DESIGN AND IMPLEMENTATION OF LEARNING MEDIA WITH AUGMENTED REALITY BASED ON HIGHER ORDER THINKING SKILLS TO INVESTIGATE FACTORS THAT AFFECT ACADEMIC ACHIEVEMENT OF ENGINEERING EDUCATION STUDENTS

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ABSTRACT

The challenge of preparing qualified graduates is a serious problem that is of common concern, including higher education graduates. Data from the Central Statistics Agency (BPS, 2022) recorded the Open Unemployment Rate (TPT) in Indonesia as of February 2022, which was 5.83%. Vocational High School (SMK) graduates contributed the highest TPT at 10.38%, university graduates contributed 6.17%, and diploma graduates contributed 6.09%. Ironically, higher education is a contributor to open unemployment. University unemployment occurs due to many factors, one of which is because the learning process (both methods, strategies, media and evaluation) implemented at this time is not optimal, including in the field of Technical Education at the Higher Education level. The challenge of teaching Technical Education in Higher Education needs to be a very serious concern, because SMK graduates contribute the highest TPT which has a strong correlation with the fulfillment of prospective SMK teachers, as the output of Technical Education in Higher Education. Strengthening the role of graduates in Engineering Education from the aspect of scientific competence is very basic and important through learning innovation in quality Engineering Education.So far, the learning process has not been interactive, immersive, student-centered, encouraging thinking skills and has not optimized learning media and technology. As a result, the existing learning is still a transfer of knowledge, has not stimulated learners to be motivated, play an active role and build a learning environment that has a conducive academic climate. This condition is certainly no exception to the learning material in Engineering Education in Higher Education. Fun learning equipped with more concrete learning media, facilitating the development of higher order thinking skills (HOTS), and motivating learners is expected to be an alternative to learning that has tended to be boring and monotonous. Thus, this research aims to design and implement learning media with augmented reality (AR) based on HOTS to investigate the factors that affect the academic achievement of engineering education students.This AR learning media is useful to help students more easily understand abstract material through HOTS-based learning activities, so that the development of critical, analytical, and creative thinking skills in addition to a better level of material mastery. This research method uses a research and development (R&D) design using mixed and multiple methods, by applying quantitative and qualitative approaches. The development research procedure is based on the stages of condition analysis and preliminary studies, design, development, validation, implementation and revision, and evaluation. In the initial design stage, the initial concept of Learning Media with HOTS-based AR was discussed collaboratively between PT Host and Partners. Then, at the analysis stage, the results of expert tests related to the media products made were analyzed and continued with the analysis of factors that affect the academic achievement of engineering education students. Then analyzed with Structural Equation Modeling (SEM)-PLS (Partial Least Square) assisted by SmartPls software version 4.0. The output of this research is a learning media product with HOTS-based augmented reality.

Kata Kunci: *Learning Media, Augmented Reality, HOTS, Engineering Education*