7 Latino/a Immigrant Parents’ Voices in Mathematics Education

Marta Civil and Núria Planas

In this chapter we draw on a decade of research with working-class, Latino/a familiars and their engagement in their children's mathematics education. Most of the families in our work are of Mexican origin; some are recent immigrants, while others have been in this country for generations since this area was at one time part of Mexico. Throughout our years of working in these communities, we have noticed that often, immigrant students who were recent arrivals and had been schooled in Mexico came in with a strong command of mathematics, particularly in terms of arithmetic procedures and knowledge of formulas (e.g., knowing the formula for finding the area of a triangle) and tended to outperform (at least in the more skill-type activities) their classmates who had been mostly (if not completely) schooled in the U.S. Valenzuela (1999) also documents this difference in performance in more general terms, not specific to mathematics.

As a group, Latinos (Hispanic is the term used in the reports) continue to underperform in mathematics compared to White students on the National Assessment of Educational Progress (NAEP). In the 2007 NAEP, the mathematics average scores for fourth graders were 248 for White students and 227 for Hispanic students; the mathematics average score for ELL (English Language Learner) fourth graders was 217 and the average score for non-ELL fourth graders was 242. (The scale is from 0 to 500.) Although the performance has shown improvement for all groups in the recent years, the gaps between groups persist. Our work takes place in schools that overall do not perform well in state assessments. These schools are in low-income communities, with a majority of Latino students, some of whom are ELLs.

Immigration is often strongly related to both economic and social disadvantage. Rainwater and Smeeding (2003) show that poverty rates for Latinos/as are about three times that for the so-called group of Anglo-Americans. They point to the necessity of new pedagogies and relationships so that such social differences do not persist over the next decades. In their portrayal of the circumstances surrounding different groups of immigrants, Hernandez, Denton, and Macartney (this volume) provide ample evidence for the rather challenging conditions that affect Mexican immigrant families (in particular in terms of educational background and economic situation). These authors state that children of Mexican origin are among the most likely (from several groups of different origins) to have a parent who is limited-English-proficient. They are also most likely to have parents with low levels of formal education (67% of the Mexican-origin children in their data had a father who had not completed high school).

The parents in our work cover the whole spectrum of educational attainment but overall the median is a sixth-grade level of schooling. Our findings confirm what Hernandez et al. (this volume) write in terms of immigrant parents having high hopes for the education of their children yet often are not familiar with the school system in the US. These authors point out the importance “for educators to focus attention on the needs of children in immigrant and native-born families who are most likely to have parents who have completed no more than elementary school or who have not graduated from high school” (p. 13). This chapter presents an effort in this direction.

Building on our prior work and in particular the involvement of the first author in projects grounded on the Funds of Knowledge concept (González, Moll, & Amanti, 2005), we have developed an approach to working with immigrant and minoritized students that relies on understanding and involving these students’ community (i.e., primarily their family members) in the in-school learning. We assume that a community approach (Civil, 2007) can help overcome the social use of school mathematics as a gatekeeper. We have documented students’ engagement in the learning of mathematics when this learning is grounded on their experiences (Civil, 2002a, 2002b, 2007; Kahn & Civil, 2001). Throughout some of this work it became evident to us that parents, and in particular immigrant parents, needed to be brought to the forefront of our efforts to improve the teaching and learning of mathematics for the students with whom we work. In Civil and Andrade (2003), we highlight the concept of parents as intellectual resources. We argue that by establishing relationships of trust and a two-way dialogue between home and school, we may be able to address issues of social valorization of knowledge (Abreu & Cline, 2005) that could lead to conflicts between parents and school personnel with children being caught in the middle (Suárez-Orozco & Suárez-Orozco, 2001). In this chapter we focus on the voices of immigrant parents because they are an important (yet often invisible) part of the school community and have a significant influence on their children's learning. Latino/a parents and their children can inform us about their norms of schooling, which may differ from those found in other cultures (Okagaki & Frensch, 1998; Okagaki & Sternberg, 1993), in particular the local school culture. We begin with a brief overview of why a focus on mathematics education is important when talking about immigration, diversity, and education.

Immigration, Diversity, and Mathematics Education

At the end of the 1980s, Bishop (1988) argued that different cultures have in common the same mathematical patterns: counting, measuring, locating, designing, playing, and explaining. He based his ideas on results from cross-cultural studies developed by anthropologists. One of the most relevant findings was that different groups develop universal mathematical patterns through situated mathematical practices. A distinction between universal patterns and situated practices was stated and the extended idea of mathematics as being culturally neutral was strongly contested. Researchers have carried out studies centered on the idea that mathematical practices are socially mediated by the contexts where they are developed (Chronaki, 2005; H.P. Ginsburg, 1999).

Different studies document how people tend to perform virtually error-free mathematics in contexts that relate to their everyday activities (Lave, 1988; Nunes, Schliemann, &
needed when interpreting Latin@ student's resistance to participating in workshops may represent a rejection of the values and beliefs of the dominant culture. Therefore, it is important to understand the cultural and social contexts within which these students are situated.

Research Method

Our approach to research with Latin@ students is grounded in a critical perspective that recognizes the historical and institutional factors that have shaped the experiences of Latin@ students in mathematics education. We adopt a qualitative research approach that involves participant observation, interviews, and focus group discussions. We focus on understanding the ways in which Latin@ students construct their identities in relation to mathematics and the broader social contexts in which they are situated.

To achieve our research goals, we have conducted a series of workshops and focus group discussions with Latin@ students in different settings. We have also conducted a longitudinal study with a group of Latin@ students over several years to examine the ways in which their mathematical identities are constructed and transformed over time.

We have also engaged in collaborative research with Latin@ students and their families, where we work together to identify and address the challenges they face in learning mathematics. This approach allows us to understand the complex interplay between the individual experiences of Latin@ students and the larger social structures that influence their learning journeys.

Conclusion

In conclusion, our research has highlighted the importance of understanding the cultural and social contexts in which Latin@ students learn mathematics. By adopting a critical perspective and engaging in collaborative research with Latin@ students and their families, we can develop more effective and equitable mathematics education practices that recognize and value the diverse cultural and linguistic backgrounds of Latin@ students.

References

[Provide references here]

Appendix

[Provide appendix here]
Carratér, 1993), while they may be unsuccessful in the "traditional" pencil-and-paper school mathematics.

D’Ambrosio (1985) used the term "ethnomathematics" to refer to the mathematics which is practiced among identifiable cultural groups, such as national-tribal societies, labor groups, children of a certain age bracket, professional classes, and so on. In our work, we have used principles of ethnomathematics to develop innovative mathematics that build on the backgrounds and experiences of the culturally diverse students with whom we work (Civil, 2002a, 2007; Civil & Kahn, 2001). In Civil (2002b, 2007) we discuss dilemmas related to the connection between in-school and out-of-school mathematics. Some of these dilemmas, we argue, are related to our beliefs as to what we are willing to count as being mathematics. We are aware of issues of transfer across contexts (Lave, 1988) and of the fact that there are many differences between in-school and out-of-school mathematics. Civil (2002a, 2002b, 2007) has written on the differences and on how one of the premises behind this community approach to the teaching and learning of mathematics is not to attempt to reproduce the everyday contexts in the classroom but to use those as contexts from which to develop the mathematics that children are expected to learn in school. The everyday contexts provide us with a way to connect with the families’ (and children’s) knowledge, experiences, and ways of learning (e.g., by apprenticeship) but our responsibility is to ensure that these children advance in their mathematical learning in school.

Some researchers have looked into the issue of contextualization and its interaction with social class in an attempt to explain differences in approaches to doing mathematics. Cooper and Dunne (2000) present data from two children (a middle-class girl and a working-class boy) that illustrate differences as to how these two children approached "real-context" type problems, with the working-class child taking the contexts more seriously in a way that it sometimes interfered with his being able to successfully solve the task. Lubienski (2004) argues that working-class students tend to become immersed in real-world constraints of problems, and are also more deferential to the authority of the teacher. Planas (2007) examines the diversity of norms in the mathematics classroom and how different participants had difficulties when expected to show the knowledge associated to the representations for a "good student." It is assumed that an understanding of immigrant students' interpretations of classroom norms was not possible without considering their out-of-school contexts of experience, and primarily their home contexts. We argue that in the case of immigrant students, the access to their home contexts, by means of the access to their parents' voices, may be an effective way of gaining knowledge about their mathematical daily practices, beyond stereotypes and misconceptions reinforced by dominant negative social representations on them.

Our position when addressing challenges and difficulties that Latino/a students may experience when learning mathematics is a rejection of a deficit model that tends to blame the students and their environment (i.e., family and community) for these problems (see Valencia & Black, 2002, for a discussion regarding the myth that Mexican Americans do not care about education). Instead, we argue that the issue is systemic and that is related to schools not considering these students' expectations and experiences. The context of immigration, the role of language, and the general living conditions of a minority group are realities that need to be taken into account when assessing these students' mathematics learning experiences. This information is needed when interpreting Latino/a students' behaviors as learners. Although many Latino/a students are not immigrants themselves, their parents' experiences of immigration have an influence on them. If parents experience contradictions between mathematics instruction in the US and preserving certain school values and approaches to doing mathematics learned in Mexico, they may communicate these contradictions to their children (Civil, Planas, & Q uintos, 2005). Children may not experience these contradictions themselves but they still will have to cope with transition processes between the school culture and certain home values (Civil & Andrade, 2002).

