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COMMENTARY

Why Should Mathematics Educators Learn from and about Latina/o Students' In-School and Out-of-School Experiences?

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I have been studying the complexities of bridging in-school and out-of-school mathematics for quite a long time. My motivation for doing this work is grounded in my initial experiences with the Funds of Knowledge for Teaching (FKT) project (González, Moll, & Amanti, 2005a) and has continued throughout the years as I have been working with largely low-income, Mexican American[1] communities in Tucson, Arizona. All throughout this time, I have raised questions related to connecting in-school and out-of-school mathematics (Civil, 2002, 2007, 2014). These questions have to do with *What is mathematics? Where is the mathematics? How are different mathematical practices valued, by whom, and where?* In Civil (2014), I raise further questions about *What is competence? What is the interplay between task, setting, and engagement?* and *How do languages (as in English and Spanish, for example) and affective elements interact when doing mathematics?* In particular, I discuss these questions in relation to in-school and out-of-school settings.

For example, the case of Alberto, a young immigrant student from Mexico, portrays a child who is seen as quite competent in his home/community environment, but not succeeding in the school environment (Civil, 2014; Civil & Andrade, 2002). What should we learn from this case? Why is this case relevant to our research and our teacher preparation efforts? I believe that mathematics educators (teachers, school administrators, university faculty, etc.) need to take a more holistic approach toward the mathematics education of students, and in particular of marginalized students. In this commentary, I expand upon this belief through the "voices" of several students and their parents with whom I have interacted over the years. But first I provide some general context for my research, in terms of who the participants are and how I approach my work.

[1] Here, I use the term *Mexican American* rather than *Latina/o* to more closely reflect the communities in which this work is located.

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Context

As I mentioned earlier, most of my work is located in schools and communities that are largely Mexican American. Thus, while I have worked with other marginalized students, my focus here will be on students of Mexican origin and their parents. Even though I use the terms *Mexican American* or *of Mexican origin* I want to underscore the variability among the children and families with whom I have worked over the years. Most of them have some connection to Mexico. In some cases, the connection is quite current, in that they may be recent immigrants or have family members living in Mexico, in the bordering area. While in other cases, it is a historical connection, in that they trace back their histories to when this southwest region of the United States was part of Mexico (Sheridan, 1995). Some are "documented" and some are not. Some were born in the United States and some were born in Mexico. Some speak English only or Spanish only; some speak both languages, and some have one of the many indigenous languages from Mexico as first language. Furthermore, it is important to understand that these situations occur within families. That is, in a given family, one or both parents and some of the children may be "undocumented" but some may have been born in the United States or are documented; the parents may speak mostly Spanish, while the children may be bilingual.

My approach to research is heavily influenced by an ethnographic tradition. In that sense, I spend considerable time in the community building rapport with its members, just being there. Also, whenever possible, I like to interact with the students, their parents,[2] and their teachers. That is, I argue that to gain an understanding of students' experiences with in-school and out-of-school mathematics, we need to talk to the various people that are likely to play a role in these students' experiences. Starting with the FKT project, I developed a particular interest in working with parents and mathematics education. Thus, much of my work focuses on parents' perceptions of their children's mathematics education, as well as on their own interests, uses of, and questions about mathematics. For me, an ideal situation is the case where I have developed a solid rapport with a parent (usually a mother), often through activities (e.g., workshops, classroom and home visits), and I also have developed a rapport with her children through my work in the classroom and conversations with them. I am describing my approach not in the "traditional" sense of research method—though of course, I have collected data through interviews, classroom observations, and so on—but to me the relevant point is the importance of what many mothers describe as *confianza* (trust). *Confianza* is a key component of the FKT project. As González, Moll, and Amanti (2005b) write, "when there is sincere interest in both learning about and learning

[2] In most of my work *parent* actually refers to mother (most often) or father, but I also use the term to refer to other primary care takers such as grandparents.

from a household, relationships and *confianza* can flourish" (p. 6). In Civil (2001), I elaborate on the concept of *confianza* and illustrate it through the voices of some of the mothers, as in the following excerpt:

