

**New Directions for
Latina/o Mathematics Teacher Preparation:**
Lessons learned from Latina/o
pre-service teachers' participation
In *Los Rayos de CEMELA*

Eugenia Vomvoridi-Ivanović
University of Illinois at Chicago



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Introduction

- The preparation of teachers for linguistically and culturally diverse populations has been the subject of a growing body of research and discussion over the last two decades (e.g. Brisk, 2008; Cochran-Smith, Feiman-Nemser, McIntyre, & Demers, 2008; Lucas, Villegas, & Freedson-Gonzalez, 2008)
- Literature often mentions language as a factor to consider, language related issues are seldom addressed in depth (Lucas & Greenberg, 2008)



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Introduction

- The focus has been on white middle class English monolingual teachers and the disconnect between their and their students' backgrounds.
- Literature pays scant attention to strategies that teacher educators might use to help pre-service teachers of color build on the unique strengths they bring into teaching to shape their pedagogy and define their roles as teachers” (Villegas & Davis, 2008, p. 596).



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Introduction

- The literature on effective schooling for Latinas/os and LMS students, suggests that language and culture play very important roles in learning mathematics and therefore have significant consequences for effective teaching (e.g. Civil 2000, 2007; Khisty, 2006; Khisty & Chval, 2002; Moschkovich 1999, 2000, 2002, 2007)
- We cannot assume that simply because Latina/o students and teachers share home language and ethnicity that the teachers will know how to connect student life to school curricula (Télliez, 2005) or use Spanish as an instructional resource in mathematics (Vomvoridi-Ivanovic & Khisty, 2007).



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Los Rayos de CEMELA

- Bilingual Latina/o undergraduate students (UGs) meet twice a week with elementary students and engage in various mathematical activities.
- All activities are in both Spanish and English and include games, problems, and community based projects.
- UGs work in groups consisting of one UG and 2-4 students and are encouraged to do the mathematical activities with the students rather than playing the role of their teacher or tutor.
- At the end of each session students write to *el Maga*, a bilingual mathematics wizard.



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Los Rayos de CEMELA UG&Fellow weekly meetings

- * Discuss happenings of *Los Rayos* with a focus on UGs&childrens' use of natural language, childrens' mathematical strategies, UGs' assistance strategies, childrens' interests.
- * UGs reflect on their schooling experiences
- * Discuss *Los Rayos*' mathematical activities and possible ways of facilitating them.
- * Discussions are in English and Spanish.



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Theoretical Framework

*Hybrid Spaces (Gutierrez, Baquedano-Lopez, Alvarez, & Chiu, 1999; Gutierrez, Baquedano-Lopez, & Tejeda, 1999).

- Spaces in between formal and informal contexts
- Emerge when a variety of resources become available
- Spaces where assumptions are challenged



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Participants

- * 9 pre-service teachers:
 - * 8 elementary, 1 secondary math
 - * 4 bilingual endorsement
- * Grew up in Latino communities and attended local public schools
- * Immigrant parents from Mexico
- * 1st language: Spanish, self identified as fluent in Spanish
- * Placed in different programs for ELLs (pull-out, transitional, maintenance)
- * Interested in teaching inner city Latino students



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Methods

- Participants' interactions with 4th and 5th grade students in *Los Rayos* through a nine week period during Fall 2006 and 2007 twice a week for 1.5 hours/session.
 - Participants' talk in a weekly a two hour debriefing seminar.
 - Participants' field-notes
- Qualitative methods (Lincoln & Guba, 1985), discourse and content analysis of participants' field-notes and oral comments during the weekly debriefing meetings.



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Conversational fluency ≠ Academic Fluency

Participants' role

Reflections on
Language

Practices
associated with
different national
languages

English as the language for academic discourse
and in academic institutions



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Associating academic discourse/institutions as monolingual/English

Jose: It's like all our lives we have been trying to speak proper English in school and to sound academic and then we come here and we try to talk about math in Spanish and math is academic and it is very hard. **Now it feels weird to use Spanish in here because this (math) is not something I am used to talking in Spanish but in English only.** It's like I am not used to talking about things I learned in school in Spanish because we always used English and I always tried hard to sound proper and here (at the University) we have to sound academic and it is all in English.

(11/02/07UG)



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Juanita: Yea it's like we - all these years we had to to use English in school and now **using Spanish is weird – I am not used to talking in Spanish in school** – I mean when I'm in class. So this here (doing math in Spanish) is very different.

Lupe: I remember in 7th grade when the principal told us we couldn't speak Spanish any more and that it would all be in English and I remember that really hurt – I really remember that - and it was very hard but I guess after that I got used to it and now **it feels weird talking in Spanish when I am in school because** I got used to the English but when I was little I didn't want to use all English because it was hard for me and I would rather do it in Spanish. Whoa! It switched! I just thought of that now!

(11/02/07UG)



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Associating academic discourse/institutions as monolingual/English

Maria: I also had that thing about not talking in Spanish anymore in 6th grade and it was hard for me too. But eventually you get used to the fact that **English is the language for school and Spanish for outside**. For me like generally speaking I feel more comfortable speaking in Spanish but like when it comes to school it's like you know, you have to do this right, you have to speak in English, you know it's the language of America and they are teaching it in school so we grew up pressured to speak in English. But once we are outside and are free in the environment then we are more comfortable to speak however we want. But when I'm in class I can't speak Spanish so when I'm in school or when I go to the after-school - once I enter a building that is like I'm in grade school again so I automatically use English and I was not conscious of that until lately.



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(11/02/07UG)



“Monica said that she does not talk Spanish (and that she) only (says words) like “hola.” Then I found out it was because she can not roll her R’s...and I think it is a lack of confidence, because I can not roll my R’s and in reality to speak Spanish without rolling your R’s it’s like sounding like a white girl trying to talk Spanish. I think I get teased a lot for it, and even more when I was young. I remember one time, a guy told me: “Don’t be a clown! Why are you trying to sound white?” because I was talking Spanish and some words did not sound right”
(Field-notes, Deborah, November 09, 2006)



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Conclusion

*It is often taken for granted that if a teacher is Latina/o and is fluent in both Spanish and English (s)he will be able to facilitate mathematical discussions in both languages with ease and make connections between the curriculum and students' experiences

*Many teachers with similar linguistic and cultural backgrounds with their students, such as Latinas/os, have experienced “subtractive schooling” (Velenzuela, 1999) and need support in utilizing their resources in their teaching.



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Conclusion

*Culturally responsive teacher education is as essential as culturally responsive teaching in K-12 schools and more attention should be given to providing relevant preparation for teachers of color and studying such preparation (Villegas & Davis, 2008)

*How can teacher education programs provide Latina/o (prospective) teachers with the appropriate linguistic and cultural support and the appropriate experiences to mediate their development as culturally responsive mathematics teachers?



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