**Research Method**

Our approach to research with parents is grounded on a phenomenological perspective (Van Manen, 1990). Thus, the lived experiences of the parents as they participate in the mathematics workshops are at the center of our attention. We try to understand the nature of these lived experiences through dialogue with the parents. In this chapter we draw on work that spans over a decade and that includes three projects (Civil & Andrade, 2003; Civil & Bernier, 2006; Civil, Bratton, & Q uintos, 2005; Civil & Q uintos, 2006). Although there were some differences among the projects, our approach to working with parents retained some common characteristics. Engaging in conversations about mathematics teaching and learning is key to our research. Parents participate in a series of workshops (sometimes called Math For Parents courses, or "tercullas matemáticas" (mathematical get-togethers)). These sustained experiences allow us to promote a two-way dialogue in a safe and supportive environment in which the parents (most of whom are mothers) bring in their questions not only about mathematics but also about their children's schooling.

We rely on multiple sources of data, including observations and field notes, focus groups, individual interviews, and classroom visits and debriefings. To analyze our data we use Glaser and Strauss (1967) constant comparative method. This process leads to the development of themes that tend to be highly interrelated. In this chapter, we consider three such themes from a community approach perspective. The first can be seen as a general theme that includes the other two themes: (1) Latino parents' perceptions of their children's mathematics education; (2) Latino parents' valorizations of school mathematical practices; and (3) Latino parents' views of language in their children's mathematics education. For this third theme, we focus on issues related to language and mathematics as they occur in parents' interactions with their children around homework.

To us, mathematics education is a process of enculturation (Bishop, 1988) through the reconstruction of practices that are highly conditioned by the contexts where they are developed. In the case of home contexts, the parents' perceptions of their children conducting certain practices at school, their valorization of these practices, and their forms of communicating perceptions and valorizations to their children may be seen as significant social issues of influence.
Latino Parents’ Perceptions of Their Children’s Mathematics Education

In this section we present some of our findings on parents’ perceived differences between mathematics education in schools in the US and schools in Mexico. This has been a constant theme in our research into parents’ perceptions about the teaching and learning of mathematics (Civil, Planas, & Quintos, 2005; Civil & Quintos, 2006). Many of the families have frequent contact with relatives across the border in Mexico. Most parents (and children too) comment that they find that mathematics instruction is more advanced in Mexico:

ERNESTO: The level in Mexico is much higher. I have nieces and nephews there and here and there, I see that they have learned more things at school. [Referring to a nephew in Mexico] He’s in fourth grade and my son is in fourth grade too. What they’re giving my son now, he [the nephew] learned in second grade. So, the educational level is lower and they learn more slowly than they learn in Mexico.

BERTHA: No, I’m not happy. I feel that there is repetition of a lot of things; I don’t understand why the teaching is so slow, I don’t like it, I don’t like the system, I don’t like it at all. When we go to Mexico … my nieces and nephews or my husband’s nieces and nephews, they are children that are more or less the same age as Jaime [their son] and I see that Jaime is behind. Here they tell me that Jaime [is] really excellent.

It is not our goal to engage in a discussion of whether mathematics instruction is more advanced in Mexico or in the US. This is a complex issue that we are trying to understand better in our current research. We do have some evidence that students who have been schooled in Mexico and have recently arrived in the US tend to have a better command of arithmetic skills and formulas. But there is much more to knowing mathematics than skills and facts. Our goal in this chapter is to highlight immigrant parents’ perceptions, not to determine whether these perceptions are “accurate” or not. These perceptions affect the interactions between children and parents and between parents and the schools their children attend. Furthermore, these perceptions go beyond opinions in that the parents provide evidence for their assertions. Whether they refer to what their relatives in Mexico are doing (as the quotations above illustrate) or, as we will show later, what their children tell them or what they see themselves happening in the US classrooms, these parents based their perceptions on data. Granted, their perceptions are influenced by their views of what counts as mathematics, which in most cases consists of arithmetic and procedures and do not usually encompass other topics or approaches such as problem solving.

One of our goals in the mathematics workshops is to widen parents’ views of what counts as mathematics by engaging the parents in problem-solving tasks and in exploring topics such as geometry, measurement, and data analysis. Although we encourage discussions in which parents bring up these perceived differences between Mexico and the US, we tend to be very cautious about our own participation in these conversations since not only do we believe that this is a very complex comparison, but also it is an emotionally charged area.
Latino Parents’ Perceptions of Their Children’s Mathematics Education

In this section we present some of our findings on parents’ perceived differences between mathematics education in schools in the US and schools in Mexico. This has been a constant theme in our research into parents’ perceptions about the teaching and learning of mathematics (Civit, Planas, & Quintos, 2005; Civil & Quintos, 2006). Many of the families have frequent contact with relatives across the border in Mexico. Most parents (and children too) comment that they find that mathematics instruction is more advanced in Mexico:

ERNesto: The level in Mexico is much higher. I have nieces and nephews there and here and there, I see that they have learned more things at school. [Referring to a nephew in Mexico] He’s in fourth grade and my son is in fourth grade too. What they’re giving my son now, he [the nephew] learned in second grade. So the educational level is lower and they learn more slowly than they learn in Mexico.

BERTHA: No, I’m not happy. I feel that there is repetition of a lot of things. I don’t understand why the teaching is so slow. I don’t like it; I don’t like the system. I don’t like it at all. When we go to Mexico … my nieces and nephews or my husband’s nieces and nephews, they are children that are more or less the same age as Jaime [their son] and I see that Jaime is behind. Here they tell me that Jaime [is] really excellent.

It is not our goal to engage in a discussion of whether mathematics instruction is more advanced in Mexico or in the US. This is a complex issue that we are trying to understand better in our current research. We do have some evidence that students who have been schooled in Mexico and have recently arrived in the US tend to have a better command of arithmetic skills and formulas. But there is much more to knowing mathematics than skills and facts. Our goal in this chapter is to highlight immigrant parents’ perceptions, not to determine whether these perceptions are “accurate” or not. These perceptions affect the interactions between children and parents and between parents and the schools their children attend. Furthermore, these perceptions go beyond opinions in that the parents provide evidence for their assertions. Whether they refer to what their relatives in Mexico are doing (as the quotations above illustrate) or as we will show later, what their children tell them or what they see themselves happening in the US classrooms, these parents based their perceptions on data. Granted, their perceptions are influenced by their views of what counts as mathematics, which in most cases consists of arithmetic and procedures and do not usually encompass other topics or approaches such as problem solving.

One of our goals in the mathematics workshops is to widen parents’ views of what counts as mathematics by engaging the parents in problem-solving tasks and in exploring topics such as geometry, measurement, and data analysis. Although we encourage discussions in which parents bring up these perceived differences between Mexico and the US, we tend to be very cautious about our own participation in these conversations since not only do we believe that this is a very complex comparison, but also it is an emotionally charged subject that often brings up memories of these parents’ own experiences as learners of mathematics as well as a realization that they are not “there” anymore, where “there” is both a time—their school years—and a place—Mexico. As one mother, Gabriela, told another mother in a discussion on the differences between Mexico and the US:

GABRIELA: But for one thing, here we are in the US and here is where they are going to grow up, they are going to study here.

Even more poignant was a focus group at the house of one of the parents. Several of the parents (in particular two fathers, Francisco and Rogelio) had been quite persistent throughout the conversation in their comments about the teaching of mathematics in Mexico as being at a higher level than what their children were currently experiencing. After a while of this persistence, one of the mothers, Irene, said in a rather upset tone:

IRENE: But, let’s leave Mexico, OK? We are not in Mexico anymore.
FRANCISCO: Yes, we are not…
IRENE: Let’s focus on what we are living here.

Most of the parents’ comments express a concern for the fact that their children do not know arithmetic well enough (e.g., the multiplication facts) or that they seem to be going at a slower pace than at schools in Mexico:

VICTORIA: And you know, with the children, in fourth grade, it’s hard for them because here they don’t ask them to memorize the tables and in Mexico yes, when I went to school, I had to memorize the multiplication tables, I through 10, and they quizzed on them; and here no, children struggle a lot; just to do a computation they take out the notebook that has all the tables in the back, and I say, “no, you have to learn them.”

Victoria goes on to describe how she tries to get her children to learn the multiplication tables, and how they do that for a while but it is a struggle. Victoria is one of many parents concerned about what they perceive as problematic with the teaching of mathematics at their children’s school: the fact that they are not expected to memorize the multiplication tables is a common topic of discussion in our conversations with parents (for similar results with Pakistani parents in the U.K., see Abreu & Cline, 2005). Another point of concern is the repetition, going over material that they had already seen in Mexico. In the quotation below, a mother is talking about her child, a fourth grader, who was getting upset in class and not paying attention because he had already seen the content before:

LUcRECIA: More advanced [in Mexico]; because my son here is doing division by one digit and over there, they are already dividing by three digits, so it’s lower. It’s lower, yes, because here they are going over the multiplication tables and over there, by second grade, the tables … for that reason, I find it a lower level here, and my son finds it easier here, because since he comes more advanced from
there, maybe that's why he finds it easier. And the teacher said that he wasn't paying attention but if he had already seen this [the material], then he already knew it and he didn't pay much attention, yes, he was getting a bit upset.

