

Mathematical Understanding and Proving Abilities: Experiment With Undergraduate Student By Using Modified Moore Learning Approach

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Abstract

This paper reports findings of a post test experimental control group design conducted to investigate the role of modified Moore learning approach on improving students' mathematical understanding and proving abilities. Subject of study were 56 undergraduate students of one state university in Bandung, who took advanced abstract algebra course. Instrument of study were a set test of mathematical understanding ability, a set test of mathematical proving ability, and a set of students' opinion scale on modified Moore learning approach. Data were analyzed by using two path ANOVA. The study found that proof construction process was more difficult than mathematical understanding task for all students, and students still posed some difficulties on constructing mathematical proof task. The study also found there were not differences between students' abilities on mathematical understanding and on proving abilities of the both classes, and both abilities were classified as mediocre. However, in modified Moore learning approach class there were more students who got above average grades on mathematical understanding than those of conventional class. Moreover, students performed positive opinion toward modified Moore learning approach. They were active in questioning and solving problems, and in explaining their works in front of class as well, while students of conventional teaching preferred to listen to lecturer's explanation. The study also found that there was no interaction between learning approach and students' prior mathematics ability on mathematical understanding and proving abilities, but there were quite strong association between students' mathematical understanding and proving abilities.

Keywords: modified Moore learning approach, mathematical understanding ability, mathematical proving ability.

Abstrak

Artikel ini melaporkan hasil temuan suatu eksperimen berdisain postes kelompok kontrol dengan tujuan mengembangkan kemampuan pemahaman dan pembuktian matematik mahasiswa dengan menerapkan pembelajaran dengan metode Moore termodifikasi. Subyek penelitian sebanyak 56 orang mahasiswa peserta kuliah stuktur aljabar lanjut dari satu universitas negeri di Bandung. Instrumen penelitian terdiri dari tes pemahaman dan tes pembuktian matematik, dan satu set skala pendapat terhadap pembelajaran dengan metode Moore termodifikasi . Analisis data menggunakan anova dua jalur. Penelitian menemukan bahwa tugas pembuktian lebih sukar daripada tugas pemahaman matematik dan terdapat cukup banyak mahasiswa