World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:16, No:12, 2022

Characterization of Group Dynamics for Fostering Mathematical Modeling Competencies

Authors : Ayse Ozturk

Abstract : The study extends the prior research on modeling competencies by positioning students' cognitive and language resources as the fundamentals for pursuing their own inquiry and expression lines through mathematical modeling. This strategy aims to answer the question that guides this study, "How do students' group approaches to modeling tasks affect their modeling competencies over a unit of instruction?" Six bilingual tenth-grade students worked on open-ended modeling problems along with the content focused on quantities over six weeks. Each group was found to have a unique cognitive approach for solving these problems. Three different problem-solving strategies affected how the groups' modeling competencies changed. The results provide evidence that the discussion around groups' solutions, coupled with their reflections, advances group interpreting and validating competencies in the mathematical modeling process

Keywords : cognition, collective learning, mathematical modeling competencies, problem-solving
Conference Title : ICME 2022 : International Conference on Mathematics and Education
Conference Location : Paris, France
Conference Dates : December 29-30, 2022