Mathematical Content and Language Learning through Translanguaging in TWI Programs

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Objective

Explore how teachers can use pedagogical translanguaging in the TWI classroom to support both mathematical content learning and language learning.

The Research

- Longitudinal video club lesson study PD
- 11 California and 6 Texas teachers in TWI programs
- 490 minutes of classroom videos
- 6 teacher interviews

Note: All individuals names are Pseudonyms

California Teachers

* Obtained from 2017-2018 SARC reports (https://sarconline.org)

** CAASPP Test results for percentage of all students meeting or exceeding State Standard

Pseudonym	Grade	Type	SES DIS	ELL
Rubi	5	Public	37.6%	22.9%
Veronica	3	Charter	79.7%	55.3%
Rosa	1	Charter	79.7%	55.3%
Jocelyn	4	Public	74.6%	57.6%
Daria	3	Public	74.6%	57.6%
Vikki	2	Public	61.4%	37%
Lucas	4	Public	61.4%	37%
Gabriel	5	Charter	73.2%	42.3%
Sara	K	Public	65.2%	49.7%
Viviana	K	Public	65.2%	49.7%
Monse	K	Public	66.7%	57.9%

Texas Teachers

Pseudonym	Grade	Type	SES DIS	ELL
Guadalupe	3	Public	38.3%	31.5%
Carla	4	Public	67.1%	11.1%
Raquel	3	Public	70.1%	14.1%
Victoria	5	Public	67.1%	11.1%
Rocio	1	Public	38.3%	31.5%
Paola	4	Public	38.3%	31.5%

Codeswitching

- Alternation of two languages or two different grammatical systems within a single clause, sentence, or turn (Poplack, 1980).
- Most common term in mathematics research previous to 2015 (ex. Moschkovich, 2007; Planas & Civil, 2013)
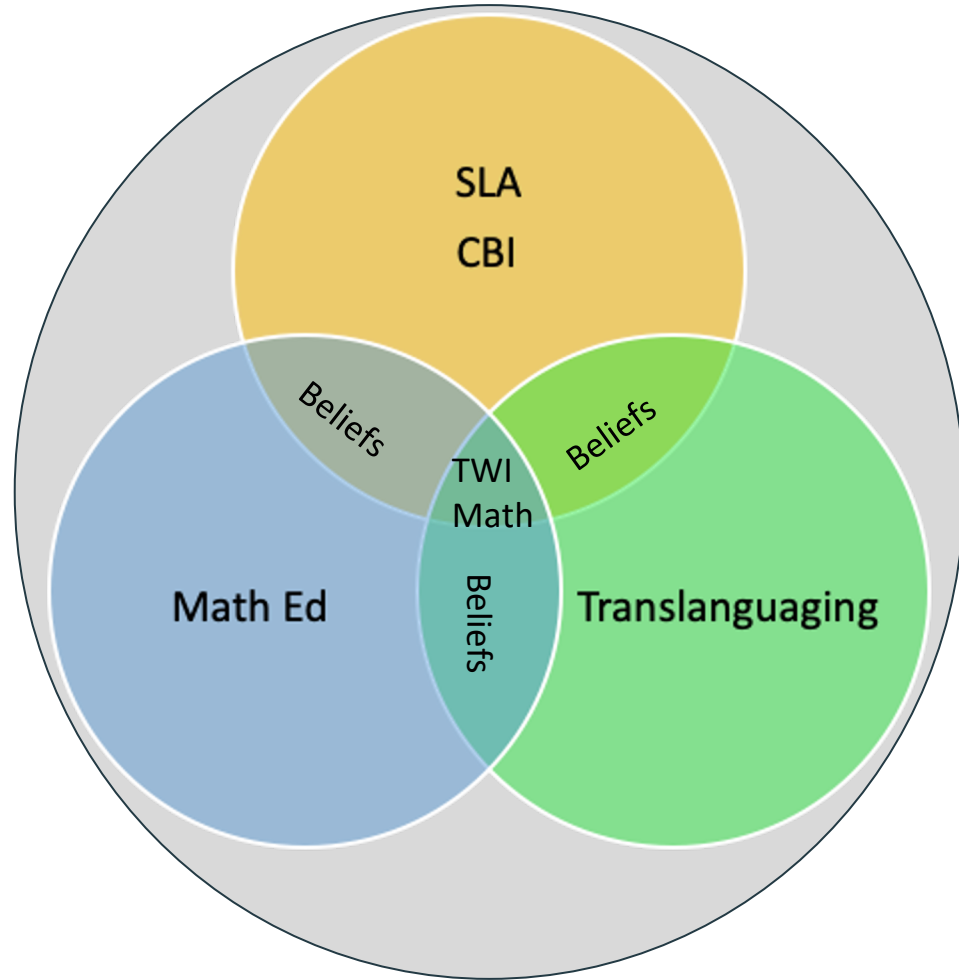
Translanguaging

