

LANGUAGE IN MATHEMATICS EDUCATION: ISSUES AND CHALLENGES

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Researchers studying phenomena related to language in mathematics education face many challenges. The first one is adopting, adapting or introducing a solid theoretical framework, which can be a demanding process, given the multiplicity of theories in mathematics learning, as well as in linguistics (including subfields, such as sociolinguistics). The second challenge is intertwined with the first one and relates to the methods of analysing data. In one of the first papers which explicitly study the relationship between language and mathematics education, Austin and Howson (1979) observe the difficulty of quantitative taxonomies-based approaches to “take sufficiently into account ‘deeper’ structures and interactions” (p. 163). Nowadays, verbal communication is merely one of the components of the interactions among students or among students and teachers. Relevant research has been enriched by approaches (crucially facilitated by the technological advances) studying non-verbal aspects of communication as well.

Despite the challenges raised by our increasing ability in data collection, the issues related to the role of language in mathematics education remain important. A main issue is the effectiveness of language in communicating mathematical meanings, an issue which has significant implications in mathematics teaching. Although this issue entails the discussion on the nature of mathematical meanings, in the lecture I will mostly focus on the role of different registers in mathematically-rich interactions. For example, the dichotomy between formal mathematical language and informal everyday language can be challenged by the notion of quasi-mathematical language (Pirie, 1998), in order to showcase the multitude of means that are deployed in order to effectively communicate mathematical meanings. Additionally, by viewing language as the means for participants to achieve various interpersonal aims, the analytic methods change considerably. The relevant studies deploy concepts such as norms (Yackel & Cobb, 1996) or politeness and authority structures (Tatsis & Wagner, 2018), in order to shed light on patterns of interactions and their effect on the participants’ positioning and roles. Such approaches address real classroom or laboratory interactions, as well as imagined interactions, e.g., between authors of textbooks and readers.

Summing up, the study of linguistic phenomena in mathematics education is a challenging endeavour, as it requires the researchers to appropriately orchestrate the broad view of the complex phenomena involved with the research focus of their own study.

References

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