> When I integrated into the group de las Señoras, for me the most important foundation was the confianza that each one offered me…. I can say that all that I now know and have learned has been accomplished by means of the confianza. (p. 175)

Developing *confianza* takes time and its results are not necessarily immediately measureable. I am concerned with the pressures that funding agencies, policy makers, and others are putting on interventions and studies that "produce outcomes" and measure things, usually in a limited amount of time, as if the complexity of children's lives could be put on hold, manipulated a bit, and "desirable" outcomes will follow. What I hope to convey in this commentary is that pretending that we can "improve" marginalized students' mathematical learning opportunities without taking into account their lived experiences, is educationally naïve at best. Some of these lived experiences involve navigating different worlds (e.g., literally geographically, Mexico and the United States, as well as home and school), different languages, negative perceptions (e.g., views of immigration), fears (e.g., their "status" in the United States), and areas of expertise that grow out of these lived experiences and that may be different from our own experiences and expertise. In what follows, I discuss the relevance for mathematics education of students' in-school and out-of-school experiences by focusing on two themes: language and culture.

Considerations Around Language

My focus here is on the students for whom Spanish plays a role in their everyday life, either because they speak it, or a close member in their family speaks it. One of the schools where colleagues and I carried out several activities over five years is in a primarily Mexican American neighborhood, where Spanish is very present (in the local businesses and among the people in the community, particularly the adults). The school, like all schools in Arizona at the time of this work (and currently), is under a repressive law against bilingual education.[3] Still, this was a school where one could hear Spanish easily in the hallways, in the

[3] In 2000 Arizona voters passes Proposition 203 that severely restricted bilingual education requiring that ELLs be placed in Structured English Immersion (SEI) classrooms with instruction only in English. Furthermore, in 2008–09 the 4-hour English language development model was implemented. This model calls for 4 hours per day of English language instruction. "It is the only state in the country with such an arrangement. Whereas Proposition 203 indicated that all teachers could teach content, albeit in English only, the 4-h ELD block established stringent instructional procedures for its teachers" (Rios-Aguilar, González Canché, & Sabetghadam, 2012, p. 49).

classrooms when working in small groups, and in the office (the staff was bilingual). So, this was not a school where Spanish was not welcomed (although the instruction did follow the mandate of the law). Yet, I was not aware that several students I met spoke Spanish until I either asked them if they did or heard them speak with a family member (usually a parent or grandparent). I wonder, does language become associated with certain settings? What kinds of messages are students getting that dictate what language to use when? In the following exchange between Penny, a fourth grader in that school, and me, we see her thinking on when to use which language:

Penny: [In Mexico] Mostly Spanish; it's only Spanish that I hear all over. My dad usually talks English, but in Mexico he says, "No hables inglés, hablas español." (*Don't speak English, speak Spanish*.) My tío (*uncle*) also says that.
Marta: Ok. Why do you think they say that?
Penny: Um because you aren't at a specific place to talk one language like in school. If you have a friend that talks Spanish you should talk Spanish to them, but in school you talk English and, and…and at your house some people talk English or Spanish.
Marta: Ok, is that what your parents tell you; your dad tells you that?
Penny: Um mostly my tío. He tells my cousins and me. He says, "don't talk English at this house."

Penny was one of the students that I did not know spoke Spanish until she told me she did. As she indicates in the excerpt above, English was the language of school and when not in school, the language used depended on the place and people involved. While Penny may have felt comfortable navigating both languages and knowing when to use one or the other (we do not know that), this is not necessarily the case for other students who need to make choices and who do not feel free to use whatever language they want. For example, the excerpt below is what a mother shared when her son entered kindergarten:

Julia: When my son entered school, in Kinder, he wanted to go back [to Mexico] because one at home well one speaks Spanish and the neighborhood kids speak Spanish and everything is Spanish. And when all of a sudden he entered Kinder he told me: "You know what mommy, I don't want to go to school because everyone speaks English and I don't understand them at all. It's a world of English, this is not my world; my world is Spanish." He would say, "I want to go back to [town in Mexico] because over there it's my world"; he would say, "My world is Spanish."

