

Developing Instructional Media Using Augmented Reality based on STEM in Malaysia and Indonesia

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ABSTRACT

Mathematics learning in this digital age needs to keep up with technological developments and improve the quality of learning technology used in the education process. The ability to master information technology and the ability to think critically which contains high-level thinking skills is a 21st-century skill that needs to be trained on students, so it is necessary to develop teaching materials that practice higher-order thinking skills (Higher Order Thinking Skills, HOTS) in a Science framework, Technology, and Mathematics (STEM) based on augmented reality (AR). The results of the preliminary study on the augmented reality show that this learning technology is an effective basis for implementing learning in the technological era. Nevertheless, AR-based teaching materials using STEM framework to improve HOTS in learning mathematics are need to be tested and proved in regards to students understanding of mathematics.

This research is a experimental research. The research design that will be use is *non-equivalent pretest-posttest control-group design*. The subjects of the research are Yunior High School students in Indonesia and Malaysia. The results of this study are expected to provide effective learning information to improve students' HOTS. Research outputs will include: 1) article published in two proceeding that are indexed by Scopus; and 2) copyright for the AR instructional media.

Kata Kunci: *Augmented Reality, STEM, HOT*