

## ABSTRAK

**Akmal Fahmi. Peningkatan Kemampuan Penalaran dan Komunikasi Matematik Siswa Melalui Model Pembelajaran Berbasis Masalah Berbantuan Geogebra di Kelas VIII SMP Negeri 1 Samudera. Tesis. Medan: Program Studi Pendidikan Matematika Pasca Sarjana Universitas Negeri Medan. 2015**

Kata Kunci : Model Pembelajaran Berbasis Masalah berbantuan GeoGebra, Penalaran Matematik dan Komunikasi Matematik.

Tujuan dari penelitian ini untuk mengetahui: (1) Peningkatan kemampuan penalaran matematik siswa SMP melalui model pembelajaran berbasis masalah berbantuan *GeoGebra* lebih baik daripada peningkatan kemampuan penalaran matematik siswa yang memperoleh model pembelajaran biasa, (2) Peningkatan kemampuan komunikasi matematik siswa SMP melalui model pembelajaran berbasis masalah berbantuan *GeoGebra* lebih baik daripada peningkatan kemampuan komunikasi matematik siswa yang memperoleh model pembelajaran biasa, (3) Interaksi antara pembelajaran dengan kemampuan awal siswa terhadap peningkatan kemampuan penalaran matematik, (4) Interaksi antara pembelajaran dengan kemampuan awal siswa terhadap peningkatan kemampuan komunikasi matematik, (5) Tahapan jawaban yang dibuat siswa dalam menyelesaikan masalah pada masing-masing pembelajaran. Penelitian ini merupakan penelitian quasi eksperimen. Populasi penelitian adalah seluruh siswa SMP Negeri 1 Samudera. secara *purpose sampling* dipilih dua kelas dari tujuh kelas. Kelas eksperimen diberi perlakuan model pembelajaran berbasis masalah berbantuan Geogebra dan kelas kontrol diberi perlakuan pembelajaran biasa. Instrumen yang digunakan terdiri dari: (1) Tes kemampuan penalaran matematik, (2) Tes kemampuan komunikasi matematik. Instrumen tersebut dinyatakan telah memenuhi syarat validitas isi, serta koefisien reliabilitas sebesar 0,629 dan 0,694 berturut-turut untuk kemampuan penalaran matematik dan komunikasi matematik. Analisis data dilakukan dengan analisis varians (ANAVA) dua jalur. Hasil penelitian menunjukkan (1) Peningkatan kemampuan penalaran dan komunikasi matematik siswa SMP melalui model pembelajaran berbasis masalah berbantuan Geogebra lebih baik daripada peningkatan kemampuan penalaran dan komunikasi matematik siswa yang memperoleh model pembelajaran biasa. (2) Tidak terdapat interaksi antara pembelajaran dengan kemampuan awal siswa terhadap kemampuan peningkatan penalaran dan komunikasi matematik. (3) Tahapan penyelesaian jawaban siswa yang pembelajarannya dengan menggunakan model pembelajaran berbasis masalah berbantuan Geogebra lebih baik dibandingkan dengan model pembelajaran biasa.

## ABSTRACT

**Akmal Fahmi. Upgrades Mathematical Reasoning and Communication Students Through Problem-Based Learning Model Assisted GeoGebra in Class VIII SMP Negeri 1 Samudera. Thesis. Medan: Mathematics Education Study Program Graduate University of Medan. 2015**

Keywords: Problem Based Learning Model Assisted GeoGebra, Mathematical Reasoning, and Mathematical Communication.

The purpose of this study to determine: (1) Increasing mathematical reasoning abilities junior high school students through problem-based learning model assisted *GeoGebra* better than the increase in mathematical reasoning ability of students who received the usual learning model, (2) increasing mathematical communication abilities junior high school students through the learning model based assisted *GeoGebra* better than the increase of mathematical communication ability of students who received the usual learning model, (3) Interaction between learning and early math skills of active during the proses of increasing mathematical reasoning ability, (4) Interaction between learning and early math skills of active during the proses of increasing mathematical communication ability, ( 5) The grade of responses that the students in solving problems in each lesson. This study was a quasi-experimental study. This study population all students of SMP Negeri 1 Samudera. Then purpose sampling selected two classes of seventh grade. Experimental class were treated problem-based learning model with assisted Geogebra and grade control treated usual learning model. The instrument used consisted of: (1) Test the ability of mathematical reasoning, (2) Test the ability of mathematical communication. The instrument has been declared eligible content validity, and reliability coefficient of 0.629 and 0.694 respectively for mathematical reasoning ability and mathematical communication. Data analysis was performed by analysis of variance (ANOVA) and two lanes. Results showed (1) An increase in the ability of reasoning and mathematical communication junior high school students through problem-based learning model assisted *GeoGebra* better than the increase in communication and mathematical reasoning abilities of students who received the usual learning model. (2) There is no Interaction between learning and early math skills of active during the proses of increasing mathematical reasoning ability and communication. (3) The grade of settlement learn students answer by using problem-based learning model assisted *GeoGebra* better than the usual learning model.