NEW INSIGHTS IN THE USE OF LANGUAGE IN MATHEMATICS EDUCATION

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What is mathematics education?

This network of overlaps gives **meaning** to math education.
What is language?

This network of overlaps is what gives meaning to language.
Language is a **resource** for the creation of mathematical meanings in the midst of the communication of social and personal relationships as well as experiences of the world through a diversity of languages.
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BUT... Which of these mathematical meanings can be taken as shared and hence as evidence of mathematics learning?
A book has 89 pages, but the page numbers are printed incorrectly. Every third page number has been omitted, so that the pages are numbered 1, 2, 4, 5, 7, 8... and so on. What is the number on the last printed page?
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Two instances of language

Maria:  *U i dos, quatre i cinc, set i vuit, deu i onze... fins cent trenta-tres* [One and two, four and five, seven and eight, ten and eleven... up to one hundred and thirty-three.]

Leo:  *¡Muy largo!* [Very long!]

Maria:  *Cap problema, no son mil páginas.* [No worries, it is not one thousand pages.]

Leo:  *Agafem les pàgines que falten.* [We take the missing pages.]


Ton:  *Què més et dóna? El problema és el que importa.* [Why do you care? The problem is what matters.]

Ada:  *¿Cuáles números son como ochenta y nueve?* [Which numbers are like eighty-nine?]

Ton:  *Dieu cuáles números, eh?* [You say which numbers, eh?]

Ada:  *Diem cuáles son como ochenta y nueve. Cuáles son como. No vull dir cuáles son ni cuántos son. No más ejemplos, porfa.* [We say which are like eighty-nine. Which are like. I do not mean which are or how many are. No more examples, please.]
Tensions regarding language

The language of Leo
Exclamative and interrogative modes together with interjections, “What is this? Ugh! Pretty bad!” produces the meaning of something wrongly written on the worksheet.

The language of Ada
Interjections and intonations, “You say which numbers, eh?” produces the meaning of the word “cuáles”, which stands for “which”, as heterodoxically used by a plural “you” voice.
Translanguaging

Despite of the language-in-education policy and the prevailing language of school mathematics, learners fluidly use all their languages, to both communicate tensions and overcome them in the process of discussing the factorization of 88 and then 89.

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Grammar features
Imperfective present tense together with material, mental and existential processes communicate a focus on exposition and discussion of thinking processes (“we take the missing pages”), but also the presence of these features in response to behavioral processes (“why do you care?”).

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Concluding the argument

Language functions in several directions, e.g.:
- It contributes to the realization of normative meanings in school mathematics along with discourses of language accuracy
- It enables learners to influence the process from potential to actual meaning through their knowledge of diverse languages

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**BUT...** participants must be active in the use of their languages to produce and share mathematical meanings that can be taken as math learning.
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