responsive. Not only do language choices affect the kinds of discourse privileged in classrooms; they also influence the way mathematics itself can
be expressed and thus the way a society learns to address its problems, as shown by Barton (2008).

Cultural relevance is especially important in urban settings, which tend to comprise linguistically and culturally diverse populations. Thus, sociolinguistic research has often taken place in urban settings with high proportions of students from marginalized backgrounds (e.g. Forman et al. 1998; O’Connor et al. 1998; O’Connor and Michaels 1996). However, because inequities relate to the marginalised as much as they do to the powers that sustain the inequities, sociolinguistic research in less diverse settings or in a range of settings is also important. Positioning is always at work in mathematics classrooms, no matter the range or depth of diversity in the context (Wagner and Herbel-Eisenmann 2009).

The positioning of students within classroom interaction is important to their experiences, but students are also positioned in relation both to society and to mathematics. Research on critical pedagogy (e.g. Frankenstein 1998; Gutstein 2006; Powell and Frankenstein 1997) provides both theoretical and empirical accounts of the ways instructional contexts can be designed to address inequities outside the classroom. Positioning students as people who can address issues outside the classroom has repercussions on how they feel in the classroom and how they see themselves in relation to mathematics.

In addition to the attention to equity in the research of mathematics education, equity concerns have also become more prominent recently in professional literature and policy documents. For example, the NCTM standards documents (1989, 1991, 2000), which explicitly or tacitly underpin curriculum and policy in the United States and some other countries, prominently call for greater equity. Equity is the first listed of the six core principles in the U.S. National Council of Teachers of Mathematics’ Principles and Standards document (NCTM 2000). However, more recent professional and policy documents in the United States have moved in a different direction: the word ‘equity’ does not appear in the Common Core State Standards for mathematics (CCSS 2010), nor in the accompanying material published with them on the internet (http://www.corestandards.org/). Additionally, there is a separate three-page document addressing the teaching of English language learners and a two-page document concerned with students with disabilities, rather than equity in mathematics classrooms more broadly. The recent attention to equity at professional and policy levels is sustained and supported by the research, but it also motivates and sustains the research. We have yet to see the interplay between policy, practice and research in relation to the Common Core Standards.

In our view, differences between a student’s home culture and the culture of mathematics classrooms are central to structural inequities that exist in mathematics classrooms, particularly since the difference between home and school culture is greater for some than others (Schleppegrell 2004; Zevenbergen 2001b).

Home–school differences can be particularly evident when teachers and students are from different cultural, linguistic, socioeconomic or racial backgrounds. Students from marginalised backgrounds, for example, are aware of how racial differences shape the ways they are viewed by teachers and administrators (Howard 2008). More generally, as students, particularly
students from marginalized backgrounds, get older, they become more aware of the
dissonance between different communities of which they are members, engendering a political
awareness that impacts the ways students identify with schools (Lee 2009 ), but which teachers
and schools could use as resources rather than attempt to ignore or suppress.

Other research has focused on the deleterious effect of schooling on children from
marginalized backgrounds. Research in the U.S., for example, has shown that when background
characteristics, especially socioeconomic status, are controlled for, minority children enter
school with the same preparation as White students, but lose ground to White students in each
year of schooling (O’Connor et al. 2009 ). Simply focusing on access and achievement will not
alter these trends, as the recent experiences in the U.S. with the No Child Left Behind
experiment have demonstrated. Instead, we side with Gutiérrez (Chap. 2 ) in pointing to the
importance of investigating issues of identity and power and how they play out in classroom
interactions, which leads us to elaborate on how we interpret the idea of discourse in this book.

2 Discourse

In relation to discourse, there are at least two sides to our interest in the connections between
discourse and equity. First, we consider the ways in which social, mathematical, cultural and
political aspects of classroom interactions impact students’ opportunities to participate in the
kinds of discourse practices that provide access to future resources. Second, we consider the
perceptions and practices of educators, particularly the extent to which they view diversity as a
resource, as well as that to which they are aware of structural inequities in the ways they
perceive and design classroom discourse practices.

