

**IMPROVING THE MATHEMATICAL CRITICAL THINKING ABILITY  
AND SELF-REGULATED LEARNING OF HIGH SCHOOL STUDENTS  
THROUGH THE DISCOVERY LEARNING MODEL  
WITH A METACOGNITIVE APPROACH**

by

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**Abstract**

*Critical thinking ability and self-regulated learning are important to be improved in senior high school. Critical thinking ability is the basis of higher-order thinking cognitive competence, while self-regulated learning is one of the character values that applies Pancasila values in the role of schools. However, critical thinking ability and self-regulated learning in schools are still considered low. The aim of this study are: 1) to compare the improvement of mathematical critical thinking ability between students who obtained the Discovery Learning model with a metacognitive approach and students who obtained the Discovery Learning model; 2) to find out the comparison of self-regulated learning between students who obtained the Discovery Learning model with a metacognitive approach and students who obtained Discovery Learning model; 3) to find out the effectiveness of Discovery Learning model with a metacognitive approach to students' mathematical critical thinking ability and self-regulated learning. The research method used in this research is quantitative research with a quasi-experimental design or experiment to see cause-and-effect relationships at senior high school 16 Bandung. The research design used was a nonequivalent (pretest-posttest) control group. The research instrument used was a mathematical critical thinking ability test in the form of description questions and questionnaires regarding students' self-regulated learning. Based on the results of the instrument trial, it was stated that the instrument met the good criteria. Research results showed: 1) Improving the mathematical critical thinking ability of students who obtained the Discovery Learning model with a metacognitive approach is higher than the Discovery Learning model; 2) Self-regulated learning of students who obtained the Discovery Learning model with a metacognitive approach is better than the Discovery Learning model; 3) The effectiveness of the Discovery Learning model with a metacognitive approach to mathematical critical thinking ability is classified as a large or high category, while the effectiveness of the Discovery Learning model with a metacognitive approach to self-regulated learning of students is classified as a medium category.*

**Keywords:** *Discovery Learning, metacognitive approach, critical thinking, self-regulated learning.*