The case of this child is not unique; we have similar evidence from other parents and from the children themselves, who comment on how they are studying things in mathematics that they had already seen in Mexico. Below is an excerpt from an interview with a sixth grader who had recently arrived from Mexico:

RESEARCHER: Describe yourself as a math student.
STUDENT: I am advanced because in Mexico the schools are a year ahead. I am very fast at doing things. The teacher gives me harder work....
RESEARCHER: What is your best subject in math?
STUDENT: Algebra.
RESEARCHER: You already know algebra?
STUDENT: Yes
RESEARCHER: Where did you learn algebra?
STUDENT: In Mexico, they had already taught me algebra. And the teacher here is barely starting to teach some algebra.

We do not want to imply that these students are necessarily successful in the US mathematics classrooms. Although some of them may indeed arrive with a better command of certain aspects of mathematics, the transition to schooling in the US may be less than smooth. Language plays a key role, as we will see later. Mathematics instruction is very language dependent, probably even more so in reform-oriented mathematics classrooms, with their emphasis on communication. But, as Valdés (2001) points out, "students should not be allowed to fall behind in subject-matter areas (e.g., mathematics, science) while they are learning English" (p. 153). Her account of immigrant middle-school students shows, like our data, how some of them who had a strong mathematics background when they arrived were not placed in classes that challenged them (mathematically), hence getting bored and missing out on opportunities to advance in their learning of this subject.

Latino Parents' Valorizations of School Mathematical Practices

Closely related to this topic of difference in instruction between the two countries is the notion of valorization of knowledge (Abreu, 1995). We will focus on aspects of elementary mathematics, that is, algorithms for arithmetic operations. Arithmetic takes up most of the teaching time in elementary mathematics. Our work with teachers and preservice teachers shows unawareness on their part for the idea that different parts of the world have different ways to do the four basic operations. When presented with these different ways, their reactions often show a preference toward "their own" ways:

A PRESERVICE TEACHER: This is nice but they need to learn to do things the US way.
A FIFTH-GRADE TEACHER: And now every Wednesday we are teaching division and multiplication, and the children are doing it the way we ask. This Wednesday when we did it, Eliseo said, "Oh no board and did it that way, and did it the way that we do it the approximation. It was an approximation.

We do not know what the teacher did. These different algorithms is not easy to show. Thus, their reactions to these algorithms are quite understandable. To further illustrate this point, we have in every discussion with parents school approach to division in Mexico and in the US. And the algorithm is in your head; you do not do it the algorithm itself. Yet, it is a subject we work have a clear preference for and cleaner.

This is what Marisol and Verónica said.

MARISOL: When I looked at how he was doing and then wrote a letter to the school teacher wants to make it easy, and he learned faster with this.
VERÓNICA: I tried to do the same thing with him, and he says, "You can't do it on the computer." "You can't do it on the computer." "No, no, my friend, I have to do it like this because how we learned." And I did tell him he knows that is doing it. And he felt safe that he is doing it. But with writing above what they did homework did not have to go by what we did.

Verónica and Marisol both said to divide. Verónica, however, points to a different method to be on the safe side. We accepted this other method ("his method"

<table>
<thead>
<tr>
<th>Mexico</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2905</td>
<td>2968</td>
</tr>
<tr>
<td>42</td>
<td>1224</td>
</tr>
<tr>
<td>384</td>
<td>384</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 7.1 Division in Mexico; Divide
there, maybe that's why he finds it easier. And the teacher said that he wasn't paying attention but if he had already seen this [the material], then he already knew it and he didn't pay much attention, yes, he was getting a bit upset.

The case of this child is not unique; we have similar evidence from other parents and from the children themselves, who comment on how they are studying things in mathematics that they had already seen in Mexico. Below is an excerpt from an interview with a sixth grader who had recently arrived from Mexico:

RESEARCHER: Describe yourself as a math student.

STUDENT: I am advanced because in Mexico the schools are a year ahead. I am very fast at doing things. The teacher gives me harder work....

RESEARCHER: What is your best subject in math?

STUDENT: Algebra.

RESEARCHER: You already know algebra?

STUDENT: Yes.

RESEARCHER: Where did you learn algebra?

STUDENT: In Mexico, they had already taught me algebra. And the teacher here is barely starting to teach some algebra.

We do not want to imply that these students are necessarily successful in the US mathematics classrooms. Although some of them may indeed arrive with a better command of certain aspects of mathematics, the transition to schooling in the US may be less than smooth. Language plays a key role, as we will see later. Mathematics instruction is very language dependent, probably even more so in reform-oriented mathematics classrooms, with their emphasis on communication. But, as Valdés (2001) points out, "students should not be allowed to fall behind in subject-matter areas (e.g., mathematics, science) while they are learning English" (p. 153). Her account of immigrant middle-school students shows, like our data, how some of whom had a strong mathematics background when they arrived were not placed in classes that challenged them (mathematically), hence getting bored and missing out on opportunities to advance in their learning of this subject.

Latino Parents' Valorizations of School Mathematical Practices

Closely related to this topic of difference in instruction between the two countries is the notion of valorization of knowledge (Abreu, 1995). We will focus on aspects of elementary mathematics, that is, algorithms for arithmetic operations. Arithmetic takes up most of the teaching time in elementary mathematics. Our work with teachers and preservice teachers shows unawareness on their part for the idea that different parts of the world have different ways to do the four basic operations. When presented with these different ways, their reactions often show a preference toward "their own" ways:

A PRESERVICE TEACHER: This is nice but they need to learn to do things the US way.

A FIFTH-GRADE TEACHER: And now every Wednesday we are teaching division and multiplication, and the children are doing it the way we ask. This Wednesday when we did it, Eliseo said, "Oh no, my mama did it different." And he went to the board and did it that way, and I say "Yes, but that's in mama's home. Let's do it the way that we do it in the school." And it was again very close, but it was an approximation. It was an approximation.

We do not know what the teacher meant by "it was an approximation." Exploring these different algorithms is not easy, as our work with teachers and preservice teachers shows. Thus, their reactions to these different ways may be a combination of valorization of knowledge and lack of understanding of these approaches to do arithmetic.

To further illustrate this point, we focus on division algorithms since this topic arises in every discussion with parents schooled in Mexico. Figure 7.1 illustrates the standard approach to division in Mexico and in the US. The difference is that in Mexico the subtractions are done in your head; you do not write them down. It may seem like a simple difference because it has to do with the representation of the algorithm and not with the algorithm itself. Yet, it is a subject of controversy. The Mexican parents with whom we work have a clear preference for their method, which they consider more efficient and cleaner.

This is what Marisol and Verónica said about the division algorithms:

MARIOL: When I looked at how he [her son] was dividing, he subtracted and subtracted and that he wrote all the equation complete I said, I even said, "this teacher wants to make things complicated. No, son, not that way! This way!"

And he learned faster with this [Marisol's] procedure.

VERÓNICA: I tried to do the same with my child with divisions, that he didn't write everything, but he says, "no, no, mom, the teacher is going to think that I did it on the computer." "You don't need to write the subtraction son," I say, "you only put what is left." "No, no, my teacher is going to think that I did it on the computer, I have to do it like that," "Ok, you think that..., but I want to teach you how we learned." And I did teach him, but he still uses his method, and that way he feels safe that he is doing his homework as they told him to. The same thing with writing above what they borrow and crossing it out, I tell him, "I remember our homework did not have to have any cross-outs," whereas his does.

Verónica and Marisol both said that they showed their children their method to divide. Verónica, however, points out that her son would rather use his teacher's method to be on the safe side. We do not know whether his teacher would have accepted this other method ("his mom's method"), but we suspect that this method

<table>
<thead>
<tr>
<th>Mexico</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>296</td>
</tr>
<tr>
<td>42 /1224</td>
<td>42 /1224</td>
</tr>
<tr>
<td>384</td>
<td>-84</td>
</tr>
<tr>
<td>6</td>
<td>384</td>
</tr>
<tr>
<td>-378</td>
<td>06</td>
</tr>
</tbody>
</table>

Figure 7.1 Division in Mexico; Division in the US (field notes).
may have been rejected given the evidence we have collected from teachers. Many of them were unaware of this representation of the algorithm of division and were surprised when they saw it and said that they did not understand it. This lack of knowledge for what is a common representation for division in Mexico happened at a school where 90% of the students are Latino and many of them have at least one parent who was schooled in Mexico. At a parent workshop, all the parents divided using this representation of the algorithm, while none of the teachers had ever seen it. One of these teachers who has been at that school for over 10 years and who lives in the community said, “no, that’s not our old way [in response to a question as to whether this was an old way to divide], that’s the Mexican way because I don’t understand that.”

In Civil and Andrade (2003) we argue for the concept of parents as intellectual resources, which would bring knowledge such as this approach to division to the forefront in the schools, thus valuing immigrant parents’ knowledge. Although all families have cultural and social capital, working-class and immigrant families often do not possess the kind of capital that schools recognize as valid (Lareau & Horvat, 1999). In our work with parents we address this inequity in how the forms of capital among low-income, ethnic/language “minority” families are perceived by schools. As Bourdieu (1986) points out, the difference in distribution of cultural capital among different groups (and, we add, on how each group’s capital is valued) may explain some of the differences in children’s school achievement. What our work has revealed is a richness of mathematical knowledge among these parents, many of whom were educated in Mexico. Their approaches are different, yet no less valid. Schools, however, do not often recognize these differences.

