

CHAPTER 1

OUR HOPE FOR MULTILINGUAL LEARNERS

TEACHERS WHO INSPIRE

Most of us teachers can recall someone who influenced our entry into education, taught us how to become better teachers, and inspired us to enhance the lives of others. We authors would love to hear the stories about the individuals who inspired you because those are the stories that give us hope. Your decision to read this book tells us you are looking for approaches to enhance the participation and success of multilingual learners. Thank you for making that investment!

Early in my career, I (Kathryn) worked with a variety of elementary teachers as I was writing mathematics curriculum, teaching in K–8 schools, and facilitating professional learning sessions. One of the most instrumental relationships was with a fifth-grade teacher, Ms. Sara Martínez. Ms. Martínez is a bilingual teacher, fluent in English and in Spanish, who is excellent at connecting with both children and their families. She was known as the teacher who held very high expectations for her students. I collaborated with Ms. Martínez to conduct a research study, which involved observing her classroom 60 times during the school year: five times in Week 1, three times a week in Weeks 2 to 6, and one to two times per week for the rest of the school year. I documented a careful record of what happened in the classroom by compiling field notes as well as collecting student work each week in the curriculum materials and samples of writing assignments. A total of 119 mathematics lessons were audio recorded. Ms. Martínez’s classroom was composed of students whose primary language was Spanish. At the time the study took place, Ms. Martínez had a self-contained class of 24 students who represented a wide range of proficiencies in Spanish and English. As with most fifth-grade language learners, the students were still developing in academic English (as opposed to conversational English) proficiency. Figure 1.1 includes the median grade equivalent for the Iowa Test of Basic Skills (ITBS) reading test before entering Ms. Martínez’s classroom compared to the other fifth graders in the school, district, and national norm.

Figure 1.1 Median Grade Equivalent (Reading) Prior to Entering Ms. Martínez’s Classroom

COMPARISON GROUPS	END OF GRADE 4
Ms. Martínez’s Class	3.7
Other Fifth Graders in the School	4.0
Fifth Graders in the District	4.2
National Norm	4.8

Figure 1.2 Growth in One Year Measured by Median Grade Equivalent (Math Total)

COMPARISON GROUPS	END OF GRADE 4	END OF GRADE 5	GAIN
Ms. Martínez's Class	4.3	6.1	1.8
Other Fifth Graders in the School	4.6	5.8	1.2
Fifth Graders in the District	4.6	5.6	1.0
National Norm	4.8	5.8	1.0

Source: Razfar, Khisty, and Chval (2011).

Figure 1.2 demonstrates the mathematical gains that Ms. Martínez's students made in her classroom as measured by the ITBS mathematics assessment.

As we can see from the fourth-grade column, the average child in Ms. Martínez's classroom was half a year behind the expected 4.8. Five of the 24 students (20.8%) performed at the 4.8 level or above. After just eight months in Ms. Martínez's classroom (fifth-grade column), her students outperformed the other two groups, and 15 of the 24 students (62.5%) performed at the 5.8 level or above. Overall, Ms. Martínez's students accomplished a great deal in a short amount of time as evidenced by their performance on not only the ITBS, but also other measures collected during the study.

Each day I observed Ms. Martínez's classroom was memorable, but the first day of the school year particularly stands out. One common misconception about teaching multilingual learners is that they should not be asked to engage in challenging academic work, such as complex mathematics problem solving, until they are at grade level in English language proficiency. Due to this misconception, multilingual learners often languish in academic content classrooms where they continue to fall behind in both academic content learning and second language acquisition as the years of study necessary for grade-level proficiency pass. Since multilingual learners are learning how academic language and academic content work by using these resources to engage in classroom tasks and activities, waiting until they reach grade-level proficiency in English can actually keep them from making progress. The social ramifications are alarming as these learners can come to believe that (because they are not being challenged with grade-level work) they must be deficient in some way that disqualifies them for the same success as their peers.