We see the word ‘discourse’ being used to describe how contexts, such as mathematics
classrooms, are structured in order to broadly consider how language exchanges embody the
diverse social, political, cultural and socioeconomic positions at play. The sociocultural practices
related to language use in mathematics classrooms indicate potential mismatches between
home-based and school-based practices. Teachers who have a sense of how broad Discourses
(Gee 1999 ) impact the construction of identity and culture can build from students’ cultural
resources and political awareness to develop mathematical thinking (e.g. Gutstein 2006 ; Lipka
et al. 1998 ). Our broad approach to discourse opens attention to the structural and systemic
influences on educational equity.

There are other shades of meaning related to the word ‘discourse’. For example, in much, if not
most, of the discussion about discourse in the practitioner literature in North America,
‘discourse’ refers to oral communication practices in classrooms and tends to ignore the
political dimensions of discourse. Because different foci accompany the various ways of using
‘discourse’, we see value in various approaches to the word in literature aimed at informing
research, practice or both. At the very least, in this context of varying meanings for the word, it
is important for educators to be clear about how they are using it. We take discourse to
comprise a broad range of practices, including reading, writing, speaking and listening, as well
as prosodic features of communication and gesture; all are intimately related to the contexts in
which such practices are situated and informed by the range of communities in which people
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participate. Such a sense of discourse, which considers both the practices and the systemic influences on practice, has been detailed by scholars from diverse scholarly traditions, including Michael Halliday, James Gee, Norman Fairclough and Michel Foucault. Although these diverse traditions agree on the importance of understanding discourse, there is tension between orientations, well-documented by MacLure (2003) and within mathematics education by Ryve (2011). These tensions can be generative when scholars engage in conversation around a focused topic, as in this book.

3 Changing Discourse Patterns in Mathematics Classrooms

The resilience of historical patterns of discourse in mathematics classrooms poses concerns with respect to equity; there are strong traditions of practice that privilege certain groups of students, particularly many students from the majority culture in the context of their schooling, in part because these traditions constrain the way students engage with mathematics. Accounts of teacher-directed discourse in which students do little more than provide brief answers to procedural questions and the prevalence of the Initiate–Respond–Feedback (IRF) (Sinclair and Coulthard 1975; Mehan 1979) interaction pattern are well represented in the TIMSS video research (Stigler and Hiebert 1999). These ways of interacting are fairly specific to the context of classrooms. In wider cultural contexts, these kinds of interactions might be considered rude, inappropriate or demeaning. In fact, traditional discourse patterns in mathematics classrooms have been found to be culturally incongruent for some students because of the lack of opportunity for interaction (Brenner 1998), the emphasis on adult authority (Au 1980) and the lack of sensitivity to linguistic concerns (Warren and Rosebery 1995).

Attention to discourse in mathematics education has provided theoretical and empirical descriptions of forms of discourse that seem to provide more equitable and robust conditions for learning. The research is grounded in disciplinary and theoretical traditions that focus on grammatical and lexical features of mathematical discourse (e.g. Halliday 1978; Herbel-Eisenmann and Wagner 2010; Lemke 1990; Mousley and Marks 1991; Pimm 1987; Rowland 2000; Schleppegrell 2004), the sociocultural context in which the discourse takes place (e.g. Lerman 2001; Zevenbergen 2001b, 2005), the sociolinguistic features of discourse (e.g. Bills 2000; O’Connor and Michaels 1993, 1996; Weingrad 1998), and qualities of discourse related to the discipline of mathematics (e.g. Lampert 1990, 2001; Pimm 1987).

Research on discourse in mathematics classrooms has been synthesized or summarized elsewhere (Sfard et al. 2001; Lampert and Cobb 2003; Steinbring et al. 1998), but these syntheses have not sufficiently addressed concerns related to equity, diversity and culture. Franke et al. (2007) bring these concerns together, albeit briefly, in relationship to the teaching of mathematics.

Fundamental challenges remain in helping teachers transform their discourse practices to recruit and build better from the diversity of student perspectives and approaches that exist in classrooms. The scant literature that has focused on teachers who attempt to position all students in meaningfully intellectual roles in classroom discourse reports on unusual situations, such as teacher development experiments (e.g. Cobb et al. 1991; Cobb et al. 1992; Yackel and
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Cobb 1996 ) or teachers who are considered experts in mathematics education (e.g. Ball 1993 ; Lampert 1992 ; McClain and Cobb 1997 ) . Only recently have mathematics education researchers used the tools and concepts of discourse analysis to collaborate with teachers as they teach in their ordinary classrooms (e.g. de Freitas and Zolkower 2009, 2011 ; Rowland 2000 ; Staples and Truxaw 2010 ) , including collaborations with teachers that involve action research focused on discourse features (Grant and McGraw 2006 ; Herbel-Eisenmann and Cirillo 2009 ; O’Connor et al. 1998 ; Zack and Graves 2001 ) .

