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Investigating Filipino Mathematics Teachers' Beliefs and Instructional Practices in Developing Students' Problem Solving Skills: A Case Study

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Abstract

Purpose - In the Philippines, improving the problem solving competency of students remains a major concern. In order to understand the current situation of problem solving in the country, this study investigated how Filipino mathematics teachers incorporate problem solving into their lessons and how they develop problem solving among students. In particular, this study explored teachers' beliefs about mathematics in relation to the following dimensions of their instructional practices: the types of tasks they use in classroom instruction and their practice of flexibility in problem solving.

Method - This study followed a case study design to explore teachers' beliefs about mathematics in relation to various dimensions of their instructional practices. Three mathematics teachers from a public science high school were selected as participants of the study. In order to determine their beliefs and instructional practices, each teacher's classroom instruction was observed, lesson plans were examined, a questionnaire on teachers' beliefs was administered, and post-instruction interviews were conducted.

Findings - Analysis of the gathered data showed that all three teachers hold beliefs that were more associated with the constructivist view than with the transmissive view of mathematics. Two of the teachers used higher-level demands tasks the most frequently in their instruction, which reflect their constructivist beliefs. However, one teacher used lower-level demands tasks the most often, which is contrary to the constructivist perspective. Among the teachers, only one teacher showed evidence of flexibility in problem solving. Overall, it was observed that although the teachers predominantly hold constructivist beliefs, these beliefs were partially evident in their instructional practices.

Significance - The researcher believes that identifying factors that possibly interplay in the instructional practices of mathematics teachers from the preparation up to the actual implementation of the lesson can provide meaningful information about how these factors possibly interact and how the dynamics can be optimized and used to improve teaching and consequently, learning of mathematics, particularly in the area of problem solving.

Keywords: Problem Solving, Constructivist Beliefs, Transmissive Beliefs, Higher-Level Demands Tasks, Lower-Level Demands Tasks, Flexibility in Problem Solving