

ABSTRAK

Dori Lukman Hakim (2017). Penerapan *Mobile Learning* dalam Mengembangkan Kemampuan Komunikasi Matematis, Representasi Matematis, dan Kemandirian Belajar Matematika Siswa.

Penelitian ini bertujuan menyelidiki pencapaian dan peningkatan kemampuan komunikasi matematis, representasi matematis, dan kemandirian belajar matematika siswa dengan *mobile learning*. Dalam penelitian ini terdapat beberapa masalah diantaranya kemampuan dalam mengungkapkan atau menyampaikan ide-ide, situasi, dan relasi matematis yang diperlihatkan dalam sebuah model matematis melalui bahasa secara lisan atau tulisan masih terbilang lemah, khususnya dalam kemampuan menggambarkan secara visualisasi matematis, dan kemandirian belajar matematika siswa yang masih lemah. Metode penelitian yang digunakan adalah *mixed methods* dengan model *concurrent embedded* (KUANTITATIF dan kualitatif). Populasi dalam penelitian ini adalah dua sekolah di Kabupaten Karawang, yang mewakili level sekolah tinggi yaitu SMP Negeri 3 Karawang Barat dan level sekolah menengah yaitu SMP Negeri 2 Karawang Timur. Masing-masing level sekolah dipilih dua kelas secara acak kelas dari siswa kelas VIII untuk kelompok eksperimen dan kelompok kontrol. Kelompok eksperimen dengan menggunakan *mobile learning* (ML) dan kelompok kontrol dengan menggunakan *conventional learning* (CL), kemudian beberapa subjek diambil pada setiap kelas yang mewakili level sekolah dan kategori kemampuan awal matematis. Instrumen penelitian terdiri dari tes kemampuan awal matematis (KAM), tes kemampuan komunikasi matematis (KKM), tes kemampuan representasi matematis (KRM), angket kemandirian belajar matematika (KBM), lembar observasi, dan wawancara. Analisis data kuantitatif menggunakan uji-t, uji-t', uji Man-Whitney, Uji Kruskal-Wallis, dan ANOVA dua jalur, dan data kualitatif menggunakan *grounded theory* melalui tiga langkah yaitu *open coding*, *selective coding*, dan *theoretical coding*. Hasil penelitian menunjukkan bahwa: (1) pencapaian dan peningkatan KKM, KRM, dan KBM yang menggunakan ML lebih baik daripada siswa yang menggunakan CL; (2) tidak terdapat pengaruh interaksi pembelajaran dan KAM terhadap pencapaian dan peningkatan KKM dan KRM, akan tetapi terdapat pengaruh interaksi pembelajaran dan KAM terhadap pencapaian dan peningkatan KBM; (3) terdapat pengaruh interaksi pembelajaran dan level sekolah terhadap pencapaian dan peningkatan KKM, KRM dan KBM; (4) Kualitas kemampuan komunikasi matematis siswa, kemampuan representasi matematis siswa, dan kemandirian belajar matematika siswa yang menggunakan *mobile learning* lebih baik dari pada siswa yang menggunakan *conventional learning* ditinjau berdasarkan (a) kemampuan awal matematis (tinggi, sedang, rendah); (b) level sekolah (atas, menengah); dan (c) secara keseluruhan. (5) keunggulan implementasi ML adalah siswa dapat belajar kapanpun di manapun dengan siapapun tanpa terbatas oleh ruang dan waktu, kemudian kelemahan implementasi ML pada umumnya tidak ditemukan jika siswa pada saat pembelajaran mampu memanfaatkan dan mengakses informasi dengan baik.

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PENERAPAN MOBILE LEARNING DALAM MENGEMBANGKAN KEMAMPUAN KOMUNIKASI MATEMATIS, REPRESENTASI MATEMATIS, DAN KEMANDIRIAN BELAJAR MATEMATIKA SISWA

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Kata Kunci : *mobile learning* (ML), kemampuan komunikasi matematis (KKM), kemampuan representasi matematis (KRM), kemandirian belajar matematika (KBM).

ABSTRACT

Dori Lukman Hakim (2017). The Implementation of Mobile Learning in Developing Students' Mathematical Communication Ability, Mathematical Representation Ability and Self-Regulated Learning in Mathematics.

The aim of this research is to investigate the students' achievement and enhancement in mathematical communication ability, mathematical representation ability, and self-regulated learning in mathematics. In this research, there are some problems such as the students' ability in expressing or conveying ideas, situations, and mathematical relationship shown in a mathematical model through oral or written language is still weak, even in the students' ability to visualize mathematically and the students' self-regulated learning mathematics is also still weak. The method of this research is a mixed method with concurrent embedded models (QUANTITATIVE and qualitative). The population of this research was 8th grade students in Karawang regency, which represents the high-level school (SMPN 3 West Karawang) and middle-level school (SMPN 2 East Karawang). The first group is as an experimental class which was given treatment by using mobile learning and the second group is control class which was given conventional learning, then some subjects were taken on each grade that represents the school level and the category of prior mathematical knowledge. The data were collected through: (a) Prior mathematical knowledge test, (b) mathematical communication ability test, (c) mathematical representation ability test, (d) questionnaire on self-regulated learning in mathematics, (e) observation sheets, and (f) interviews. The quantitative data analysis used (1) t-test, (2) t'-test, (3) Man-Whitney, (4) Kruskal-Wallis and (5) Two-way ANOVA. The qualitative data were analyzed by utilizing grounded theory through three steps, namely: (1) open coding, (2) selective coding, and (3) theoretical coding. The results of the research shown that: (1) the students' achievement and enhancement in communication ability, mathematical representation ability, and self-regulated learning in mathematics by using mobile learning are greater than those who worked under conventional learning; (2) There is no interaction between learning and prior mathematical knowledge toward achievement and enhancement of mathematical communication ability and mathematical representation ability, but there is interaction between learning and prior mathematical knowledge toward achievement and enhancement of self-regulated learning in mathematics; (3) There is interaction between learning and level school toward achievement and enhancement of mathematical communication ability, mathematical representation ability, and self-regulated learning in mathematics; (4) The quality of mathematical communication ability, mathematical representation ability, and self-regulated learning in mathematics by using mobile learning are greater than those who worked under conventional learning (5) The advantages of mobile learning provide easy access to learning anyplace, anytime, making it more

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convenient to students. Students have the advantage of spending their time, between meetings or during weekends focusing on the material they want to learn.

Keywords: mobile learning (ML), mathematical communication ability (MCA), mathematical representation ability (MRA), self-regulated learning in mathematics (SRLM).

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