Fortunately for her students, Ms. Martínez created a challenging and supportive environment for all students where multilingual learners flourished. The emphasis in Ms. Martínez's classroom was always on solving challenging problems, explaining how to solve hard problems, identifying more efficient ways of solving problems, and investigating more interesting ways of solving problems. When students progressed beyond Ms. Martínez's own mathematical knowledge, which was very strong, she was not deterred. In order to shape her classroom as a place where learning was valued, she was very open about modeling how learners, herself included, admit when they do not know the

answer or how to proceed in solving a problem. Ms. Martínez made a practice of tackling advanced mathematics problems that she herself struggled with in order to show that “the reason we are in school is we are learning. If we make a mistake, that is great. Let’s put it up on the board so that we can figure out how to fix it.” This approach also made the *process* of learning more important than producing the product of a correct mathematical answer. *How* you got to the answer mattered, including where you might have gone awry or faced difficulties in problem solving.

Ms. Martínez also operated in ways that were countercultural in that problem solving was not viewed through an individualized lens—something that occurred inside the learner alone and belonged to the learner alone. Rather, learning was socially distributed, a classroom community process that required that everyone participate, share their knowledge and questions, and share their struggles. By creating a community of learners, students achieved more, not less, as the test scores of her students after one year indicate.

When I showed a video of Ms. Martínez’s teaching at a professional conference, it was clear no one had seen anything like it. I began to wonder: How can I provide opportunities for other teachers to learn about Ms. Martínez’s practice? I will always be grateful for her willingness to open her classroom so that I could share her strategies teaching mathematics to multilingual learners through transcripts of her teaching. To read more about Ms. Martínez’s teaching practice, see Chval (2004, 2012); Chval and Chávez (2011); Chval and Khisty (2009); Khisty and Chval (2002); Morales, Khisty, and Chval (2003); and Razfar, Khisty, and Chval (2011).

STUDYING TEACHER PRACTICE

I (Kathryn) designed additional research studies, funded by the National Science Foundation, that involved a variety of elementary teachers so other educators could learn from Ms. Martínez. The research studies that followed involved children wearing video cameras mounted on hats with Velcro® and then more sophisticated wireless video cameras that captured mathematics teaching and learning as shown in Figure 1.3 and Figure 1.4. In the early stages in 2005, Óscar Chávez and I tried out this approach in a first-grade classroom and a fourth-grade classroom to determine if the video cameras would capture useful data.

Then I designed a research study where I collaborated with four third-grade teachers during three academic years from 2009 to 2012. Each week, I met with the teachers to introduce ideas that would influence the design and enactment of instruction, in relation to multilingual learners (i.e., planning sessions). After the planning sessions, the research team (including Rachel Pinnow and Lina Trigos-Carrillo) videotaped two mathematics lessons in each classroom. Then I met with each teacher to debrief lessons and discuss video clips that were filmed during the past week (i.e., debrief sessions). Each session was shaped as a conversation about teaching and learning, rather than a

Figure 1.3 Third-Grade Girl Wearing a Video Camera Mounted on Her Hat



Source: Pinnow, R. J., & Chval, K. B. (2015). *Linguistics and Education*. Columbia, MO: Elsevier. Used with permission.

Figure 1.4 Third-Grade Boy Wearing a Wireless Video Camera Demonstrating His Approach With a Task



Source: Chval, K. B., Pinnow, R. J., & Thomas, A. (2015). *Mathematics Education Research Journal*. Used with permission.

directive of how the teachers should teach. After each planning session, the teachers would reflect on the conversation, design their own lessons, and create lesson materials. The professional development involved in this process included all the components that Garet and colleagues (2001) identified as critical for effective professional development. For example,

- ▶ I worked with the teachers consistently for three years;
- ▶ I focused on the content I wanted the teachers to learn—teaching mathematics to multilingual learners in elementary classrooms;
- ▶ I integrated lesson planning to connect the work with teachers' daily experiences and constraints; and
- ▶ I integrated discussions and lesson planning so I could assess teachers' prior knowledge and experiences as I thought about what kinds of questions to pose and in what ways I could facilitate their thinking about teaching multilingual learners, especially through the selection of videos filmed by students in their classrooms.

One third-grade teacher, Laura McKinney, reflected on how the use of the student cameras helped her grow during the first year:

“*The first time I watched a video filmed with the head cameras, I was shocked. I couldn't believe the things I missed even though I was right there! It concerned me at first, but as the year went on, I realized some great things were happening. I was able to see student interaction without the students feeling the need to please me, because I wasn't hovering over them. Another benefit [of the video cameras] is the opportunity to see student weaknesses. When students take 10 minutes to start an activity, I know they are struggling*

somewhere. I can also see what exactly the students [multilingual learners] are doing in the process of working on a problem. I can see their mistakes as they make them and am better able to understand why they make those mistakes. ”

The data generated from the student-worn cameras and discussions with teachers provided insight to teachers' and multilingual learners' experiences.