Over the years, I have collected several examples from parents reporting how hard it was for their children when they did not know English well yet. While this may not be surprising, what I want to stress is that parents mostly shared the emotional toll that this situation created for their children and for themselves as

parents. Parents shared stories about their children coming back from school crying and wanting to drop out. They also shared their difficulties when trying to help their children with homework. Even in subjects like mathematics where they had the knowledge to help them, they could not always do it because of the language difference, creating a barrier between children and parents (Acosta-Iriqui, Civil, Díez-Palomar, Marshall, & Quintos-Alonso, 2011).

In this commentary, I am looking at language from a political point of view, given that "as educators, to ignore the political underpinnings of school language policies would be irresponsible" (Civil & Planas, 2012, p. 72). Setati (2005) argues:

> Decisions about which language to use, how to use it, and for what purpose are both pedagogic and political…. If we are to explain language practices in a coherent and comprehensive way, we must go beyond the cognitive and pedagogic aspects and consider the political aspects of language use in multilingual mathematics classrooms. (p. 451)

In a survey of mathematics education and immigrant students (in different parts of the world), not knowing the language of instruction was seen as one of the main problems (Civil, 2012a). This notion of seeing language as a problem exemplifies the pervasive deficit view toward marginalized students—in this case, those whose first language is not the language of instruction. Elsewhere (Civil & Planas, 2012; Planas & Civil, 2013), Planas and I have argued for the need to move away from this problem focus toward a resource orientation in which languages are seen as resources toward the teaching and learning of mathematics. Furthermore, Planas and I argue for the need to understand the socio-political context of our work, and the role that the different languages involved play in positioning students as learners of mathematics: "ultimately, we cannot separate the 'language issue' from the socio-political context in which students are embedded" (Planas & Civil, 2013, p. 376).

So, why are language issues relevant to mathematics education? And here, I mean beyond the perhaps more obvious answer of teaching mathematics to English language learners (ELLs). In fact, I argue that while we need to continue to seek ways to support ELLs in their learning of mathematics, this is not enough, particularly in settings where the use of home language(s) is not supported. We need to address the complexity of language ideology in the classroom (Civil, 2011b). In prior writings (e.g., Civil, 2011b; Civil & Planas, 2012), I have articulated my dilemma when working with a group of middle school students, most of whom were recent immigrants and Spanish dominant. By encouraging the use of Spanish in their small group work and even in the whole class presentations, I was able to document rich mathematical discussions (see, e.g., Civil, 2011b; 2012b). While from a mathematics education point of view I thought it was powerful, I

was unaware of the conflicting messages that the students were getting. These students were in a segregated environment (apart from the non-ELL students) for most of their school day (quite a few articles have been written on the current language policy in Arizona; see, e.g., Combs, DaSilva Iddings, & Moll, 2014; Gándara & Orfield, 2012; Rios-Aguilar, González Canché, & Sabetghadam, 2012). Students were aware of the segregation and, in fact, were concerned about their learning. In an interview with the mothers of two of the students in this class, they shared their children's (Ernesto and Larissa) concern with being in section A of the school (this is where the classrooms for ELLs were located):

Roxana: Ernesto says that he wants to go higher. He is going for, he says: "I want to get to my final goal …I haven't reached it yet. … I am striving to get there." He says that he's not very convinced of being there [in section A]. He wants more.

Mila: Larissa feels embarrassed. She says, "Mom I am embarrassed to go to Section A."

Interviewer: And what does it mean to be in Section A? What is the difference?

Mila: Well that they speak a lot of Spanish, that they hardly know any English.

Roxana: My son says that it's more Spanish there. He says: "Mom, just imagine that we are back in Mexico, with the teachers from Mexico because now I even get mixed up because they explain more in Spanish than English. And I am with the expectation that they are going to talk to me in English and I am thinking in English…. I get mixed up, because I want them to talk to me in English and the teacher can't because there are quite a few children who don't understand English well. And the teacher opts to speak Spanish first and when [she] starts talking in English, I am already all tangled up in knots. I am already confused, and I can't get untangled." And that is why he wants to go where "the class in general, from start to finish, [is] in English." (See Civil & Menéndez, 2011)

Below is an excerpt from an interview with another ELL from Section A, an eighth grader, Cecilia, whom I knew since 6th grade. As we can see, Cecilia is conflicted about Section A. She does not like being there because it feels that she is not moving forward, not learning enough, but at the same time, she likes the people there, because "everybody is Mexican like me and we talk":

Marta: How do you like being in Section A?