Some of the parents we work with are caught in a dilemma. On one hand they perceive the education in Mexico to be more advanced, yet on the other hand, some of them know that their children will be educated and most likely stay in the US, and they do not want to create a conflict between “their ways” and what their children are learning in school. We illustrate this point with an interaction between two immigrant mothers:

LUCINDA: Well, what I say is, for example my daughter tells me “come to learn how they teach here, come see that I am right,” when we are upset at each other here around the table, and sometimes she is the one who makes me upset, because I want to explain things to her as I know them, and I tell her, “m’hija, the way I explain it to you, I know it’s much better for you,” but she sticks to her [way].

GABRIELA: But for one thing, here we are in the US and here is where they are going to grow up, they are going to study here, and I wanted to do the same thing as you, but then I say, but why, if they are teaching him things from here, and he is going to stay here, and so, one wants to teach them more so that they know more, but what they are teaching them is because they are going to stay here, and they are going to follow what they teach them here.

One could say that this is typical generational discourse—parents trying to show their children how they were taught because they feel that it was a “better” way. But there is more to this when one looks at it in the context of immigration and trying to navigate two cultures (at least) and (in our case, two languages). Conversations such as

that between Lucinda and Gabriela bring up the system. Okagaki and Sternberg (1993) point out in their study (from Cambodia, Mexico, the Philippines), “an emphasis on conformity may be viewed as an observed characteristic of the school.” (p. 52). This explanation seems to apply to the study (e.g., Gabriela) have shared with us.

We argue that these differences in approach affected are low-income, immigrant families, been recognized by institutions such as school. Takashima (this volume) writes, “global migration and renewal in the receiving country, but it is (p. 1). We claim that indeed immigration can be a means of dealing with new situations. They are caught in the new setting while trying to Suarez-Orozco and Suarez-Orozco (2001) with the margins of two cultures. Paradoxically, they are not there” (p. 92). These authors write about children face when caught between their parents’ approach to education. Immigrant children seem to be caught in the two cultures. They are not fully a member of either teachers’ demands, neither are they fully adjusting to their parents’ demands. Some children, but even this option may create tensions. This impacts parent-child interactions around mathematics. When we interviewed Lucinda, her daughter was for 2 years. In the quote given earlier, we see Lucinda what it means to know. She talks about how she values the opinions when it came to ways to do math the way she had learned in Mexico and her daughter do things here. The daughter seemed to have acclimated in the US because she found it too easy, was going to “learn the way from here” (the US).

LUCINDA: When I came from there [Mexico], [i.e., we came here, she said that the school they are making me do 4 + 3, mom, I don’t. And I would tell her, “but you are going to time, that’s what I thought, but then I vis
may have been rejected given the evidence we have collected from teachers. Many of them were unaware of this representation of the algorithm of division and were surprised when they saw it and said that they did not understand it. This lack of knowledge for what is a common representation for division in Mexico happened at a school where 90% of the students are Latino and many of them have at least one parent who was schooled in Mexico. At a parent workshop, all the parents divided using this representation of the algorithm, while none of the teachers had ever seen it. One of these teachers who has been at that school for over 10 years and who lives in the community said, "no, that’s not our old way [in response to a question as to whether this was an old way to divide]; that’s the Mexican way because I don’t understand that."

In Civil and Andrade (2003) we argue for the concept of parents as intellectual resources, which would bring knowledge such as this approach to division to the forefront in the schools, thus valuing immigrant parents’ knowledge. Although all families have cultural and social capital, working-class and immigrant families often do not possess the kind of capital that schools recognize as valid (Lareau & Horvat, 1999). In our work with parents we address this inequity in how the forms of capital among low-income, ethnic/language "minority" families are perceived by schools. As Bourdieu (1986) points out, the difference in distribution of cultural capital among different groups (and, we add, on how each group’s capital is valued) may explain some of the differences in children’s school achievement. What our work has revealed is a richness of mathematical knowledge among these parents, many of whom were educated in Mexico. Their approaches are different, yet no less valid. Schools, however, do not often recognize these differences.

Some of the parents we work with are caught in a dilemma. On one hand they perceive the education in Mexico to be more advanced, yet on the other hand, some of them know that their children will be educated and most likely stay in the US, and they do not want to create a conflict between "their ways" and what their children are learning in school. We illustrate this point with an interaction between two immigrant mothers:

**LUCINDA:** Well, what I say is, for example my daughter tells me "come to learn how they teach here, come see that I am right," when we are upset at each other here around the table, and sometimes she is the one who makes me upset, because I want to explain things to her as I know them, and I tell her, "m’hijita, the way I explain it to you, I know it’s much better for you," but she sticks to her (way).

**GABRIELA:** But for one thing, here we are in the US and here is where they are going to grow up, they are going to study here, and I wanted to do the same thing as you, but then I say, but why, if they are teaching him things from here, and he is going to stay here, and so, one wants to teach them more so that they know more, but what they are teaching them is because they are going to stay here and they are going to follow what they teach them here.

One could say that this is typical generational discourse—parents trying to show their children how they were taught because they feel that it was a “better” way. But there is more to this when one looks at it in the context of immigration and trying to navigate two cultures (at least) and in our case, two languages. Conversations such as that between Lucinda and Gabriela bring up the issue of conforming or not to the new system. Okagaki and Sternberg (1993) point out that the immigrant parents in their study (from Cambodia, Mexico, the Philippines, and Vietnam) seemed to value conformity over autonomy. They provide a possible explanation for this, "if one goal of immigrant parents is to help their children adapt to the American school environment, an emphasis on conformity may be viewed as an appropriate vehicle for accomplishing this goal" (p. 52). This explanation seems to agree with what some of the parents in our study (e.g., Gabriela) have shared with us.

We argue that these differences in approach take on a different light when those affected are low-income, immigrant families, whose knowledge has historically not been recognized by institutions such as schools (Abreu, Cline, & Shamsi, 2002). As Tanishih (this volume) writes, "global migration can lead to diversity, innovation and renewal in the receiving country, but it is often accompanied by social conflict" (p. 1). We claim that indeed immigration could become an opportunity for diversity, innovation, and renewal to be brought into the mathematics teaching and learning in classrooms with immigrant students, but that, in our experience, this does not seem to be the case and in fact these different ways of doing things can lead to conflict. What we witness are situations of potential conflict between children and parents as they try to adjust to the new setting while trying to keep connected to the former. As Suárez-Orozco and Suárez-Orozco (2001) write, "(I)migrants are by definition in the margins of two cultures. Paradoxically, they can never truly belong either here or there" (p. 92). These authors write about the identity issues that immigrant children face when caught between their parents’ culture and the culture in their new country.

Immigrant children seem to be caught in the middle, in the boundaries of at least two cultures. They are not fully a member of the home culture when adjusting to the teachers’ demands, neither are they fully a member of the local school culture when adjusting to their parents’ demands. Some children may seek to become "bicultural" but even this option may create tensions. This feeling of "caught between two cultures" impacts parent-child interactions around mathematics, as the case of Lucinda shows. When we interviewed Lucinda, her daughter was in fifth grade; they had been in the US for 2 years. In the quote given earlier, we see Lucinda struggling with her daughter over what it means to know. She talks about how she and her daughter were having differences of opinion when it came to ways to do mathematics. Lucinda wanted to show her the way she had learned in Mexico and her daughter wanted to "stick" to the way they do things here. The daughter seemed to have adapted to her new school system, while the mother was less willing to let go. Yet, in the quote below, Lucinda reflects on how when they first arrived, the daughter was the one being unhappy with the mathematics class in the US because she found it too easy, and the mother was telling her how she was going to learn "the way from here" (the US).

**LUCINDA:** When I came from there [Mexico], my daughter was in third grade; when we came here, she said that the school looked like play,"why, m’hijita?"; "Because they are making me do 4 + 3, mom, I don’t want to go to this school. It’s weird," And I would tell her, "but you are going to learn the way from here," well, at that time, that’s what I thought, but then I visited my relatives [in Mexico] and then
she goes on to talk about the difference in levels Mexico vs. US and her concern at the difference in levels).

The case of Lucinda points to the complexity of people trying to adapt to and make sense of situations that are different from what they have previously experienced. In our local context of immigration, we wonder about the effect that this adaptation to the new context has on the family dynamics. As the quote below shows, it may not be an easy road:

MONICA: Last night my son said to me that school from Mexico was not valued the same as school here, that is, it doesn’t count. What I studied there doesn’t count here, and he said, “Mom, do you know this problem?” “No, to tell you the truth, I don’t,” I said to him. “See,” he says, “see, that’s why I said that they didn’t teach you [there] what they teach me here.” ... He knows that what is taught here is different from what is taught there and so he says, “why would I ask my mom for help if she’s not going to know?” So, there is a barrier.

There is another dimension to this valorization of knowledge that although it is not exclusive to immigrant parents, it is important to point out in our field of mathematics education. Since the 1990s some new curricula grounded on constructivist principles of teaching and learning have been developed in mathematics education in the US. Our work is primarily located in schools that are using reform-based curricula. In some of these curricula the approaches to computation move away from procedures and emphasize invented strategies that build on children’s concept of number and their number sense. Thus, one of our goals in the parents’ workshops is for parents to learn about these different approaches to doing arithmetic. This brings up again the valorization of knowledge as parents judge these approaches within the framework of what they would expect for their children’s education.