Adler ( 2001 ) noted that in any mathematics classroom the teacher has to decide how much to draw explicit attention to language and that this dilemma is exacerbated in multilingual classrooms. Such explicit attention often derives from deficit views of language use (Moschkovich 1999 ) , but need not do so. There is a range of reasons for drawing students’ attention to discourse – for example, to support the development of content knowledge, communicative competence or awareness of the discipline’s role in society (D’Ambrosio 1994 ) .

Below, we review research on equity and discourse, in order to set the context for the work elaborated in the book. We focus on three themes (elaborated in more detail below) that have emerged as foci for researchers exploring inequitable patterns of participation in mathematics classroom discourse and perspectives that implicate actions for educators attempting to disrupt those inequitable patterns. The three themes are: the difficulties of engaging students in academic forms of discourse; the cultural dimensions of discourse as a means of explaining potential barriers for equitable patterns of participation; the ways teachers can structure interactions to position every student as a contributor to the collective development of mathematical ideas.

3.1 Making Language Practices Explicit

One way to look at discourse with an eye toward equity is to draw attention to the particularities of the mathematics register and the practices of mathematics classroom culture (e.g. Mousley and Marks 1991 ; Pimm 1987 ) . This research is often intended to help teachers and their students understand and develop competence with the relevant discourses, especially educators supporting students – often those most marginalized in school settings – who have less familiarity with academic and mathematics discourse (Schleppegrell 2004 ; Zevenbergen 2001b ) .

With this kind of work, it is important to distinguish between language in mathematics contexts and other contexts. For example, students have probably used the word ‘sign’ many times outside of their mathematics classroom in reference to things like ‘signing’ their names on a sheet of paper. In mathematics contexts, however, we talk about the ‘sign’ of a number, meaning that it is in a positive or negative direction from zero on a number line. We also use the word ‘sine’ which sounds the same but means something quite different (see Adler 2001 ) . To add further complication, when we write ‘sine’ or when we use calculators, we write or look for ‘sin’, which, again, has a completely different meaning outside of the mathematics classroom. (See Herbel-Eisenmann et al. 2009a , for more about this example and other examples of longer stretches of discourse that are different in mathematics classrooms from
other domains.) Differences in the way words are used may relate to relatively local ideas, like the meaning of ‘sign’ and even to ideas central to mathematics, such as the meaning of ‘proof’ or ‘justification’. Explicit discussions about these kinds of nuances in mathematical language may be important so that all students understand the tacit differences.

Further, there are differences between mathematics classroom discourse and other mathematics-related discourse practices. The knowledge, needs and aims of mathematicians are different from but related to the knowledge, needs and aims of mathematics teachers and of mathematics students. These differences appear in the form of their discourse practices, which are specific to their registers, their distinct ways of using the natural language in force (e.g. English) to achieve a specific range of functions. Pimm (2007), Barwell (2007) and Herbel-Eisenmann et al. (2010) have argued for the necessity of making this distinction between the mathematics register and mathematics classroom register. It is not appropriate to assume students should be aiming to develop discourse practices that match those of mathematicians.

Instead, educators need to consider what form of discourse is the most appropriate for each learning environment. Coming from linguistic and critical sociological perspectives, some researchers using systemic functional linguistics have argued that it is important for educators to attend to classroom discourse because students need to do more than observe mathematical outcomes. They need to engage in mathematically appropriate (i.e. academic rather than everyday) forms of reading, writing, speaking and listening.

It is argued that this kind of explicit engagement in a range of mathematical literacies is especially important when equity issues are considered (Lemke 1990; Morgan 1998; Schleppegrell 2004). Helping students understand academic forms of discourse provides them access to codes of power (Delpit 1995).