- Planned and systematic use of two languages for teaching and learning in a single lesson (Lewis et al., 2012; Williams, 1994)
- Shift in mathematics research since 2015 (ex. Hansen-Thomas & Bright, 2019; Planas, 2018)
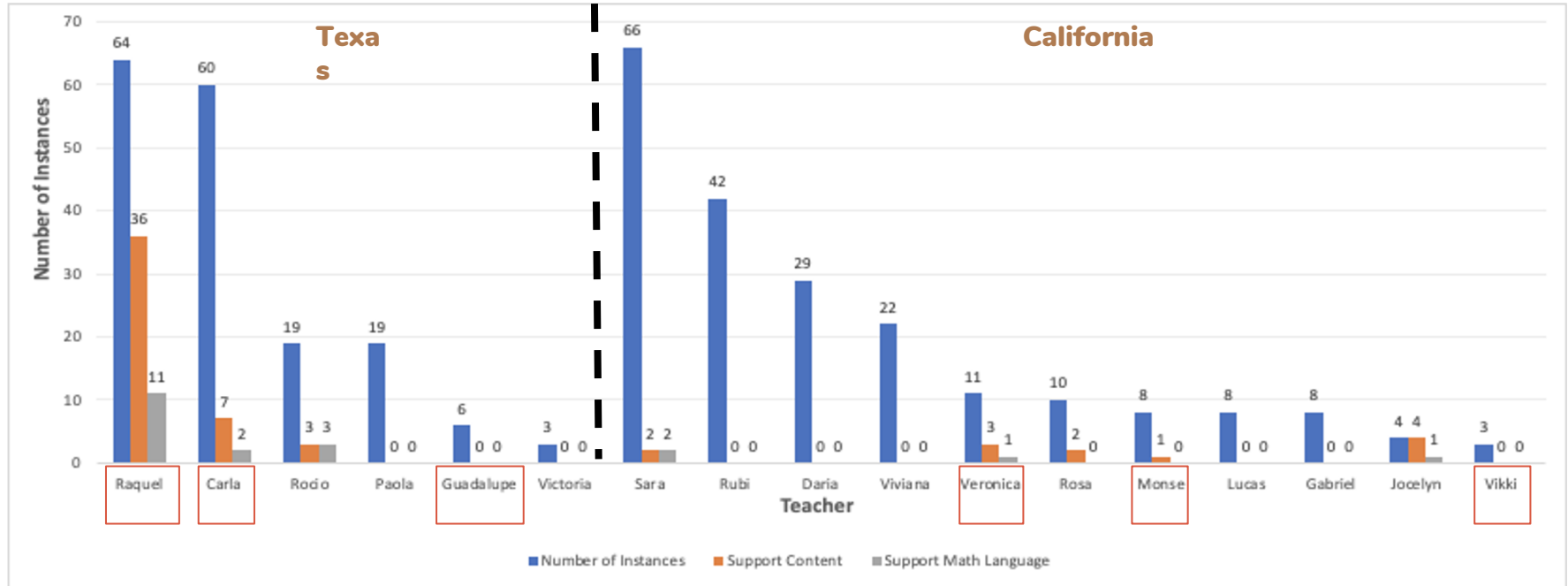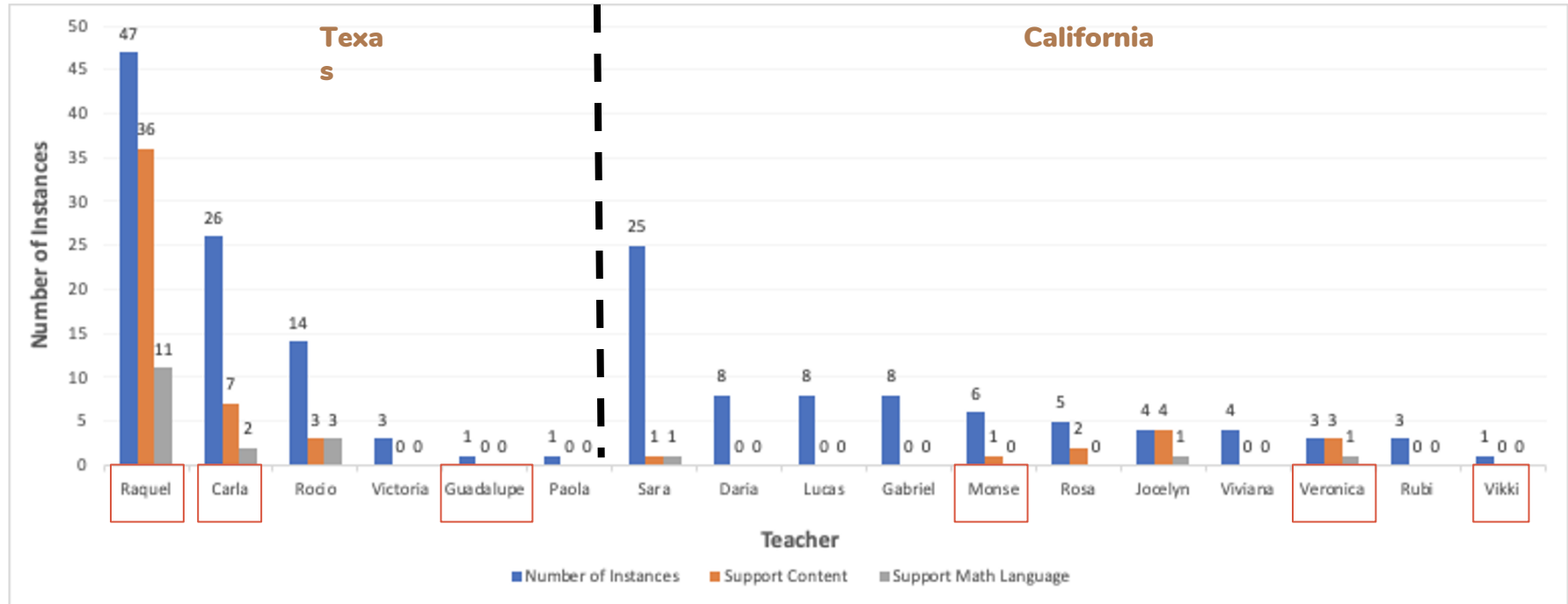
Prohibit