Throughout this book, you will read transcripts from these interactions as well as from the mathematics lessons that they taught. We use pseudonyms when we reference teachers and students in the book. As we worked with teachers and analyzed the data, we noticed that children in classrooms of teachers who teach like Ms. Martínez also learn to value every person, all the languages they speak, and what they contribute to the classroom community. We are so grateful for the teachers who were willing to invest time to learn how to more effectively teach mathematics to multilingual learners; open their classrooms to multiple video cameras; and, most importantly, share their practice with other teachers. See Figure 1.5 for more information on the classrooms studied.

Figure 1.5 Teachers Involved in the Studies

TEACHER	YEARS OF EXPERIENCE	GRADE	SCHOOL	# OF STUDENTS	# OF MLLS	LANGUAGES
Sara Martínez	20	5	Large urban district 96.8% low-income 96.9% Hispanic 46% limited English proficient 21.5% mobility rate	24	24	Spanish
Courtney Bristow	2	3	Small city 6.6% Hispanic (year 1) 9.5% Hispanic (year 2) 58.1% free and reduced-price lunch	22	3	Spanish
Kari Reams	2	1	Small city 3% Hispanic 8% Asian 16.9% free and reduced-price lunch	22	7	Spanish Korean Chinese
Roger Jones	15	4	Small city 3% Hispanic 8% Asian 16.9% free and reduced-price lunch	18	1	Spanish

TEACHER	YEARS OF EXPERIENCE	GRADE	SCHOOL	# OF STUDENTS	# OF MLLS	LANGUAGES
Laura McKinney	1	3	Rural industrial 22% Hispanic 76% free and reduced-price lunch	20	4	Spanish
Jessica Barnes	3	3	Rural industrial 22% Hispanic 76% free and reduced-price lunch	21	3	Spanish Russian
Cindy Keller	18	3	Rural industrial 22% Hispanic 76% free and reduced-price lunch	21	9	Spanish Russian

Note: MLLs = multilingual learners.

INTERACTING WITH MULTILINGUAL LEARNERS AND THEIR FAMILIES

During the three-year study involving Ms. Bristow, Ms. Keller, Ms. McKinney, and Ms. Barnes, we also interviewed the multilingual learners and their parents. We were well aware of misconceptions about children whose first language is not English among preservice teachers (see Chval & Pinnow [2010] and Vomvoridi-Ivanovic & Chval [2014] for examples). In addition, Ogbu and Simons's (1998) argument that "the treatment of the minorities in the wider society is reflected in their treatment in education" (p. 161) suggested that we needed to listen to the stories of the families involved. In an effort to provide counter-stories to the deficit-oriented comments we had heard from some educators, we interviewed parents to learn more about the families of multilingual learners. We heard the incredible love that the families had for their children and that they would give up everything—would leave their homeland to come to the United States—so that their children could have what they hoped would be a better life. During these conversations with families, many truths were made evident. As noted, we are aware that misconceptions exist regarding multilingual families. To dispel some of those misconceptions, we created Figure 1.6. We are eager to hear from you what you would add to the list.

Figure 1.6 Misconceptions About Multilingual Families

MISCONCEPTION	REALITY
Families do not care to attend meetings at schools.	Parents may work multiple jobs to provide for their families in the United States and back home. They may not be able to miss work during the school day or evenings to attend school meetings.
Families are not interested in information disseminated by the school.	Multilingual families may have limited literacy levels in English and may not understand the flyers, emails, and homework assignments.
Families are not literate.	They may be extremely well educated, but in a different language.
Families do not value education.	Multilingual families value education so much they are willing to leave their homeland and (sometimes) live in poverty in the United States so that their children can enjoy quality and safe educational experiences.

Parents make very difficult choices for important reasons that are often unknown to outsiders. You will also have opportunities to learn from parents as you engage in the content of this book. Thank you for participating in these important conversations with us. We know they will influence your teaching of mathematics, the participation of multilingual learners in your classroom, and your engagement with families.