

Challenges in Teaching Math through Problem-Solving: Reflections on Potential Actions to Support Primary School Teachers

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Abstract

It has been recognized for several decades that problem-solving activity plays different roles in mathematics education. Among these roles, several authors support the importance of using problem solving as a teaching approach, commonly called teaching through problem solving. This approach leads students into real mathematical exploration in which they are active and engaged, thus allowing them to develop a conceptual understanding of the mathematical concepts at stake. Considering the many benefits associated with this approach, why is teaching through problem-solving rarely observed in primary classrooms? What are the main challenges faced by primary school teachers using this approach, and how can these challenges be overcome? These questions will be discussed using recent research data from two complementary projects. The first project, whose participants are pedagogical math advisors at the primary level, have provided clarifications regarding the main obstacles to implementing a mathematics teaching approach through problem-solving in the classroom. The second study, conducted with primary school teachers, allows us to better understand the challenges they faced teaching math with the same approach. The data from this second study, which is part of a research and development design, will be the main focus of the presentation. A content analysis of verbatim transcripts from four interviews conducted with teachers from 2nd to 6th grade produced contextualized qualitative findings, while a descriptive analysis of data from 44 questionnaires completed by teachers who implemented a problem-solving activity to teach new mathematical concepts provided a more general overview of the main challenges faced by teachers. The results presented will also be used to propose solutions to support teachers in implementing a problem-solving teaching approach.

Keywords: approach; classroom animation; obstacles; primary school teachers; role of problem solving.