

Teachers of Mathematics = Teachers of Language

Tazreen Kassim-Lowe, PhD candidate, The University of Nottingham

Background

My PhD is themed around how teachers and pupils communicate multiplicatively and co-construct conceptual mathematical meaning in multilingual classrooms. In particular, I am critiquing the sole use of formal, set mathematical sentences to frame pupils' mathematical register and conceptual understanding.

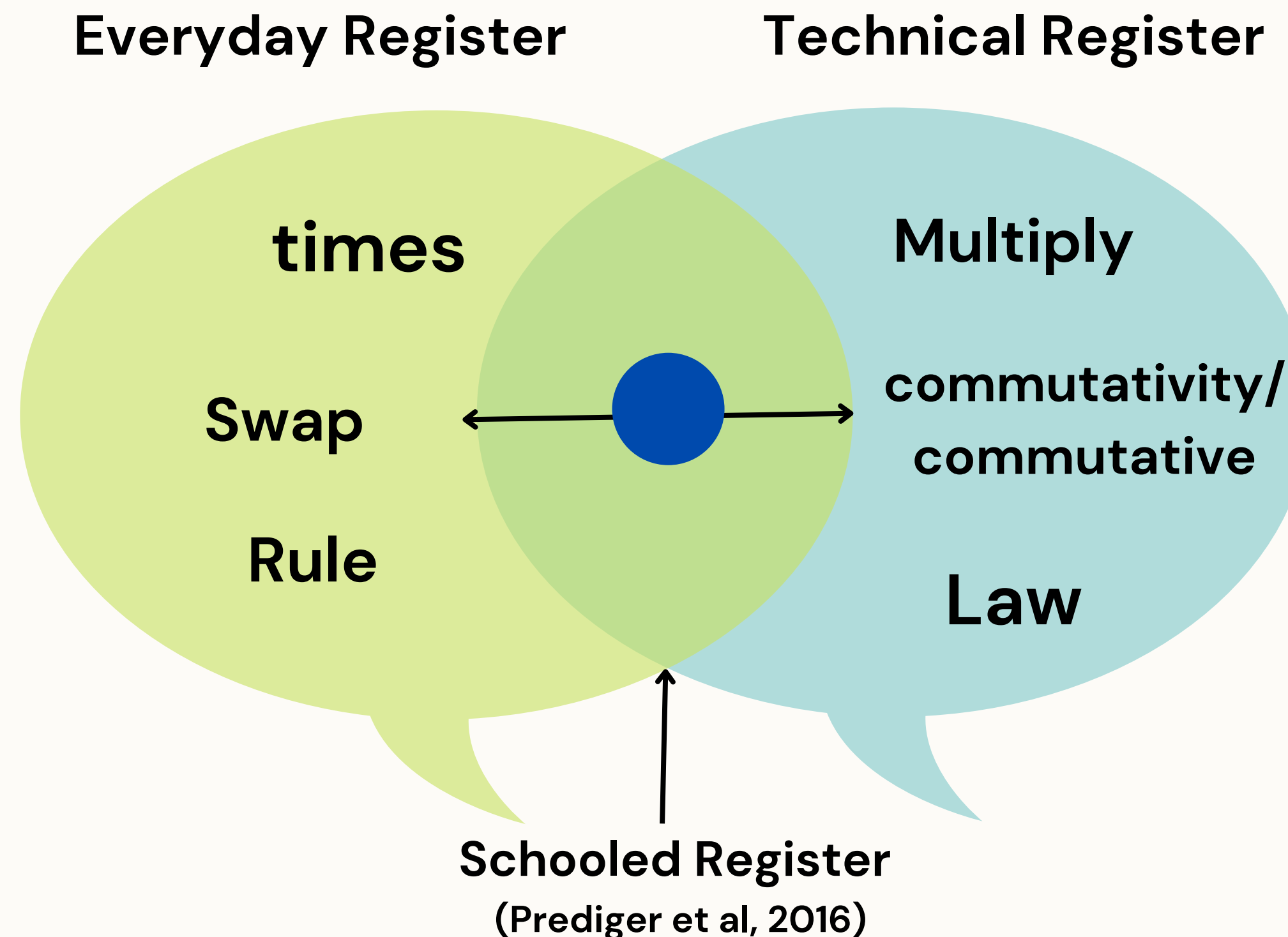
Issues with sole technical Register use

1. It disregards informal utterances and diminishes the authenticity of pupils' mathematical voices.
2. Technical mathematical talk should co-exist with everyday talk (such as incomplete phrases, colloquialism, etc) to support conceptual understanding and to make mathematical structures and laws less abstract and more transparent (Adler, 1999).

Possibilities of the Schooled Register (see diagram)

1. This form of communication is more authentic to the child's own mathematical voice and identity and less superficial than insisting on a technical mathematical register only.
2. It invites the idea of a communicative learning community whereby every utterance is a contribution towards gaining better mathematical understanding.

Mediation of Mathematical Registers



An example of mediation between formal and informal register to support meaning making:

In the video below there is a snippet where the teacher is trying to support the children to think about the law of commutativity (when you swap the factors the product remains the same e.g. $6 \times 2 = 12$ and $2 \times 6 = 12$). The children first speak about the commutative law using the verb 'to swap' which is a graspable idea before the teacher reintroduces the notion of 'commutativity' and how the relationship between the numbers can be described as commutative (see QR code for snippet).

3. The Schooled Register is more likely to relate to a child's schematic understanding and previous mathematical experiences and therefore could build a stronger foundation of conceptual understanding.

Impact on my pending research

I intend to frame everyday language as necessary for better multiplicative conceptualisation, **view teachers as mediators of mathematics through language** whilst positioning multilingual pupils as valid contributors to mathematics classroom discourse over a series of observed multiplication lessons.



(Play from 2:35–3:55)

References

Adler, J. (1999) 'The Dilemma of Transparency: Seeing and Seeing through Talk in the Mathematics Classroom', *Journal for research in mathematics education*, 30(1), pp. 47–64.

Prediger, S., Clarkson, P., Bose, A. (2016) 'Purposefully Relating Multilingual Registers: Building Theory and Teaching Strategies for Bilingual Learners Based on an Integration of Three Traditions' in Barwell, R. et al. (2016) *Mathematics Education and Language Diversity The 21st ICMI Study*. 1st ed. 2016. Springer International Publishing: Imprint: Springer, pp. 193–215.