Other research drawing from linguistics and sociology focuses on the social rules and routines present in academic environments. For students to take part in the classroom activities, they must come to follow and understand particular social rules, which are often tacit (Cazden 2001; Voigt 1985, 1989) and not universal in their cultural basis. Classrooms are unlike other social environments because one person, the teacher, is “responsible for controlling all of the talk that occurs while the class is officially in session – controlling not just negatively, as a traffic officer does to avoid collisions, but also positively, to enhance the purposes of education” (Cazden 2001, p. 2). These tacit rules, which are often taken for granted, need to be made explicit to all students, especially students whose home discourses differ most from school discourses. As Cazden and Mehan (1992) explained, students must recognize varying contexts and shift their language use multiple times throughout the day, and even within a particular lesson. For example, the ways in which students are expected to participate in small groups varies considerably from the ways they are expected to participate during a teacher’s lecture; these expectations come from each other as well as from the teacher. Different interaction patterns involve various methods used to control classroom discourse (see, for example, Edwards and Mercer 1987) and can be more or less aligned with the discourse patterns of other communities of which students are members.
Because many of these routines and rules are tacit, the identities of the participants play a significant, yet often overlooked, role in classroom discourse practices (Cazden 2001; Evans 2000; Hannula 2002; Heath 1983). A focus on both classroom discourse and identity is connected to equity issues for at least two reasons. First, there is an increased emphasis on teaching mathematics to every student 1 (NCTM 1989, 2000) and a concern about achievement gaps between sociocultural groups (Lubienski 2002; Lubienski et al. 2004). Second, there are often major differences between the demographics of the teaching force and those of the student population, with the teaching force disproportionately constituted from dominant groups while the students are increasingly diverse. In the U.S., for example, over four-fifths of elementary teachers are White, while non-White students will soon be in the majority (USDOE 1998).

Discourse studies on literacy practices have highlighted the importance of perceived status (by both teachers and peers) and one’s identity as they influence both the dynamic rituals and routines of small- and whole-group interaction (Lewis 2001). Similarly, it is likely that informal social and home discourses could impact the ways that students are taught to view and engage in argumentation (O’Connor 1998), something that is viewed as an important mathematical process in policy documents (e.g. NCTM 2000).

In the NCTM Standards documents, the earlier version used the words “all students”. In more recent publications, however, the words “every student” were used instead. We see this as a potentially important shift, because it indexes a move from a perspective of equality (in which all students get access) to a perspective of equity (in which close attention to each student can help educators to provide what each student needs).

In order to address disparities, Morgan (1998) concluded her critical discourse analysis of student mathematical writing by saying that students need to be drawn into critical discussion about their discourse, offering as a model Fairclough’s (1992) critical language awareness, which is typically done in language-oriented classes. When Wagner (2007, 2008) explored ways of doing this, students were fascinated by and engaged with certain conversations about discourse, while apparently unmoved by others. The mixed results of Wagner’s work in one context warrants further exploration, especially because students’ concerns are usually not explored by researchers. Special issues on discourse and equity of the Canadian Journal for Science, Mathematics and Technology Education (11 (3), edited by Esmonde and Moschkovich) and the Journal for Research in Mathematics Education (41 (0), edited by a panel chaired by Gutiérrez) partially address this need.

### 3.2 Cultural Dimensions of Discourse

The discipline of mathematics and its development in classrooms sits in a wider context that privileges certain values and world-views above others: thus, culture is closely related to discourse. Mathematics content and instruction “should enable children to build from their existing cultural base in mathematics” (Brenner 1998, p. 215). School, the first large institution in which students are expected to participate individually and publicly, involves multicultural encounters with both teachers and students belonging to diverse groups differentiated by
variables such as age, social class, gender, race and ethnicity (McGee Banks and Banks 1995). Thus, teachers must respect and seek forms of student participation that are consonant with children’s everyday ways of thinking and living (Moll et al. 1992; Moschkovich and Brenner 2002). This point has significant implications for mathematics instruction.

The traditional structure of mathematics classes constrains opportunities for diverse cultural traditions to serve as classroom resources. Brenner (1998) states that, “there is substantial evidence that the participant structure of a traditional classroom, that is, the roles and responsibilities assigned to the different persons, can act as an inhibiting factor to children who come from a culture that stresses different participant structures than those found at school” (p. 215).