Permit

Promote

Looking at the numbers

Translanguaging Instances Across Teachers

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Translanguaging Instances Across Teachers

- How much time is given to translanguaging?
  - Average 7.7%
- What are translanguaging interaction patterns?
  - 72.5% teacher-student interaction
  - 17.4% student-student
  - 10.8% teacher talk
- Teacher responses to translanguaging:
  - 67.7% permitting
  - 27.5% promoting
  - 4.8% prohibiting

Translanguaging Instances Across Teachers

- Language of instruction:
    - Spanish to English (72.1%)
    - English to Spanish (27.9%)
- Translanguaging as a pedagogical tool:
    - 34.1% support math content learning
    - 11.4% support math language learning
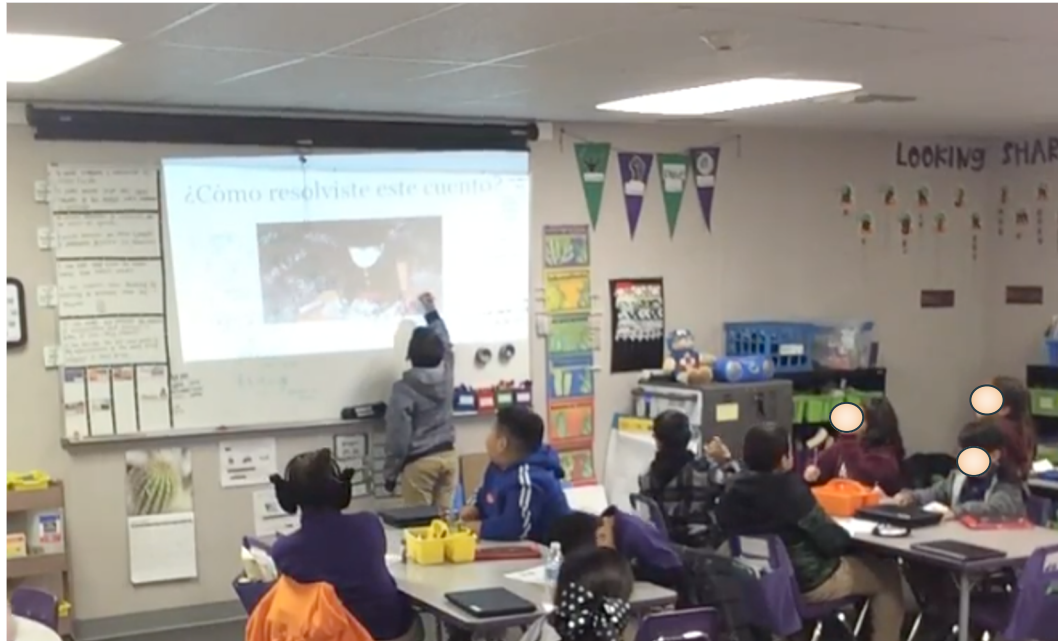
Supporting Math Content

