Abstract

The results of international comparative studies have shown that relationships exist between metacognition and cognitive activation and learning success. Since 2007 we have been carrying out projects in Indonesia to improve cognitive and metacognitive activities of pupils of year 7 and their teachers. These activities are to contribute to the construction and sensible use of sustainable mental models for mathematical concepts and methods by learners. This paper shows how games are used for the enhancement of metacognitive and discursive activities in class. Their effectiveness is documented exemplary by means of students’ outcomes and transcripts of lessons from project classes.

Keywords: Cognitive activation, Metacognition, Games, Integers

Abstrak


Kata kunci: Pengaktifan kognitif, Metakognisi, Permainan, Bilangan bulat

For more than a decade, Indonesian mathematics educationalists endeavour with a variety of different methods to improve mathematical abilities of Indonesian students. The most important project, which is broadly conceived in primary schools (Year 1 to 6) in this reform process, is called PMRI (Sembiring et al., 2010). In 2009, the Institute of Cognitive Mathematics (Osnabrück University, Germany) assumed responsibility for the German-Indonesian feasibility study “Development of Metacognitive and Discursive Activities in Indonesian Maths Teaching” (MeDIM) in Year 7 in cooperation with the Institut Mathesis (Pyzdry, Poland) and the Institute for Didactics in Mathematics (Sanata Dharma University, Yogyakarta). With the introduction of cognitive, metacognitive and discursive activities in this study, some methodological approaches approved from PMRI were further continued. The documentation of the theoretical foundations of the project MeDIM, the concept of