SYMPP - (18661) - TEACHERS' PROFESSIONAL DEVELOPMENT ABOUT MATHEMATICAL REASONING: INSIGHTS ABOUT TEACHERS' KNOWLEDGE ABOUT JUSTIFICATION

Leonor Santos (Portugal)¹; Joana Mata-Pereira (Portugal)¹; João Pedro Ponte (Portugal)¹

1 - Instituto de Educação da Universidade de Lisboa

Short Abstract

Justification is a central reasoning process in mathematics. However, to support students to develop their ability to justify, teachers should understand this mathematical reasoning process and how to develop it. Although teachers often have insights about what a mathematical justification should be and look like, the meaning they give to this reasoning process is often generic and scattered.

Within project REASON, a professional development course was enacted with secondary school mathematics teachers, aiming to provide them with knowledge and opportunities to develop their students' mathematical reasoning. In the context of this professional development course, this study aims to understand the development of teachers' knowledge about justification as a mathematical reasoning process.

Data was collected through video recording of the course sessions and teachers' written documents. The data reports on three teachers selected from the participant teachers, based on their interventions about justification. Data analysis was driven by the teachers' interactions that refer to justification and related words. Then it was analyzed based on three main categories: a) general meanings of justification, b) justification types, and c) justification formality.

The results show that the main characteristics of the professional development course led to a development of teachers' knowledge about justification and justification types and forms. This development was supported by reading and discussing articles about mathematical reasoning, discussing tasks that have both a mathematical task and classroom situations (either students' written work or transcripts of whole class discussions), and enacting lessons that sought for the development of students mathematical reasoning.