At a parents’ workshop on addition and subtraction, the first author was asked to explain to one of the mothers an approach to subtraction from a handout from the reform-based curriculum the second/third-grade teacher was using. The example showed that to find 51−22, one could do 30−22, which gives 8; then one needs to add 21 (what is missing from 30 to 51) to 8, thus the answer is 29 (in the handout, the adding of 21 is done in steps, by adding 10 to 30, so 10 to 8; then 10 more, so 50 and 28, and then 1 more, 51 and 29). When the mother was invited to try this strategy on 42−13, instead she said, “to me, this is much easier” and went back to 51−22, set it up vertically and started explaining to her son (a second grader) the “standard” subtraction procedure, “when the number on top is smaller, you ask for 1 from the one next to it,...”. The mother walked him through 51−22 and then encouraged him to try 42−13. The mother helped him make the “2” into “12” and then the child asked, “do I put a 5” pointing to the 4 in 42. The mother said, “no, no 3.” The child did not understand the regrouping strategy. We are not claiming that he would have understood the alternative strategy any more easily, since these strategies are often based on a flexible understanding of numbers (e.g., being able to break numbers apart and regroup in different ways), which this child did not have at that point. He was having difficulties with mathematics, which is why his mother wanted to come to the workshops. The “standard” algo-

rithm for subtraction (regrouping) seems straight alternative methods, but it is not conceptually obvious how to regroup and whether to decrease or increase. What seemed clear to us is that the mother appeared to be skeptical about the alternative views about teaching and learning mathematics into conflict, even with the parents who are coming being exposed to how and why their children are being

Latino Parents’ Views of Language in Their Child Education

In the previous section we brought up the point parents when their ways of doing mathematics differences in approaches may be particularly sensitive potential conflict between parents and children exacerbated when we add the language factor. Relations between parents and children around homework where the children’s instruction is in English but with the parents) is Spanish. Some of the parents plays much of a role in mathematics:

RESEARCHER: Do you think that the language affects?
DOROTEA: No, because numbers are the same in both thing, that is, if you add in Spanish or in English.

LUCRECIA: Mathematics is a language that doesn’t have

Language, however, plays a key role in the text particularly in those classrooms using reform-based textbooks do include computation exercises, they privilege rich, and by this we mean language in the sense of the mathematical language. We are not referring to tasks that use rather complex sentences in the instructions ask students to provide written explanations. Their use of these curricula; however, due to the non-bilingual some schools do not seem to have these materials comment on the difference between being in a bilingual

CANDIDA: Well, I remember that they would give Spanish, and so I could help her a little more no. Then I couldn’t. I felt bad. I would not explain it to them, I would have liked to explain frustrated.

VERONICA: I liked it while they were in a bilingual pr he was in kindergarten it was easy to cut out kids, gather them up, I even brought work ho
she goes on to talk about the difference in levels Mexico vs. US and her concern at the difference in levels].

The case of Lucinda points to the complexity of people trying to adapt to and make sense of situations that are different from what they have previously experienced. In our local context of immigration, we wonder about the effect that this adaptation to the new context has on the family dynamics. As the quote below shows, it may not be an easy road.

MÓNICA: Last night my son said to me that school from Mexico was not valued the same as school here, that it doesn’t count. What I studied there doesn’t count here, and he said, “Mom, do you know this problem?” “No, to tell you the truth, and don’t,” I said to him. “See,” he says, “see, that’s why I said that they didn’t teach you (there) what they teach me here.” He knows that what is taught here is different from what is taught there and so he says, “why would I ask my mom for help if she’s not going to know?” So, there is a barrier.

There is another dimension to this valorization of knowledge that although it is not exclusive to immigrant parents, it is important to point out in our field of mathematics education. Since the 1990s, some curricula grounded on constructivist principles of teaching and learning have been developed in mathematics education in the US. Our work is primarily located in schools that are using reform-based curricula. In some of these curricula, the approaches to computation move away from procedures and emphasize invented strategies that build on children’s concept of number and their number sense. Thus, one of our goals in the parents’ workshops is for parents to learn about these different approaches to doing arithmetic. This brings up again the valorization of knowledge as parents judge these approaches within the framework of what they would expect for their children’s education.

At a parents’ workshop on addition and subtraction, the first author was asked to explain to one of the mothers an approach to subtraction from a handout from the reform-based curriculum the second/third-grade teacher was using. The example showed that to find 51 – 22, one could do 30 – 22, which gives 8; then one needs to add 21 (what is missing from 30 to 51) to 8, thus the answer is 29 (in the handout, the adding of 21 is done in steps, by adding 10 to 30, so 10 to 8, then 10 more, so 50 and 29). When the mother was invited to try this strategy on 42 – 13, instead she said, “to me, this is much easier” and went back to 51 – 22, set it up vertically and started explaining to her son (a second grader) the “standard” subtraction procedure, “when the number on top is smaller, you ask for 1 from the one next to it…”. The mother walked him through 51 – 22 and then encouraged him to try 42 – 13. The mother helped him make the “2” into “12” and then the child asked, “do I put a 1” pointing to the 4 in 42. The mother said, “no, no 2.” The child did not understand the regrouping strategy. We are not claiming that he would have understood the alternative strategy any more easily, since these strategies are often based on a flexible understanding of numbers (e.g., being able to break numbers apart and regroup in different ways) which this child did not have at that point. He was having difficulties with mathematics, which is why his mother wanted to come to the workshops. The “standard” algo-

thm for subtraction (regrouping) seems straightforward compared to many of these alternative methods, but it is not conceptually obvious, as we saw the child stumbling over how to regroup and whether to decrease or increase the number that he was using to regroup. What seemed clear to us is that the mother valued the “standard” algorithm and appeared to be skeptical about the alternative approaches. We can see how different views about teaching and learning mathematics are in play and can potentially come into conflict, even with the parents who are coming to the workshops and therefore being exposed to how and why their children are being taught this “different” way.

Latino Parents’ Views of Language in Their Children’s Mathematics Education

In the previous section we brought up the potential conflict between children and parents when their ways of doing mathematics do not match. We argue that these differences in approaches may be particularly sensitive in an immigration context. In fact, this potential conflict between parents and children and between parents and schools is exacerbated when we add the language factor. In this section we focus on the interactions between parents and children around homework, particularly in our context where the children’s instruction is in English but the language in the home (at least with the parents) is Spanish. Some of the parents do not seem to think that language plays much of a role in mathematics:

RESEARCHER: Do you think that the language affects your son’s learning of mathematics?
ELOISA: No, because numbers are the same in English than in Spanish; it’s the same thing, that is, if you add in Spanish or in English, it’s the same thing.

LUCRECIA: Mathematics is a language that doesn’t need translation.

Language, however, plays a key role in the teaching and learning of mathematics, particularly in those classrooms using reform-based curricula. Although many of these textbooks do include computation exercises, they also have activities that are quite language rich, and by this we mean language in the sense of the English language, but also the mathematical language. We are not referring just to typical word problems, but to tasks that use rather complex sentences in the instructions or the context and that may ask students to provide written explanations. There are resources in Spanish for many of these curricula; however, due to the non-bilingual emphasis in our local context, some schools do not seem to have these materials to send home in Spanish. Parents comment on the difference between being in a bilingual program and not:

CANDIDA: Well, I remember that they would give her homework in English and in Spanish, and so I could help her a little more… But when it was all in English, no. Then I couldn’t, I felt bad. I would be very frustrated because I couldn’t explain it to them, I would have liked to explain it to them and I couldn’t. I was frustrated.

VERONICA: I liked it while they were in a bilingual program, I could be involved… When he was in kindergarten it was easy to cut out things, pass out the projects to the kids, gather them up, I even brought work home to take for the teacher the next
day. In first grade it was the same thing. I went with him and because the teacher spoke Spanish, she gave me things to grade and other jobs like that. My son saw me there, I could listen to him, I watched him. By being there watching, I realize many things. And then when David went to second grade into English-only and with a teacher that only spoke English, then I didn’t go, I didn’t go.

Teachers have also shared their concern with homework. In some cases teachers assign the more standard type of worksheet in part because it is less language demanding but also it gives something that parents recognize and want—practice of basic skills. It is hard to separate what is due to a reform-based curriculum (i.e., topics that may be unfamiliar to the parents) and what is due to the language, but parents often said that their reason for coming to the parents’ workshops was to be able to help their children with homework (see L. Ginsburg, 2006, for her work with African American parents and reform-based mathematics homework; see also Jackson & Remillard, 2005; Remillard & Jackson, 2006). One obvious way in which the language plays a role is that parents feel they cannot help their children with homework, even though in many cases they say that they know the mathematics. One mother, Selena said that as a student she had no problems with mathematics in Mexico, but that now, here in the US she is having a hard time helping her son because

SELENA: Sometimes I cannot explain it to him because I hardly know English. There are things that he reads them to me and he translates them into Spanish; sometimes I understand what he’s telling me in English, but others, definitely I don’t understand anything… And so, I put a circle around the parts I did not understand.