As noted above, traditional mathematics instruction can be culturally incongruent because of the limited ways in which patterns of interaction tend to draw on cultural and linguistic resources. We believe that instruction needs to provide greater opportunities for interactions between participants, interactions in which students’ cultural resources can be used to communicate particular perspectives or solutions that contribute to the collective negotiation of knowledge. Teachers should attempt to gain an in-depth understanding of their students’ backgrounds and the relationship between their cultures and their learning (Malloy and Malloy 1998). For example, getting to know students’ backgrounds can allow curriculum material modification in order to make tasks compelling and applicable to students’ experiences (see El Barrio 2009); it can also help teachers assist students to use mathematics in critical ways (Gutstein 2006).

Increased interaction allows household ‘funds of knowledge’ to serve as a resource for students (Moll et al. 1992). Such ‘funds’ should not merely reproduce home-based cultural practices related to specific professions, but rather household and other sources of knowledge should be drawn upon so that “student experience is legitimated as valid and classroom practice can build on the familiar knowledge bases that students can manipulate to enhance learning in mathematics [and other content areas]” (González 1995, p. 240). As Gay (2000) pointed out: teachers should not merely make girls talk more like boys, or boys talk more like girls, or all individuals within and across ethnic groups talk like each other [...] Instead [teachers] must be mindful that communication styles are multidimensional and multimodal, shaped by many different influences. Although culture is paramount among these, other critical influences include ethnic affiliation, gender, social class, personality, individuality, and experiential context. (p. 109)

Gay’s ‘culturally responsive teaching’ articulates ideas upon which educators can draw to consider how to connect deeply with students. The work of Au and colleagues in Hawaii (Au 1980; Au and Jordan 1981) and Warren and Rosebery (1995) among Creole children of Haitian descent demonstrates how instruction that explicitly recognizes and builds from students’ cultural resources can promote the development of academic knowledge. These students’ unique position straddling a border between cultures, a position that has also be characterized as a third space (Gutiérrez et al. 1995), affords them and their peers a view of the cultural aspects of mathematics discourse. Ladson-Billings’ (1994) study of teachers
recognized as effective by both community members and administrators found that these teachers made great efforts to build aspects of students’ community life into their classrooms as a means to help students learn. Similar work shows this connection in other contexts, especially for Aboriginal students (e.g. Aikenhead 2002; Orr et al. 2002; Tompkins 2002).

3.3 Structuring Equitable Discourse

The differences between home cultures and school may paint a bleak picture for mathematics education. However, some scholars have investigated discourse to propose patterns of interaction that depart from the traditional I–R–F structure. For example, O’Connor and Michaels (1993, 1996) documented specific linguistic practices that serve to socialize students into mathematical aspects of argumentation. They detailed the impact of these moves in terms of the creation of participant frameworks, which provide opportunities for students to take part in particular types of complex thinking by means of “taking on various roles and stances within recurring social contexts that support [...] intellectual give-and-take and its proto-forms” (1996, p. 64). Such revoicing functions to align students’ explanations with academic content and with each other, attributes ideas to students and ultimately serves to portray students as competent mathematical thinkers. Moschkovich (1999) described how a teacher’s use of revoicing incorporated the contributions of bilingual students into mathematical discussions. The teacher moved beyond a focus on language development to engage students in aspects of discourse recognized as central to the learning of mathematics, providing them with opportunities to develop competence in academically valued practices. The teacher thus played a prominent role in “uncovering the mathematical content in student contributions and bringing different ways of talking and points of view into contact” (p. 11), as a means of helping students experience academic excellence.

Just as significant as the investigation of teacher moves such as revoicing are accounts of discourse practices that limit student agency in general or the agency of particular student groups. For example, in Morgan’s (1998) discourse analysis of student mathematical writing, she noted grammatical functions inherent in the discourse that obscure the agency of participants. This obfuscation mirrors the hidden agency in mathematics textbooks (Herbel-Eisenmann 2007) and the way oral mathematics classroom discourse positions students into complicit roles (Herbel-Eisenmann and Wagner 2010; Wagner and Herbel-Eisenmann 2008). Thus, there is a need for explorations of efforts to change discourse, which, we suggest, might follow the methodology for critical mathematics education research described by Skovsmose and Borba (2004) or by others in the collection edited by Valero and Zevenbergen (2004). Within such reflection-intensive work, we would also support the use of theoretical tools from discourse-related disciplines, including linguistics and cultural studies.

