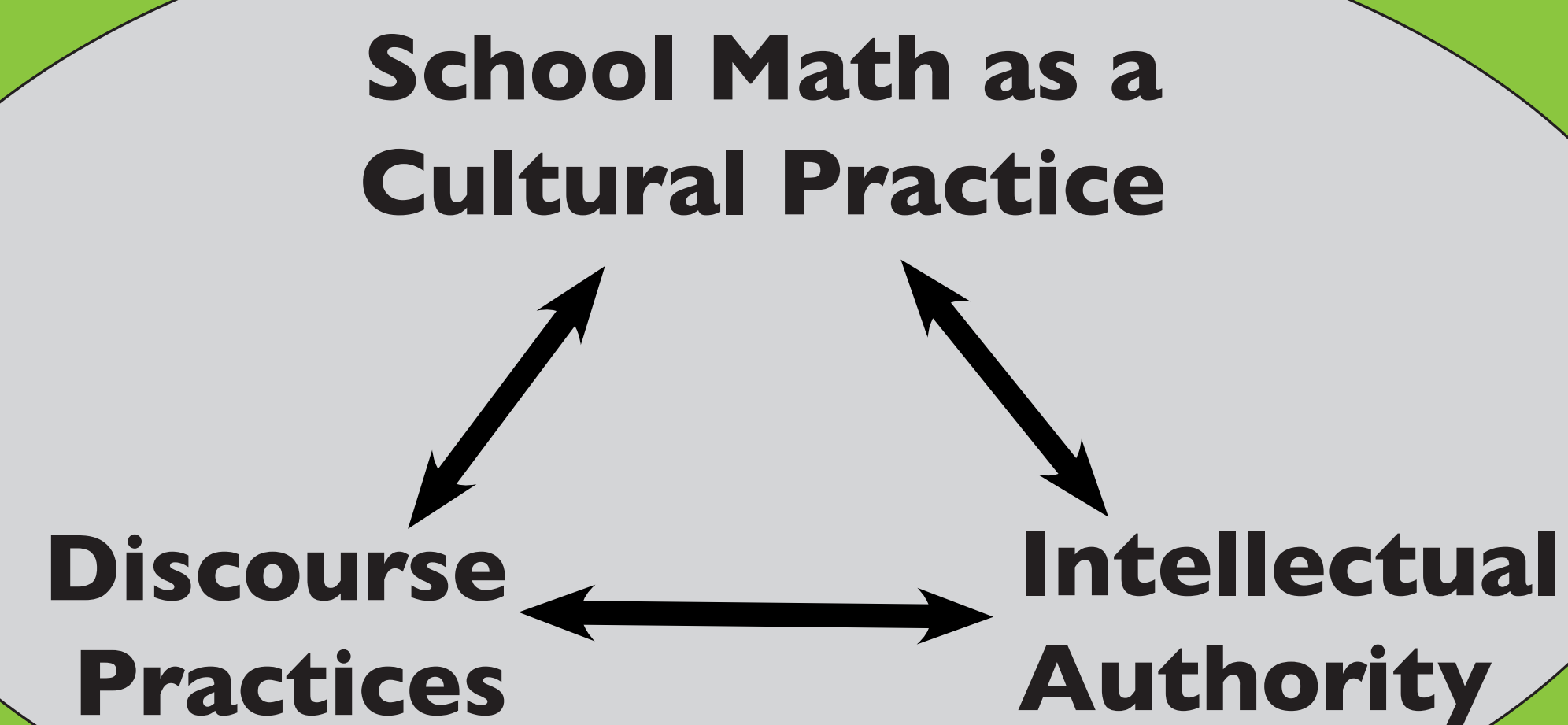


The Organization of a Peer Mathematics Discussion among Middle School Students

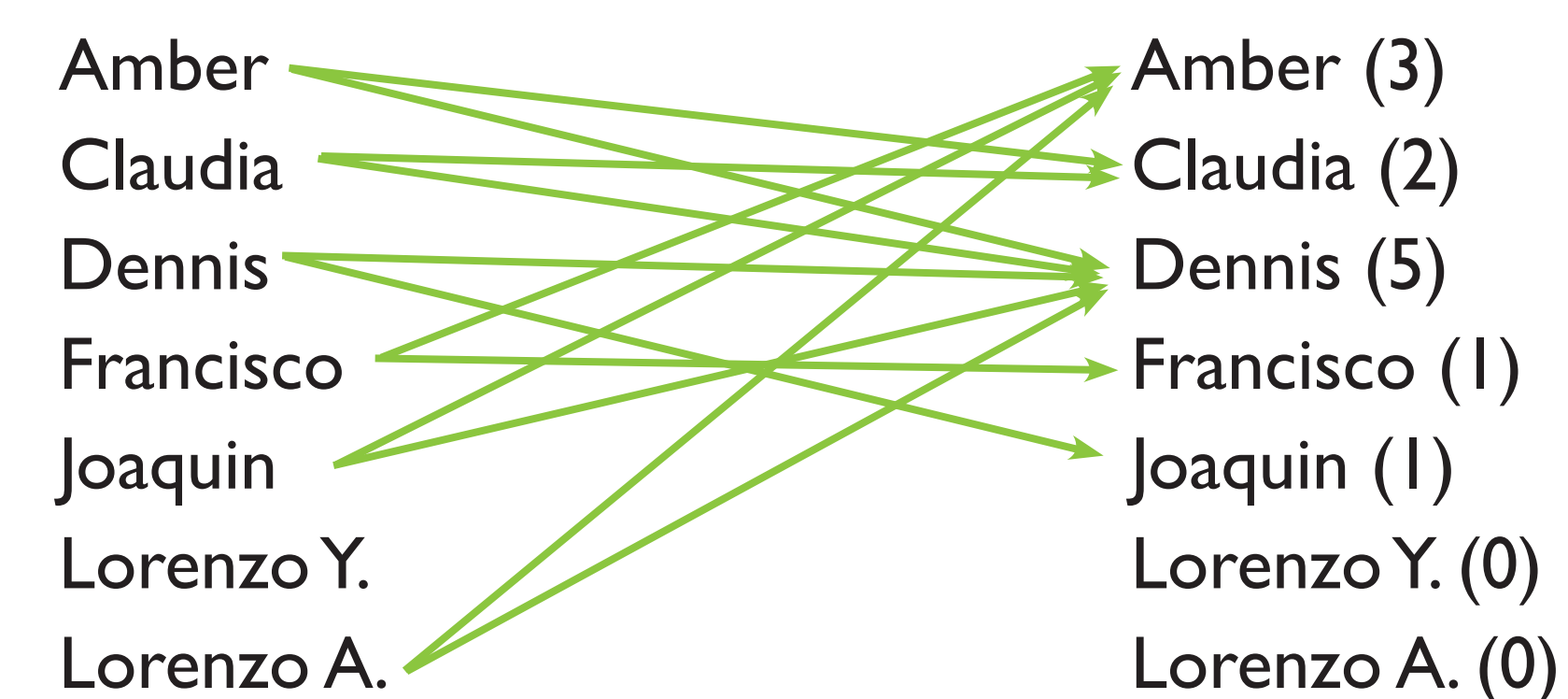
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Abstract

