**Development of Metacognitive and Discursive Activities in Indonesian Maths Teaching**

**A theory based design and test of a learning environment.**

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**Abstract**

We report on a German-Indonesian design research project, which aims to significantly increase the mathematical skills of secondary school students. Since results of international comparative studies have shown that there exists a relationship between metacognition and learning success, a learning environment for the beginning with secondary school mathematics in class seven has been developed, in order to significantly enhance metacognitive and discursive activities of students and teachers. The effectiveness of the approach has been tested in a secondary school several times. In this paper the theoretical background for the design of the learning environment is described, some sample exercises are presented and student productions from the project lessons analysed.

**Keywords:** Metacognition, Microworlds, Mental models, Metaphors, Integers

**Introduction**

Researchers from the Universitas Sanata Dharma (Yogyakarta) and the University of Osnabrück, have been closely cooperated since 1982. From the first of October 2009 until the last of December 2010 we jointly conducted the feasibility study.