PENGEMBANGAN MEDIA PEMBELAJARAN *FLIPBOOK* BERBASIS *AUGMENTED REALITY* (AR) DENGAN TEORI APOS PADA MATERI BANGUN RUANG MATA PELAJARAN MATEMATIKA KELAS VI SD

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ABSTRAK

Penelitian ini bertujuan (1) untuk mendeskripsikan rancang bangun media pembelajaran *flipbook* berbasis *Augmented Reality* (AR) dengan teori APOS pada materi bangun ruang mata pelajaran Matematika kelas VI SD, (2) untuk mengetahui validitas media pembelajaran *flipbook* berbasis *Augmented Reality* (AR) dengan teori APOS, serta (3) untuk mengetahui efektivitas penggunaan media pembelajaran tersebut terhadap hasil belajar siswa. Penelitian ini merupakan penelitian pengembangan yang menggunakan model ADDIE yang terdiri atas lima tahap, yaitu *analysis, design, development, implementation, dan evaluation*. Subjek penelitian ini adalah siswa kelas VI SD Negeri 12 Peguyangan. Metode pengumpulan data yang digunakan meliputi kuesioner dan tes. Instrumen yang digunakan berupa lembar validasi ahli, angket, dan tes hasil belajar. Data dianalisis menggunakan analisis deskriptif kuantitatif dan kualitatif. Hasil penelitian menunjukkan bahwa (1) media pembelajaran *flipbook* berbasis *Augmented Reality* (AR) dengan teori APOS berhasil dikembangkan sesuai tahapan model ADDIE, (2) hasil uji validitas menunjukkan bahwa media memiliki kualifikasi sangat baik, dengan persentase uji ahli media sebesar 96%, uji ahli isi pembelajaran sebesar 96,67%, uji perorangan sebesar 96%, uji kelompok kecil sebesar 96%, dan uji lapangan sebesar 96,12% sehingga media dinyatakan layak digunakan dalam pembelajaran, dan (3) hasil uji efektivitas menunjukkan bahwa media pembelajaran efektif digunakan karena terjadi peningkatan hasil belajar siswa yang ditunjukkan melalui perbandingan nilai *pre-test* dan *post-test*, di mana nilai *post-test* lebih tinggi dan telah melampaui KKM. Dengan demikian, media pembelajaran *flipbook* berbasis *Augmented Reality* (AR) dengan teori APOS layak dan efektif digunakan untuk meningkatkan hasil belajar siswa pada materi bangun ruang kelas VI SD.

Kata kunci: ADDIE, *Augmented Reality* (AR), bangun ruang, *flipbook,* teori APOS.

DEVELOPMENT OF AN AUGMENTED REALITY (AR)-BASED FLIPBOOK LEARNING MEDIUM INCORPORATING APOS THEORY FOR TEACHING SOLID GEOMETRY IN GRADE VI ELEMENTARY SCHOOL MATHEMATICS

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ABSTRACT

This study aims (1) to describe the design and development of an Augmented Reality (AR)-based flipbook learning medium incorporating APOS theory for teaching solid geometry in Grade VI elementary school mathematics, (2) to determine the validity of the developed learning medium, and (3) to examine its effectiveness in improving students' learning outcomes. This study employed a research and development approach using the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. The subjects of this study were sixth-grade students at SD Negeri 12 Peguyangan. Data were collected through questionnaires and tests. The instruments included expert validation sheets, questionnaires, and learning outcome tests. The collected data were analyzed using quantitative and qualitative descriptive analysis. The results indicated that (1) the AR-based flipbook learning medium incorporating APOS theory was successfully developed in accordance with the ADDIE model, (2) the validity assessment demonstrated that the medium achieved a very good qualification, with scores of 96% for media expert validation, 96.67% for instructional content expert validation, 96% for individual evaluation, 96% for small-group evaluation, and 96.12% for field evaluation, indicating that the medium is suitable for use in the learning process, and (3) the effectiveness test showed that the learning medium was effective, as evidenced by an improvement in students' learning outcomes, with post-test scores higher than pre-test scores and exceeding the minimum mastery criteria (KKM). Therefore, the AR-based flipbook learning medium incorporating APOS theory is considered valid and effective for improving students' learning outcomes in solid geometry in Grade VI elementary school.

Kata kunci: ADDIE, *ADDIE, Augmented Reality (AR), solid geometry, flipbook APOS theory*.