4 Bringing These Perspectives Together in This Book

To bring together perspectives oriented to discourse and equity in the context of the research described above, we have structured this book to include in Part I examples of work that starts from an orientation to equity and, in Part II, examples starting with a discourse orientation. The work that starts with equity indicates that a focus on equity draws attention to discourse. We
think this shift is inevitable in any discipline or situation (mathematics education or not), because of the way human relationships, whether equitable or not, express themselves in the discourse and because change in relationships operates through discourse.

The work that starts with discourse shows that in mathematics education discourse structures have implications for equity. In this case, we only claim this connection for the context of mathematics education, though we recognize that the phenomenon may occur in other situations (see, for example, Heath’s 1983 classic study and intervention in elementary literacy). Particularities of the language practice in mathematics and in mathematics classrooms are oriented to generality and abstraction. Thus, students, though connected to the mathematics in their learning, may seem insignificant or ignored. We note that ignoring differences between people can be either freeing or oppressive, but nevertheless with either extreme there are implications for equity.

The first two sets of chapters, then, move from equity to discourse and from discourse to equity, respectively. Within each set, the first chapter is strongly theoretical, the second focuses on a particular context but with strong orientation to theory, the third and fourth focus on the context of the research, and the fifth looks across the set to reflect on the relevant move (from equity to discourse or from discourse to equity). These two sets of chapters are followed by two chapters that consider policy implications, and a response to the entire conversation comprising the book.

The first group of chapters (Part I) begins with Rochelle Gutiérrez noting differences in the way educators conceptualize equity, which she shows to encompass access, achievement, identity and power issues. Following this, there are three chapters (Chaps. 3, 4, 5) describing work that was oriented to equity but that includes discourse implications. In the first, Robyn Jorgensen employs a Bourdieuvian analysis to explore the ‘synergy’ between the culture of school mathematics and the cultural practices students bring to school, especially Aboriginal students in an Australian context. In the second of the group, Indigo Esmonde develops language for describing equitable classroom group structures for mathematical exploration.

In the third, David Wagner and Lisa Lunney Borden reflect on their ethnomathematical research amongst Mi’kmaw First Nation communities on Canada’s east coast, noting positioning issues in the discourse as they strove to structure respectful relationships. The section ends with a reflection chapter written by Judit Moschkovich, who looks back across this section to show how concern for equity necessitates attention to discourse.

The second set of chapters (Part II) begins with linguist Mary Schleppegrell’s articulation of how linguistic tools might be used to consider particular language choices in mathematics classrooms, thereby examining the construction of mathematics offered to students, as well as the positioning of students in relationship to mathematics. She identifies questions and issues related to equity for which examination of language choice might help researchers. Following this chapter, there are three chapters (Chaps. 8, 9, 10) describing work that was oriented to discourse and that exposed issues of equity. In the first, Mamokgethi Setati reflects on the research she has done over the past decade and shows how the dilemmas teachers face in
multilingual classrooms relate to equity beyond the classroom. In the second, Richard Barwell illustrates the idea of ‘discursive demands’ as a way of thinking about some aspects of the double challenge faced by English as a second language learners in the U.K. attempting to learn mathematics. In the third, Beth Herbel-Eisenmann discusses a dilemma of telling, one which relates to one’s right to call on one’s authority and to control social (and mathematical) aspects of others’ work, that emerged as she led teachers to attend to their discourse. A final reflection chapter by Candia Morgan looks back across this section to highlight how mathematics learning discourse in particular comprises inherent equity questions.

The third set of chapters (Part III) turns attention to implications of the conversations in the first two sections, in particular policy implications. First, Donna Harris and Celia Anderson consider the ways that policy shapes opportunities for teachers and students to engage in more demanding – and valued – forms of discourse. Second, we draw on conversations with selected mathematics education stakeholders to consider further implications of research that relates to equity and discourse.

A key specificity of this book is that of the work under discussion took place in countries where English is the primary, if not the only, national language of teaching and learning. Following his observation that his book is written in English, Barton (2008), in The Language of Mathematics, goes as far as to claim, “To the extent that mathematical ideas differ between languages, the reflexive principle means that the ideas in this book would be different if they were written in another language” (p. 11). As David Pimm points out in his Afterword, we are far from understanding the effects of the current substantial hegemony of English in many educational situations.

In consequence of the foregoing, there is more than a significant geographic constraint in terms of the location of the research sites indicated by the foregoing observations. Nevertheless, despite these important limitations, this book assembles a diversity of perspectives in order to address the intertwining of discourse and equity issues in the context of mathematics education.

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