Verónica, a mother who had attended college in Mexico and had some teaching experience there, told us that she was confident she had enough mathematics background to help her son who was in middle school at the time, but:

VERÓNICA: It takes a lot of work when it is difficult to translate something for me, so he prefers to go early to school or ask someone else and that is something I don’t like. He doesn’t feel very sure that I understand him because the problem is written in English. I don’t know how to read it and he doesn’t know how to translate it well for me because he speaks Spanish and reads Spanish… but when kids learn Spanish here, their vocabulary is not as developed and he doesn’t translate like he should so that I’m able to help him… I think he thinks I studied differently.

Verónica was concerned because she knew the mathematics, yet she felt that her son did not value her knowledge. Her comment also points out to the issue of academic language (for more on language and mathematics with Latino students, particularly in the context of reform-based instruction, see Khisty, 2006; Moschkovich, 2002). Because Verónica’s child had been schooled in English since second grade (he had been in a bilingual class prior to that), he did not have a command of academic Spanish. He knew how to speak Spanish, as this was the home language, but could not talk about mathematics in Spanish. This is a common situation in our context now that access to bilingual education has been restricted. In a series of focus-group interviews with fourth through sixth graders, we asked them, “whom do you go to when you need help

with your homework?” Although many of them also brought up that language was an issue:

DANIELA (fifth grade): Well, since I have two brothers, they don’t understand everything I need—my brothers or a cousin who is in high school.

RESEARCHER (asking of a group of fifth graders): Questions to your parents in Spanish?

[The children in the group all laughed and shook their heads.]

RESEARCHER (to a group of sixth graders): So, mathematics in English, you cannot say it in Spanish?

IGNACIO: Practically not.

JULIAN: Practically not.

These excerpts point to another issue that, as this chapter, is quite present in our everyday work—how we are exposed to and make sense of a resource. We agree with Hernandez et al. (2006) about the importance of bilingualism in global economy, bilingual both at the social and academic levels in place in our context, they are not.

In terms of parent–children interactions around homework, although some of the issues are language related and cultural barriers, children are not social enough with academic related to different approaches to doing mathematics exchange during a home interview in which (Sergio) are trying to help their daughter (Berta) with her mathematics problem. The mathematics task is very easy for us, including the interviewer Beatriz, because it builds on what we, the interviewer, talked earlier that day at the parent workshop. The whole flavor about the conversation and how they talk, we have left the first few lines in Spanish (it).

MARGARITA: ¿Qué dice? Dimelo en español. [What does he say? Tell me in Spanish.]

BERTA: Jack tiene 73 pennies, cuando él agarró 100. [Sergio has 73 pennies, when he picked up 100.]

BERTA: 100 pennies, él ... [100 pennies, he ...]

MARGARITA: Él puede ... [he can]

BERTA: Él puede ... puede ... cambiarlo por un dólar. [He can ... can ... change it for a dollar.]

MARGARITA: Aha.

BERTA: How many more pennies Jack need? Cuántos más needs need Pennies Sergio? [How many more pennies does Sergio need?]

MARGARITA: Primero, primero lo vamos a hacer [First, first we’ll do it with 100 pennies, to]

BERTA: Pero, pero, pero, pero no me digas! [But, A few minutes later] [Translated into English for]
day. In first grade it was the same thing. I went with him and because the teacher spoke Spanish, she gave me things to grade and other jobs like that. My son saw me there, I could listen to him, I watched him. By being there watching, I realize many things. And then when David went to second grade into English-only and with a teacher that only spoke English, then I didn’t go, I didn’t go.

Teachers have also shared their concern with homework. In some cases teachers assign the more standard type of worksheet in part because it is less language demanding but also it gives something that parents recognize and want—practice of basic skills. It is hard to separate what is due to a reform-based curriculum (i.e., topics that may be unfamiliar to the parents) and what is due to the language, but parents often said that their reason for coming to the parents’ workshops was to be able to help their children with homework (see L. Ginsburg, 2006, for her work with African American parents and reform-based mathematics homework; see also Jackson & Remillard, 2005; Remillard & Jackson, 2006). One obvious way in which the language plays a role is that parents feel they cannot help their children with homework, even though in many cases they say that they know the mathematics. One mother, Selena said that as a student she had no problems with mathematics in Mexico, but that now, here in the US she is having a hard time helping her son because:

SELENA: Sometimes I cannot explain it to him because I hardly know English. There are things that he reads them to me and he translates them into Spanish; sometimes I understand what he’s telling me in English, but others, definitely I don’t understand anything … And so, I put a circle around the parts I did not understand.

Verónica, a mother who had attended college in Mexico and had some teaching experience there, told us that she was confident she had enough mathematics background to help her son who was in middle school at the time, but:

VERÓNICA: It takes a lot of work when it is difficult to translate something for me, so he prefers to go early to school or ask someone else and that is something I don’t like. He doesn’t feel very sure that I understand him because the problem is written in English. I don’t know how to read it and he doesn’t know how to translate it well for me because he speaks Spanish and reads Spanish … but when kids learn Spanish here, their vocabulary is not as developed and he doesn’t translate like he should so that I’m able to help him…. I think he thinks I studied differently.

Verónica was concerned because she knew the mathematics, yet she felt that her son did not value her knowledge. Her comment also points out to the issue of academic language (for more on language and mathematics with Latino students, particularly in the context of reform-based instruction, see Khisty, 2006; Moschlovich, 2002). Because Verónica’s child had been schooled in English since second grade (he had been in a bilingual class prior to that), he did not have a command of academic Spanish. He knew how to speak Spanish, as this was the home language, but could not talk about mathematics in Spanish. This is a common situation in our context now that access to bilingual education has been restricted. In a series of focus-group interviews with fourth through sixth graders, we asked them, “whom do you go to when you need help with your homework?” Although many of them said that they asked their parents, they also brought up that language was an issue:

DANIELA (fifth grade): Well, since I have two brothers that are already working and my mother does not understand everything in English, I need to ask one of my brothers or a cousin who is in high school.

RESEARCHER (asking a group of fifth graders): And you have never tried to ask your questions to your parents in Spanish?
[The children in the group all laughed and shook their heads (indicating no).]
RESEARCHER (to a group of sixth graders): So, what you know how to say about mathematics in English, you cannot say it in Spanish?
JULIAN: Practically not.

These excerpts point to another issue that, although we do not directly address it in this chapter, is quite present in our everyday work with immigrant families: the waste of a resource. We agree with L’Hernandez et al. (this volume) when they write about the importance of bilingualism in global economy. The children in our work could be fully bilingual both at the social and academic levels yet due to the current language policies in place in our context, they are not.

In terms of parent—children interactions around homework, there are several factors at play. Although some of the issues are language-based (i.e., parents use Spanish while children are not strong enough with academic Spanish), some of them are once again related to different approaches to doing mathematics. Next we present excerpts from an exchange during a home interview in which the mother (Margarita) and the father (Sergio) are trying to help their daughter (Berta, in third grade) with a homework subtraction problem. The mathematics task is very relevant for everybody in the room, including the interviewer Beatris, because it builds on an activity they had just seen six days earlier at the parent workshop. The whole interaction was in Spanish. To give the flavor of the conversation and to highlight the issues around language and mathematics, we have left the first few lines in Spanish (with the translation into English next to it).

MARGARITA: ¿Qué dice? Dímelo en español. [What does it say? Tell me in Spanish.]
BERTA: Jack tiene 73 peniques, cuando él agarró ... [Jack has 73 pennies, when he got ...]
[...]
BERTA: 100 peniques, él ... [100 pennies, he ...] [long pause]
MARGARITA: El puede ... [he can]
BERTA: El puede ... puede ... cambiarlo por un dólar! [he can ... can ... change it for one dollar]
MARGARITA: Aha.
BERTA: ¿Cómo cambia, más peniques $1 dollares? [how many more pennies $1 dollars?]
MARGARITA: Primero, primero lo vamos a hacer con 100 peniques, a cien peniques la ... [First, first we'll do it with 100 pennies, to 100 pennies ...]
BERTA: Pero, pero, pero, pero no me digas! [But, but, but, but don’t tell me]
[A few minutes later] [Translated into English from here on]
MARTA CIVIL and NÁRIA PLANAS

MARGARITA: Seventy-three; seventy-three; it's what we did with the clips. But these are pennies, right, "mi'hijita? And we found how many pennies were left?

Here the mother relates the situation to an activity that she and her daughter had worked on at the parents’ workshop in which they took out a handful of paper clips from a box of 100, they counted how many they took out and then they had to find how many were left in the box; the given problem (Jack has 73 pennies; how many more does he need to be able to exchange them for $1?) that Berta is solving is similar to the paper clip one, as Margarita notices. But Berta does not seem to see (or hear) the connection to that activity. After a few seconds she turns to her father for help.

BERTA: Dad! I need help.

SERGIO: Look m'hija. It’s very easy; look, just pay attention. You put...

BERTA: I have to do it! [raising her voice]

BERTA: I know, I know; look! I’m not going to do it for you; if you have seventy, eighty, ninety, one hundred, how much; how much is it? Ten, twenty, thirty. But since you already have three, it wouldn’t be thirty. It would be, how much? If you have thirty...

BERTA: One, one... one thousand!

SERGIO: No. You have three here...

BERTA: Ninety!

SERGIO: No, just a moment...

BERTA: Eighty! Seventy!