Cecilia: I don't like it.

Marta: How come?

Cecilia: Because when I was in 6th grade, I had all the classes in here; and when I was in 7th grade, and now.

Marta: And what is it that you don't like?

Cecilia: Que no salgo de la misma (*that I don't get out of the same place*)…

Marta: So, what else don't you like about Section A?

Cecilia:	I like Section A because everybody is Mexican like me and we talk, and yeah, I like it.
Marta:	You like being in Section A?
Cecilia:	No, I, I like the people in Section A, the persons in…
Marta:	Got you! The students?
Cecilia:	Yeah.
Marta:	The students in Section A. Got you. But if you could choose, where would you be?
Cecilia:	In Section B [a different set of classrooms for non-ELLs].
Marta:	In Section B. If now you were to start eighth grade, if this was August instead of April…
Cecilia:	Section B.
Marta:	In Section B. OK. And why? Why do you think that, that…
Cecilia:	I would learn more.
Marta:	And why do you think you'd learn more in Section B?
Cecilia:	Like I said, …all the people speak English and…I have to speak English too.

It is rather ironic that while the intent behind the segregation was presumably that the students would learn English quicker, the experience for these students was quite the opposite. While the instruction may have been in English (with clarification in Spanish when needed), in general Spanish was very present in Section A. Most of the students I interviewed who were in Section A expressed that they did not think they were learning as much as they wished. They had an awareness that "something was wrong" with being in Section A and the goal was to move out of it. These were young people navigating a different culture and language, a different approach to schooling (many of them had been in the United States for three or fewer years), trying to fit in with the "regular kids" while at the same time being classified as "Section A." I encouraged them to use Spanish in their mathematics explanations, which opened up the patterns of participation in mathematical discussions (Civil, 2011b). However, I have been wondering since about what other messages I was unintentionally sending them, such as "your English is not quite there, use Spanish?" or simply ignoring their struggles with power issues associated to different languages.

As I look back, I believe that besides wanting the students to be able to do and talk about mathematics in any way they felt comfortable, my intent was also to value and affirm their home language (which it is important to note, is my and the classroom teacher's home language, too). But that is a political positioning that I do not think came through for the students. That is, we did not engage in discussions with the students about language ideology. And this is coming from a mathematics educator who learned mathematics in a language (French) other than my home language (Spanish), grew up in Catalonia at a time where the Catalan language was repressed, and then moved to the United States, where obviously English is not my home language. I share this personal story to put things in per-

spective. I have had ample opportunity to experience linguistic diversity and power issues around different languages. I know how important language is as part of one's identity (Ruiz, 2010), and I also know how unsettling it can be to feel different because of one's language and how that language is perceived with respect to other language(s). Yet, I still feel that in my work I am not addressing this "language issue" head on. I should make it clear that these issues around language are not only about settings where one's home language is repressed and devalued, as in the situation I have illustrated with the middle school students in Arizona. Even in dual-language settings where the school is trying to make sure that the non-dominant students' language is valued, the power issues are still present (Cervantes-Soon, 2014; see Civil, 2012b for a discussion on the participation of Latina/o students in the mathematics classroom in a dual-language setting). As Valdés (1997) cautions, "bilingualism can be both an advantage and a disadvantage, depending on the student's position in the hierarchy of power" (p. 420).

