

## Developing Metacognitive and Discursive Activities in The Indonesian Mathematics Education

### Results of a Feasibility Study

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#### *Abstract*

This article reports on the findings of a German-Indonesian feasibility study, which has been conducted to examine whether a more extensive pilot study could be successful. The objective of the pilot study is to enhance the mathematical skills of Indonesian students in the 7th class by increasing the number of students who can really understand the mathematical concepts and methods introduced in class.

In order to achieve this, a learning environment for the introduction of integers was designed and implemented in class. During its implementation a teaching style has been practised which encourages metacognitive and discursive activities in the students.

In this paper the theoretical background for the construction of a comparing test is set out, several exercises are presented as examples and on the basis of student solutions, taken from the test, the effects of the innovative teaching is demonstrated.

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

#### **Abstrak**

Dalam artikel ini kami melaporkan proyek penelitian desain Jerman-Indonesia yang bertujuan untuk meningkatkan kemampuan matematika siswa di sekolah menengah secara signifikan. Sebagai hasil dari studi banding internasional menunjukkan bahwa hubungan antara metakognisi dan pembelajaran adalah lingkungan belajar untuk instruksi dasar di kelas 7 dirancang untuk meningkatkan kegiatan metakognitif dan diskursif pelajar dan guru dengan jelas. Efektivitas pendekatan ini diuji dalam beberapa kali sekolah menengah.

Dalam tulisan ini, latar belakang teoritis untuk pembangunan lingkungan pembelajaran disajikan, beberapa tugas disajikan sebagai contoh dan analisis produksi mahasiswa dari pelajaran proyek.

**Kata kunci:** Metacognition, Microworlds, Mental models, Metaphors, Integers

From October the first in 2009 until the last of December in 2010, mathematics education researchers at today's Universitas Santa Dharma (Yogyakarta) and the University of Osnabrück jointly conducted a feasibility study called "Development of metacogni-