SERGIO: Wait, wait. If you have seventy-three here, seventy-three to eighty, it’s seven. From eighty to ninety, it’s ten. From here to there, another then. How much would it be? Seven, ten, and ten, how much?

BERTA: Twenty-seven!!! [yelling]

SERGIO: That’s it; so, erase, erase; do it well!

BERTA: [at the same time and screaming] Dad, dad but I have to do it this way.

SERGIO: And how did they teach you?

BERTA: Like this, I have to do it like this; like one, one, and how much, and then plus zero, plus six zeros...

In this exchange the father is looking at the subtraction 100–73, as first from 70 to 100, which gives him 30, and then, since it was 73 and not 70, he is asking her to account for that difference of 3, which would give 27. This strategy of adding up from the number you are subtracting is similar to one of the strategies the teacher is using in the classroom. It is one of these “reform” approaches, as opposed to the traditional subtraction algorithm (regrouping and so on). At the workshop a few days earlier, Sergio did not seem to show much interest in this alternative approach and in fact in videotaped interactions between him and his daughter, we see Sergio trying to teach the traditional algorithm to Berta. Yet in this interaction in the home, he is using one of the approaches discussed in the workshops and hence, used in the classroom too. But Berta does not think that this is the way she has to do it. We cannot tell from her explanation what that other way is. Several minutes later, Berta is still concerned that her father’s method is not going to be accepted, in part because she is worried that she is not going to know how to explain it, which classrooms:

BERTA: But if you did it for me, and then that is going to say, “how did you do it?” going to say, “who did it for you?” So, work in the head.

Her father explains it to her again and then:

BERTA: Ah, look, you are doing it wrong.

SERGIO: Ten; ten and ten and seven, right? way, but I don’t know how your teach

BERTA: Well, she wants us to do it well, and the

SERGIO: Well, I don’t know how they make...

This excerpt illustrates again the concept of the father is doing it the wrong way and that it illustrates the conflict between the father and "well, I don’t know how they want me to do the things because she notices that Sergio’s way is in the classroom.

BEATRIZ: How did he do it, how did he did it for you... what they explain to you, right Berta?

SERGIO: It’s very hard to explain to Berta... her...

Between Margarita and Beatriz they bring the classroom—the 100 chart. It seems that this problem she needed to use this chart to of 100. This interaction highlights several issues. On, is related to the difficulty for a child like talk about mathematics in Spanish. A second is only are the strategies different but also there is explain her thinking, which requires common home). It is no longer “just” about filling out or issue is more typical of interactions between they are immigrant or not; it has to do with the school’s way. In this case, the father used a str the classroom but the daughter did not seem to had been discussing and was convinced that issue, that encompasses the previous ones, is may have on parental engagement and on the academic subjects. Both the father and the child the previous exchange.
Here the mother relates the situation to an activity that she and her daughter had worked on at the parents’ workshop in which they took out a handful of paper clips from a box of 100, they counted how many they took out and then they had to find how many were left in the box; the given problem (Jack has 73 pennies; how many more does he need to be able to exchange them for $17) that Berta is solving is similar to the paper clip one, as Margarita notices. But Berta does not seem to see (or hear) the connection to that activity. After a few seconds she turns to her father for help.

BERTA: Dad! I need help.

SERGIO: Look m’hiija. It’s very easy; look, just pay attention. You put...

BERTA: I have to do it! [raising her voice]

SERGIO: I know, I know; look; I’m not going to do it for you; if you have seventy, eighty, ninety, one hundred, how much; how much is it? Ten, twenty, thirty. But since you already have three, it wouldn’t be thirty. It would be, how much? If you have thirty...

BERTA: One, one..., one thousand!

SERGIO: No. You have three here...

BERTA: Ninety!

SERGIO: No, just a moment...

BERTA: Eighty! Seventy!

SERGIO: Wait, wait. If you have seventy-three here, seventy-three to eighty, it’s seven. From eighty to ninety, it’s ten. From here to there, another then. How much would it be? Seven, ten, and ten, how much?

BERTA: Twenty-seven!!! [yelling]

SERGIO: That’s it; so, erase, erase; do it well!

BERTA: [at the same time and screaming] Dad, dad but I have to do it this way.

SERGIO: And how did they teach you?

BERTA: Like this, I have to do it like this; like one, one, and how much, and then plus zero, plus six zeros...

In this exchange the father is looking at the subtraction 100–73, as first from 70 to 100, which gives him 30, and then, since it was 73 and not 70, he is asking her to account for that difference of 3, which would give 27. This strategy of adding up from the number you are subtracting is similar to one of the strategies the teacher is using in the classroom. It is one of these “reform” approaches, as opposed to the traditional subtraction algorithm (regrouping and so on). At the workshop a few days earlier, Sergio did not seem to show much interest in this alternative approach and in fact in videotaped interactions between him and his daughter, we see Sergio trying to teach the traditional algorithm to Berta. Yet in this interaction in the home, he is using one of the approaches discussed in the workshops and hence, used in the classroom too. But Berta does not think that this is the way she has to do it. We cannot tell from her explanation what that other way is. Several minutes later, Berta is still concerned that her father’s method is not going to be accepted, in part because she is worried that she is not going to know how to explain it, which is an expectation of many reform-based classrooms:

BERTA: But if you did it for me, and then they tell me, what was it? Because the teacher is going to say, “how did you do it?” And I’m not going to know, and then she’s going to say, “who did it for you?” So I’m not going to know how these things work in the head.

Her father explains it to her again and then:

BERTA: Ah, look, you are doing it wrong.

SERGIO: Ten ten and ten and seven, right? How much is that? Count. It’s easier this way, but I don’t know how your teacher tells you, how she wants us to do it.

BERTA: She wants us to do it well, and that we do it like this...

SERGIO: Well, I don’t know how they want me to do it.

This excerpt illustrates again the concept of valorization of knowledge. Berta thinks her father is doing it the wrong way and that the teacher “wants us to do it well.” It also illustrates the conflict between the father and daughter, and Sergio ends up giving up “well, I don’t know how they want me to do it.” The interviewer, Beatriz, then intervenes because she notices that Sergio’s way is very similar to one of the approaches in the classroom.

BEATRIZ: How did he do it, how did he do it for you, how he explained it to you, it’s similar to what they explain to you, right Berta?

SERGIO: It’s very hard to explain to Berta…. And for more than I want to explain it to her…

Between Margarita and Beatriz they bring up another tool that they have been using in the classroom—the 100 chart. It seems that Berta was under the impression that to solve this problem she needed to use this chart to count from 73 to 83, then to 93, and then to 100. This interaction highlights several issues. One, that is hard to capture in the transcription, is related to the difficulty for a child like Berta who has been schooled in English to talk about mathematics in Spanish. A second issue is related to the reform approaches not only are the strategies different but also there is an expectation that the child will be able to explain her thinking, which requires communication in English (yet, it is in Spanish in the home). It is no longer “just” about filling out worksheets with subtraction exercises. A third issue is more typical of interactions between parents and children (unrelated to whether they are immigrant or not): it has to do with the parents’ way versus the teacher’s (or the school’s) way. In this case, the father used a strategy that we know would have been fine in the classroom but the daughter did not seem to recognize it as one of the approaches they had been discussing and was convinced that she needed to use the 100 chart. A fourth issue, that encompasses the previous ones, is about the potential effect that these issues may have on parental engagement and on the relations between parents and children on academic subjects. Both the father and the child were getting frustrated with each other in the previous exchange.
In the workshops we address several of the issues highlighted in this section by (a) engaging parents in activities that reflect what their children are learning; this allows us to discuss the different methods and introduce English terms that the children are likely to bring home (some workshops are bilingual but others are mostly in Spanish), and (b) (in some workshops) parents and children work together on tasks that are based on what the children are studying; this allows us to address issues of language and content that may come up.

Conclusion

In this chapter we have focused on the importance of establishing a dialogue with Latino/a immigrant parents about mathematics education. Although our emphasis has been on the parents, there are clear implications from this work for mathematics instruction in general and for possible roles for teachers and schools. The workshops we have described are a powerful arena for dialogue between parents and teachers. Teachers become aware not only about parents’ perceptions about their children’s education but also about other approaches to doing mathematics (as is the case with the division algorithm). Teachers can then bring these different approaches into their class, thus valuing these forms of knowledge. In one of our projects, we had teams of parents and teachers (and school administrators) facilitating workshops for parents in the community. This approach pushed parents and teachers to reconsider their roles, as they were sharing similar responsibilities as workshop facilitators. In Civil and Berneir (2006) we discuss some of the challenges and possibilities associated with this approach. Some of the challenges were associated with issues of power, as teachers saw themselves as experts while parents did not want “to be relegated to handing out papers or greeting the people coming to the workshop” (p. 327). Some of the possibilities showed teachers embracing their new relationship with the parents and an appreciation for their contributions to the mathematical learning of their children.