This study analyzes patterns of interaction among bilingual middle school students during mathematical discussions. Using ethnomethodology, conversation analysis, and discourse analysis I show that the students primarily engaged in “calculational” conversations, that regularities in the students’ peer mathematics discussions differed from the regularities of everyday conversations, and “intellectual authority” emerged as an important construct for understanding students’ mathematical peer discussions.

Students’ Impressions of Each Other’s Math Skills



Rank your group-mates in terms of math skills (first and second place votes)

Distribution of Math Questions

Day	Monday	Wed 1	Wed 2	Friday	Total
Amber	16	4	22	5	47
Claudia	--	7	6	1	14
Dennis	3	0	1	0	4
Francisco	2	4	2	5	13
Joaquin	0	1	0	0	1
Lorenzo Y	0	0	0	1	1
Lorenzo A	0	0	0	0	0
Teacher	5	5	0	9	19
Total	26	21	31	21	99

The (Re)Construction of Intellectual Authority

Prompt: At 6:00 AM the temperature was -4°F. By 6:00 PM, the temperature had risen 17°. What was the temperature at 6:00 PM?

- Francisco: But who ge-do you get number eight at all?
 - Amber: Seventeen minus six (.) **Duh**
 - F: Oye (“listen” or an interjection), I found it already
 - F: Look. Subtract ss seventeen minus negative four [xxx]
 - A: [Thats what I sai:=d]
 - F: You said subtract thirteen!=
 - A: **No, I said seventeen!=**
 - T: They’re almost do[ne ((addressing class))
 - A: [= (minus) negative four
 - F: Now I get [it
 - A: I got number eight ((looking up at teacher))
 - F: I got number eight too, **but (kinda) she’s helped me**
- [Monday 44:27-44:56]

Theoretical Framework

- Situated & sociocultural perspective on mathematics learning & discourse (Moschkovich)
- Discourse analysis & studies of reform in mathematics teaching/learning (Lampert; Sfard & Kieran; Forman; Yackel, Cobb, & Wood; Thompson et al.; Gee)
- Conversation analysis & norms (Heritage; Sacks Schegloff & Jefferson; Lakoff; Grice)

Findings

- Students engaged in “calculational” school math discourse
- Patterns in these students’ calculational mathematic discussions differ from patterns in everyday settings
- Students’ discourse patterns tied to “intellectual authority”
- Enactment of intellectual authority did not necessarily correspond to students’ impressions of math skills
- Group discussion did not necessarily disrupt traditional school mathematics construct of intellectual authority

“The issue of intellectual authority is central to this comparison between how mathematics is known in school and how it is known in the discipline. In the classroom, the teacher and the textbook are the authorities and mathematics is not a subject to be created or explored. In school, the truth is given in the teacher’s explanations and the answer book” (Lampert, 1990 p. 32)

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Methods

Setting

Sixth grade classroom in Bilingual K-8 School
Harcourt California math text
Class connect to CEMELA’s TRG and SLRG

Data

4 Hours of video recorded group conversations
(Did not change curriculum or setting)

Focus Group Interview

Student Survey

Teacher Interview

Analysis

Analysis of students’ written work

Mathematics discourse analysis

Conversation analysis

Calculational Orientation

Prompt: If six pairs of socks cost \$4.50, how much will 9 pairs cost?

- Lorenzo A: ((Amber walks around the table and stands to the right of Lorenzo A. who is writing on a shared paper)) How would I do?
 - Amber: Ah a um let me see
 - LA: Number four
 - A: Number four (for the (1) then you put (2) nine up xxx equals nine (3.5)=
 - A: =Now put a: number-a letter (1) alright, and then, let’s se[e:: six
 - Francisco: [Oh my God, you guys have the problem up there ((points to blackboard))
 - LA: Six divided by (four-fifty)?
- [Monday, 45:05– 45:31]

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