Drawing on mathematics content previously learned in another language

Differentiated scaffolding of mathematics content

Drawing on mathematics procedures/ concepts learned in another language

Drawing on mathematics procedures/ concepts learned in another language

"And what he is doing is that he is talking to himself in English and then solving it because we learned all this material in English...we learned this concept in English. So, he is talking to himself, talking himself through the problem in English, the way [Ms. Veronica] would have shown him in her explicit teaching." - Veronica

Drawing on mathematics procedures/ concepts learned in another language

"Maybe if I know that they learned something in second grade in Spanish. For example, place value is learned in second grade, and it is learned in Spanish. So they have centenas, decenas, and unidades. But in English it is hundreds, tens and ones, so I will probably translate in those terms." - Veronica

Differentiated scaffolding of mathematical content

"we have this strategy the preview-view-review. So many times I do maybe the mini lesson in English for them, and then when I do the viewing it is all in Spanish and then the review [in English]" - Guadalupe

what is it called? Umm...I think it's menos.

I think it's minus.

Differentiated scaffolding of mathematical content

"I need to talk in [English] because the content, he does not understand...I need to go to something really simple. I still try to say, we are finding the difference. I am not saying you are going to take away, I am trying to use the academic content with something that he can understand." - Carla

Lowering Affective Filter and Supporting Language

Validating Students' Heritage

Building Confidence

Doing Bilingualism

Validating Students' Heritage

I could tell he had that puzzle, and when I showed him the picture he was like "oh!" Because I think I said "Caravel", and he said "Oh! ¡es un barco!" And I said, "¡sí, es un barco!" And then we continued with English…they need to feel comfortable that they can express themselves in Spanish, even if the class is English. If they say in Spanish, validate what they are saying. And maybe just respond "Yeah el barco, that's a caravel; it's a small barco." But you know, validate their language. - Guadalupe

Validating Students' Heritage

Example 1:

T: How many people can the Cineplex seat in all? I want you to use the standard algorithm to solve the problem and then together we are going to estimate the reasonableness. [Turns to Spanish speaking student] Ok, *el cuatro grado se va al cine y hay cuatro teatros, or four theaters*…

S: (Student writes on board)

Jocelyn (video [16:53])

Example 2:

S: "Maestro, I have a song for the XXX"

T: "Cool Mija, can you show me at recess time?"

Lucas (video [12:45])

Building Confidence

❏ Esa explicación estaba muy difícil para él en español. Él hace conversaciones más cortas pero <u>empezó a usar su español muchísimo</u> cuando empezó a sentir la confianza de "hacemos errores" porque yo los hago en inglés, no importa hacerlos. Y sí cambia el comportamiento, es increíble pero sí cambia cuando les damos esa confianza. - Raquel

❏ ...pueden decir lo que saben o enseñarle a otros niños lo que saben, entonces los hace sentir más y seguros, más contentos y el comportamiento mejora. - Raquel

Building Confidence

❏ **Example 3:**

T: ¿Qué estrategia utilizaste?

S: In English?

T: English or...Inglés o español <u>en lo que te sientas más confiado</u>. (VIDEO)

Raquel (video, [1:29])
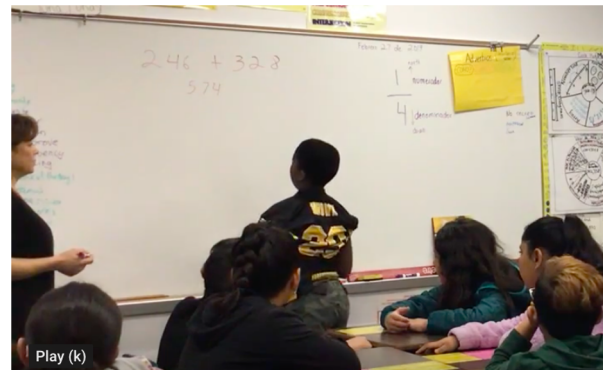
❏ **Example 4:**

T: Si nunca hemos hecho tres dígitos por un dígito, ¿cómo supiste dónde poner, cuando multiplicaste por centenas?

S: <u>Can you say it in English?</u>

T: How did you figure out where to put the number when you multiplied by the hundreds, by the two hundreds?