In terms of implications for mathematics instruction, immigrant parents have expressed their concern that maybe their children are not learning the kinds of mathematics and approaches to doing mathematics that they were expecting. This concern needs to be addressed. One approach is what we have suggested, through both dialogues and workshops in which parents not only learn about the approaches to mathematics instruction in their children’s schools but also share their approaches to doing mathematics. On one hand, by engaging parents with the mathematics that their children are learning, we seek to address an issue brought up by earlier research that suggests that Latino parents (particularly Mexican/Mexican-American) want to help their children with homework but may not know how to do that (Delgado-Gaitan, 1992; Okagaki & Fresch, 1998; Okagaki, Fresch, & Gordon, 1995). As Okagaki et al. (1995) write, “some Mexican American parents may not have the practical knowledge to help their children on schools tasks and … children’s school performance will improve as parents become better educated and more able to provide effective instrumental support” (p. 175). Our research thus fits within the primary cultural discontinuities theory by which “parents may have less practical knowledge about how to do school tasks and about the school system itself. This lack of knowl-
Conclusion

In this chapter, we have focused on the importance of establishing a dialogue with Latino/a immigrant parents about mathematics education. Although our emphasis has been on the parents, there are clear implications from this work for mathematics instruction in general and for possible roles for teachers and schools. The workshops we described are a powerful arena for dialogue between parents and teachers. Teachers become aware not only about parents' perceptions about their children's education but also about other approaches to doing mathematics (as is the case with the division algorithm). Teachers can then bring these different approaches into their class, thus valuing these forms of knowledge. In one of our projects, we had teams of parents and teachers (and school administrators) facilitating workshops for parents in the community. This approach pushed parents and teachers to reconsider their roles, as they were sharing similar responsibilities as workshop facilitators. In Civil and Bernard (2006) we discuss some of the challenges and possibilities associated with this approach. Some of the challenges are associated with issues of power, as teachers saw themselves as experts while parents did not want "to be relegated to handing out papers or greeting the people coming to the workshop" (p. 327). Some of the possibilities showed teachers embracing their new relationship with the parents and an appreciation for their contributions to the mathematical learning of their children.

In terms of implications for mathematics instruction, immigrant parents have expressed their concern that maybe their children are not learning the kinds of mathematics and approaches to doing mathematics that they were expecting. This concern needs to be addressed. One approach is what we have suggested, through both dialogues and workshops in which parents not only learn about the approaches to mathematics instruction in their children's schools but also share their approaches to doing mathematics. On one hand, by engaging parents with the mathematics that their children are learning, we seek to address an issue brought up by earlier research that suggests that Latino parents (particularly Mexican-Mexican/American) want to help their children with homework but may not know how to do that (Delgado-Gaitan, 1992; Okagaki & Freusch, 1998; Okagaki, French, & Gordon, 1995). As Okagaki et al. (1995) write, "some Mexican American parents may not have the practical knowledge to help their children on schools tasks and ... children's school performance will improve as parents become better educated and more able to provide effective instrumental support" (p. 175). Our research thus fits within the primary cultural discontinuities theory by which "parents may have less practical knowledge about how to do school tasks and about the school system itself. This lack of knowl

dge—not a low valuation of education—is what affects parental support for school" (Okagaki et al., 1995).

On the other hand, however, our approach moves beyond "teaching" parents about the mathematics their children are learning and emphasizes listening to parents. This idea of listening to parents and engaging with them in a mutual exchange of information is at the basis of our concept of parents as intellectual resources (Civil & Andrade, 2003). The quotation below captures this approach, as Ana reflects on the impact of the workshops on herself as a learner and shows a sense of ownership of her learning:

Ana: I am so happy with all these mathematics workshops because I realize how to help my children understand mathematics in a different way, from a fun approach, all together as a family. And also for us, because one never knows when we may need it, and this way we move forward, and no one is going to mandate that is has to be the way they say, because we also think and solve problems.

Our findings point to the need for respect and positive valorizations of different groups' knowledge. This has implications for schools. Immigrant children interpret their values and meanings according to the mediation of their families' values and meanings. In this process of mediation, both parents and children interact with positive and negative valorizations, suggested by themselves and by other members of the educational context—teachers, non-immigrant students, school administrators, other immigrant students, etc. The contents of these valorizations have an influence on the children's positioning when learning mathematics. Children who experience respect for their home culture at school, and for their school culture at home, may see their learning as a smooth transition process among cultures instead of a place for conflict. Negative valorizations limit the learner's possibilities for their learning and they also limit the learner's possibilities to understand what other learners know.

The construction of a more equitable society is not the only reason why we should be concerned with promoting positive valorizations among different cultural groups. There are also reasons related to mathematics education. Mathematical patterns are universal, but mathematical practices are necessary situated. Lack of respect for others' knowledge makes it difficult to develop a positive disposition toward learning different mathematical practices. Prior to the learning of different representations and algorithms we need a positive attitude toward the cultures where these are used. But in addition to gaining knowledge about other groups' ways of doing mathematics, learning about different types of representations and algorithms for subtraction or division is a way of better understanding the concepts behind these operations. Interaction between children and parents concerning each other's mathematical knowledge is a means of gaining knowledge. However, it is not an easy interaction. When immigrant parents talk with their children they are interacting with members of another culture—or should we say, "other cultures"—not only due to generational differences. Children are at some point of the distance between their home cultures and their school and classroom cultures. The dialogue between children and parents is to be seen as a form of multicultural dialogue that needs to overcome negative valorizations. In order to seek similarities between

Latin@ Immigrant Parents and Math Education
different mathematical practices concerning the same notion, children and parents need to interpret each other’s knowledge as complementary, and accept the possibility of working together on a common school task, as a way of getting to know each other better and understanding mathematics better as well. We close with the words of a 10-year-old, who capture this idea of working together and exchanging information:

Now that she [his mother] is attending the mathematical workshops, she can teach me other ways of learning mathematics... She shares it with the entire family and we all get involved in a mathematical gathering that is fun. We are all teachers and students at the same time, there is no difference and that there be much respect and "confianza" [trust] is most important.

Notes
1. Project Bridge (Linking home and school: A bridge to the many faces of mathematics) was supported under the Educational Research and Development Centers Program, PR/ED Program Number R306A00001, as administered by the OERI (US Department of Education). Project MAPPS (Math and Parent Partnerships in the Southwest) and CEMELA (Center for the Mathematics Education of Latino/as) are funded by the National Science Foundation (NSF) under grants ESI-9901275 and ESI-0424083. The views expressed here are those of the authors and do not necessarily reflect the views of the funding agencies.
2. All names are pseudonyms. All the quotations from parents have been translated from Spanish.
3. Proposition 203 was a ballot initiative approved by Arizona voters in 2000, now codified as part of the Arizona Education Statutes. This law severely restricts bilingual education programs, replacing them with "Structured English Immersion" classes for a period "not normally intended to exceed one year" (AIS, 15–752). The law allows teachers to use a minimal amount of the child's native language for clarification, but "all children in Arizona public schools shall be taught English by being taught in English and all children shall be placed in English language classrooms" (AIS, 15–752).

References
different mathematical practices concerning the same notion, children and parents need to interpret each other's knowledge as complementary, and accept the possibility of working together on a common school task, as a way of getting to know each other better and understanding mathematics better as well. We close with the words of a 15-year-old, who captures this idea of working together and exchanging information:

Now that she [his mother] is attending the mathematical workshops, she can teach me other ways of learning mathematics ... She shares it with the entire family and we all get involved in a mathematical gathering that is fun. We are all teachers and students at the same time, there is no difference and that there be much respect and “confianza” [trust] is most important.

Notes
1. Project Bridge (Linking home and school: A bridge to the many faces of mathematics) was supported under the Educational Research and Development Centers Program, PR/ED Program Number R306A940001, as administered by the OERI (US Department of Education). Project MAPPS (Math and Parent Partnerships in the Southwest) and CEMELA (Center for the Mathematics Education of Latinos/as) are funded by the National Science Foundation (NSF) under grants ESI-9901275 and ESI-0424983. The views expressed here are those of the authors and do not necessarily reflect the views of the funding agencies.

2. All names are pseudonyms. All the quotations from parents have been translated from Spanish.

3. Proposition 203 was a ballot initiative approved by Arizona voters in 2000, now codified as part of the Arizona Education Statutes. This law severely restricts bilingual education programs, replacing them with “Structured English Immersion” classes for a period “not normally intended to exceed one year” (ARS, 15–752). The law allows teachers to use a minimal amount of the child’s native language for clarification, but “all children in Arizona public schools shall be taught English by being taught in English and all children shall be placed in English language classrooms” (ARS, 15–752).

References


8 Cultural Incongruence Between Teachers and Families
Implications for Immigrant Students

Selcuk R. Sirin and Patrice Ryce

Schools are often the first places where many immigrant families encounter cultural differences with the mainstream society. Upon entering the educational system, the cultural background of most immigrants is often not considered when developing the curriculum, instructional strategies, and pedagogical practices that are crucial for their educational success. This can lead to cultural incongruence, where the educational practices and beliefs of teachers conflict with those of the students' families, resulting in a lack of alignment that can negatively affect students' academic performance.

Prior research on marginalized groups show that teachers' understanding of their students' cultures contributes to positive academic outcomes. Teachers who are knowledgeable about their students' cultural backgrounds can create a more inclusive and supportive learning environment. Conversely, a lack of understanding of cultural differences can lead to misunderstandings and negative interactions. This can contribute to the development of a subtractive school culture, where students feel disconnected and disengaged from the educational process.

In this chapter, we will examine how the integration of cultural diversity and understanding among teachers, administrators, and families can contribute to a more equitable educational environment. We will explore strategies for fostering cultural awareness and inclusivity in the classroom, and discuss the implications of these strategies for improving educational outcomes.