Mobile Remedial System (MRS) Application Development Oriented to Increase Metacognitive Ability and Reduction of Physics Misconceptions

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ABSTRACT

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Today, the rapid development of mobile technology has created a new learning platform, namely mobile learning. The implementation of mobile technology in learning has become a must. This is because various mobile technology devices have become an integral part of the lives of teachers and students in various countries, including Indonesia. This device has changed the paradigm of most of them in teaching and learning activities, communicating and accessing information. Even more specifically, the presence of technology-based learning has provided a new perspective in learning including how the relationship between teachers, students and learning materials is. Mobile devices that are growing rapidly today are mobile devices in the form of smartphones or tablets. The tremendous proliferation of mobile devices has a direct consequence of exponentially increasing demand for mobile application development while supplies are limited. The android platform is an ideal and widely chosen environment for developing learning applications on mobile devices. Metacognitive ability is the ability needed by students. This ability will direct students to the regulation of cognitive processes in learning and thinking. In addition, students must have an understanding of physics concepts as a whole so as not to cause conceptual errors. However, in reality there are still many students who still experience misconceptions. Misconceptions that are not handled will have a bad impact on the next learning process. Understanding more complex concepts will be further away than it should be. Therefore, the presence of Android-based learning technology provides opportunities for the development of remedial learning that can be accessed according to the needs and learning speed of each student. For this reason, this research will develop an android-based learning application that is oriented towards increasing metacognitive abilities and reducing misconceptions. This research belongs to the type of Research & Development. The development stage combines development models from Borg & Gall and Alessi & Trollip. In general, the development stage begins with conducting a needs analysis based on field studies and literature, followed by the design, development, validation, trial and error processes and ends with dissemination. The research was conducted in Yogyakarta. The mandatory output that has been achieved in this research is 1 scientific article with the status of Accepted in a reputable international journal indexed in the Scopus Q2 database (SJR = 0.45). Additional output in the form of 1 article in the in-review stage in the International Journal of Evaluation and Research in Education (Scopus Q4, SJR = 0.2). Other additional outcomes that have been achieved are 1 article published in the European Journal of Educational Research (Scopus Q3, SJR = 0.32), and 1 article Accepted in the Indonesian Journal of Physics Education (Sinta 2 and WoS ESCI). Other additional outputs in the form of books, are still in the stage of preparation and refinement. This Doctoral Dissertation Research proposes achieving TKT at level 3

Kata Kunci: *Mobile remedial system, metaconitive ability, physics misconceptions*