More about teacher's revoicing in the mathematics classroom

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Aim and context

These lines derive from my doctoral dissertation (Boukafri, 2017) regarding the study of revoicing in the mathematics classroom. I use the notion of revoicing accordingly with O'Connor and Michaels (1996) as recasting and reformulating contributions of participants in classroom contexts of talk. Despite the increased attention given to this language move in mathematics education research over the last years (e.g., Moschkovich, 2015), there is few work on analytical methods for the detailed study of revoicing as developed in the language of mathematics of the teacher in classroom discourse. My aim here is not to examine adequate theoretical frameworks – I generally draw on sociocultural theories of mathematics education that place the language of the teacher at the interplay of distinct voices in the social context of the classroom (Planas, 2012). Instead, I present some insights regarding the analytical deconstruction of the language of the teacher in the search of meaning for instances of revoicing. I examine revoicing at the successive structural levels of: 1) spoken turns, 2) episodes made of turns, and 3) lessons in order to explore language use and meaning production during mathematics teaching and learning. The specific tools developed for the organization and analysis of these levels of discourse jointly help to explain the complexity and variety of forms and functions of revoicing.

Tools for the analysis of revoicing

My lesson data come from video recording of whole-class discussions of two mathematics classrooms in two secondary schools of Barcelona. As a result, the term 'discourse' in my work refers to the institutional interactional settings embedded in the naturally occurring contexts of the mathematics classroom. Multimodal transcripts – talk into text and gesture into imagery – were elaborated for the initial identification of linguistic forms of revoicing and the reduction of data into pieces of language with empirical illustrations of this type of move. This process required the deductive refinement of linguistic forms into codes consistent with literature in the domain (e.g., O'Connor & Michaels, 1996; Forman & Ansell, 2001) but also the inductive production of newer codes (Planas, 2004). While linguistic codification was primarily undertaken through revision of talk into text in the transcripts, functional codification was more sophisticated in that the intention was to explore the impact of the teacher's revoicing on particular turns and interactional episodes of a lesson for a number of lessons.

Figure 1. Examples of episode connections underlying revoicing

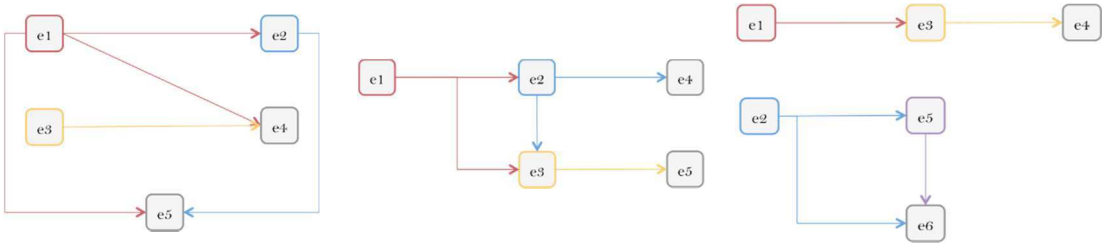

Figure 1 represents the schematic output emerging from the application of one of the tools to three lessons in the study. This tool connects episodes (e_i) in a functional sense with arrows that

represent directions of influence in the interaction between teacher and learners. It particularly establishes an inferential connection between the manifestations of revoicing in the language of the teacher and the manifestations of certain mathematical contents in the language of the mathematics classroom –accomplished by either the teacher or the students in the interaction. These connections are inferential with each other in that we can use them to make inferences as we go through the explanation of the use and role of revoicing in the language of the classroom related to the development of the mathematical task. On the other hand, in all these connections, revoicing is viewed as generating or implied in the traceable link between episodes. Such a link is not directly traceable at the beginning of the analysis, before the application of tools for the successive study of the following features: 1) the language of mathematics in the task of the lesson; 2) the linguistic forms and potential functions of revoicing in turns; 3) the potential relationships between turns with revoicing and episodes of mathematical content; and 4) the potential relationships across episodes with shared turns.

Concluding remarks

More than a mere illustration of particular data and results, the creation, application and validation of specific tools for the analysis of revoicing can help to enrich future research on the use and role of this and other language moves in mathematics teaching and learning. The position that the triad turn-episode-lesson is fundamental for the broader study of revoicing can be taken in further analyses of classroom-based language use. A sort of continuity shows the impact of revoicing not only during single turns or episodes but also throughout the lesson when the mathematical topic under discussion seems to have become out of focus. An expanded look at revoicing from the perspective of its manifestation in a turn of the language of the teacher to its manifestation in the overall language of the classroom can better explain relationships between mathematics learning and language use. That said, the major challenge is to approach this expanded look by means of a more comprehensive interpretation of the functions of language.

Acknowledgements

GIPEAM, SGR-2014-972, and EDU2015-65378-P, MINECO/FEDER.

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