

ANDROID-BASED MEDIA DEVELOPMENT IN CHEMICAL LEARNING TO IMPROVE ABILITY TO SOLVE PROBLEMS, LEARNING MOTIVATION, AND METACOGNITION ABILITY OF HIGH SCHOOL STUDENTS

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ABSTRACT

The purpose of this study was to find out (1) the characteristics of android-based chemistry learning media on chemistry for students, (2) the quality of android-based chemistry learning media on acid and base, (3) the differences in cognitive learning outcomes and self-efficacy, cognitive learning outcomes, and self-efficacy of between the students taught using android-based chemistry learning and the students taught using power point, (4) percentage of android-based chemistry learning media contribution to the cognitive learning outcomes and self-efficacy, cognitive learning outcomes, and student's self-efficacy on acid and base.

This research was Research and Development (R & D) with the ADDIE development model. This development model consists of five stages, namely analysis, design, development, implementation, and evaluation. The product was validated by subject-matter expert and media expert. The product assessment was reviewed by chemistry teachers and the product readability tests by students. The product trial was conducted to eleventh grade students of SMAN 5 Yogyakarta and Sukoarjo SMA N. The testing subjects consisted of two groups namely experimental class and control class. The sampling technique used was random sampling. The experimental class conducted the learning process using android learning media and the control class performed the learning using power point. The instruments used were test questions Problem solving skills, metacognition and learning motivation questionnaires that had been validated theoretically and empirically. The MANOVA data analysis technique was used to find out the differences between cognitive learning outcomes and students' self-efficacy in the control and experimental class. Test of between Subject Effect is used to find out the differences in each cognitive learning outcomes and self-efficacy in the experimental and control classes. Partial eta square is used to find out the percentage of android-based learning media contributions to the dependent variable.

The results showed that (1) android learning media consisted of a summary of material and exercises about cognitive abilities and problem solving presented in the form of games and supporting learning anywhere and anytime; (2) android learning media developed have very good quality based on the validation of material experts and media experts as well as the assessment of chemical educators and students so that they are fit to be used as learning media; (3) there are differences in the ability of metacognition, motivation to learn, and the ability to solve problems between students who use android learning media and students who learn to use power points. (4) the percentage of android learning media contribution to the ability to solve problems 12.2%, 17.9% metacognition and motivation to learn 3.8%

Kata Kunci: *acid base, reaction rate, problem solving ability, metacognition, learning motivation, android learning media*