And so, as I reflect on the comments and experiences of students like Penny, Larissa, Ernesto, and Cecilia, and mothers like Julia, Mila, and Roxanna, I wonder: What should we do as mathematics educators? Should we bring up issues around valorization of language and language policy when we teach prospective/practicing teachers? How do we raise awareness among mathematics educators that these considerations about language are important in the mathematics classroom and include more than just approaches to teach mathematics to ELLs? Similar to Martin, Gholson, and Leonard (2010), I have a focus on the mathematics when I work with students like Penny, Larissa, Ernesto, and Cecilia, as well as when I work with parents, teachers, and prospective teachers. I want to know how they think about mathematics, but also as Martin and colleagues point out:

> Yet, for many scholars, including ourselves, subsequent efforts to add needed complexity to the understanding of learners, their social realities, and the forces affecting these realities have led them (and us) to take social, sociopolitical, and critical turns in their (our) work, away from overly narrow concerns with mathematics content. These turns have made salient many issues not typically pursued in mathematics education research, including issues of identity, language, power, racialization, and socialization. (p. 15)

One of these "salient many issues not typically pursued in mathematics education research" is learning about the backgrounds and experiences of marginalized students. In what follows, I offer some brief remarks on what that learning may look like and why it is relevant to mathematics education.

Considerations Around Culture

First of all, my definition of culture is based on González's (2005) work in the FKT project, where culture is defined as lived experiences: "we have interrogated

many of the assumptions of a shared culture, and have chosen instead to focus on 'practice,' that is, what it is that people do, and what they say about what they do" (p. 40). Learning about and from students' (and their families') lived experiences is a key premise in the FKT project. To illustrate, let me go back to the case of Penny.

In her interview, Penny shared that she went to Mexico quite often, almost every weekend, to a ranch that was about three hours away from Tucson. At the ranch she rode horses, and in her description she conveyed both her expertise and confidence with this practice. From a mathematics funds of knowledge approach, there are rich opportunities for learning experiences building on Penny's knowledge of international travel (Mexico – United States) (e.g., my first experience in the FKT project was with a module around money that originated in part from students' experiences with U.S. and Mexican currency) and on her knowledge of horses and ranch life (for an example of a module based on her students' experiences with ranches and horses, see Amanti, 2005). While these connections between out-of-school experiences and in-school mathematics learning opportunities are important and are in fact what first attracted me to a project such as FKT, I think that finding the actual connection to the mathematics may be less significant than making the connection with the student and his or her family.

It is these connections that help develop *confianza*, which has proven to be so important in my work with parents and children. I argue that this *confianza* that grows out of a real interest in understanding students' lived experiences allows us to also make connections toward their mathematical learning. By developing *confianza* with the middle school students mentioned earlier, their interactions often combined what one could describe as social chat (others might characterize it as "off task" and miss the learning going on). This social chat drew upon cultural elements such as humor and metaphors, which at times became tools for the actual solution of a problem (see, e.g., Civil, 2011a). Through this *confianza*, I was able to get to know the students better. For example, Octavio did not participate much in the mathematics classroom when I first met him. As we worked on encouraging mathematical discussions, I found out that Octavio liked to argue. His peers referred to him as "alegador" (*argumentative*). This interest in engaging in arguments became an asset to what I would describe as his passionate participation in mathematical discussions (Civil, 2011a; Civil, 2012b).

Most of my work within this notion of *confianza* has been with parents. Through listening to parents, I have learned about their experiences with school mathematics (in many cases, as children growing up in Mexico), as well as their children's experiences, often as they navigate a system that is quite different from their parents' (Civil & Planas, 2010). These conversations with parents also point to their perceptions of power issues as they realize that their knowledge of and experiences with mathematics are not even acknowledged in their children's

schools. For instance, one of the mothers, in a discussion around barriers and opportunities for a stronger communication between school and community, commented:

> The first problem is that when the teacher send papers, the teachers want to do a better job with the kids that come from Mexico, but they don't start thinking that it is not just the kids, *it is the parents and they go together* [my emphasis].

This mother wanted her knowledge and experiences acknowledged. Similar to others parents in the group, there was a concern that the school did not ask them about their approaches to doing mathematics. While some still went ahead and shared their knowledge with their children, they described a tension as their children were caught between the school approaches and those from home. For me, this is an area that needs to be addressed. While I have learned much from, with, and about children and their families, particularly through my work with the parents, what I see lacking is real dialogue between teachers and parents. Here, I argue for the need to take a holistic approach to the mathematics education of marginalized students, an approach that takes into account their lived experiences and that brings together all the parties involved in their education. As the mother in quote above reminds us, parents and children go together. What do we need to do to get parents, children, teachers, and mathematics educators to go together?

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