S: I did two times two and, then, four…

Raquel (video [12:36])

Doing Bilingualism

They get kinda lazy or just say in English. So, with those ones I am kinda more strict and say, "You already said it in English, now you need to try to explain it in Spanish." - Vikki

Lo único que yo noto que favorece es que ellos se animan a hacerlo, a hablar más...cuando ven que yo lo hago, entonces pues ellos también lo hacen y lo hacen más. Pero yo no he notado que eso limite su desarrollo en inglés o en español - Raquel

Doing Bilingualism

Example 5:

T: ¿Alguien tiene una buena pregunta? A ver, Farid

S: Draw a diagram of this problem

T: ¿En español lo puedes decir?

S: Hace un diagrama de este problema

Raquel (video1, 7:51)
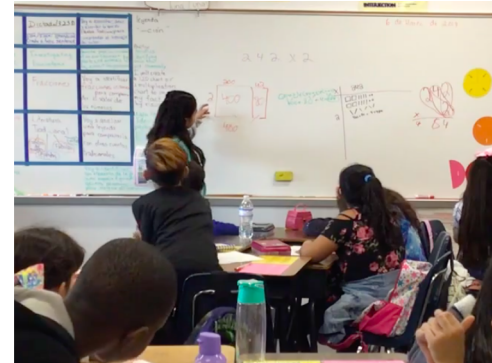

Example 6:

T: Tú, Nia, ¿qué estrategia usaste?

S: La estrategia que usé es Partial Product

T: Productos parciales, okay, y platícanos qué hiciste.
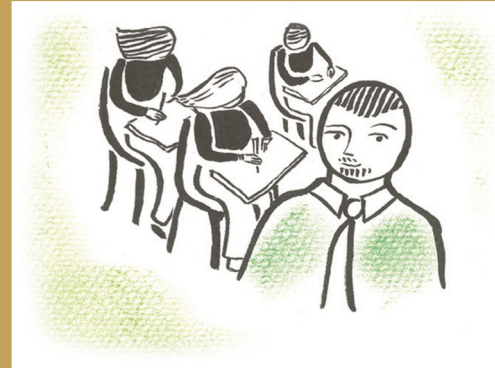
Párate y enséñame.

Raquel (video5, 3:28)

Language Policies

Schools

Teachers

Schools tend have strict language policies

"It is pretty strict I would say. And um it is pretty strict in the way that in English it is English time, and in Spanish it is Spanish time, like they need to be differentiated........But network wide, there is a strict policy of isolating language as a best practice." - Veronica (CA)

"Yes, we need, because by law... by law we need to have X amount of minutes in English and in Spanish and they are trying that we are true to it." - Carla (TX)

Schools tend have strict language policies

"Actually this year we had a great discussion about it because we used to be very strict that when it is Spanish time only Spanish, and when it is English time only English." -Vikki (CA)

Teachers have more flexible language policies

"...It is also important for the student, while they are working with friends, the classmates, to switch languages because that is the way you can support their understanding. And then we came to a kinda an agreement that sometimes we will let them if we see that the conversation is academic." - Vikki (CA)

"What we say is that the teacher shouldn't switch to teach. But if the students are discussing a way to solve a problem and stuff like that they can switch." - Raquel (TX)

Teachers have more flexible language policies

"When I move from my content and I am going to the table to talk...if in order for him to understand, you need to speak to him in Spanish, do so. It's just... the instruction on time...because it's by law that we need to try to be as, no loyal, as accurate as possible, so no, they completely understand...and what we need is to serve the kiddos." - Carla (TX)

"I think our admin here at my site is very flexible, very understanding and has other practices that he respects. So if we are just transparent, and say what we are doing and why we are doing it, as long as it is a benefit to our students then I would say that our administration here is ok with that." - Veronica (CA)

Implications for administrators

- Providing spaces and time for reflection and conversation among teachers about translanguaging
- Allowing teachers to have agency over their students and instructional practices
- Participating in activities that provide exposure to ideas and conversation about translanguaging in the dual language context.

Implications for teachers

- Promoting spaces with other teachers and administrators to reflect on individual and school-wide practices
- Creating and fostering translanguaging spaces and interactions with students and curriculum
- Incorporating self-reflective practices in which they can measure translanguaging practices in relation to their educational goals.

Implications for teacher educators

- Providing opportunities for teachers/teacher candidates to think about their own language learning experiences and translanguaging practices.
- Understanding past and current micro- and macro-language policies in which their students/teachers participate.
- Connecting teachers across schools, districts, and states to discuss the use of translanguaging.

Questions

For more information, visit our MALLI website: https://malli.sites.ucsc.edu

Or contact us:

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Thank you for attending our session!