

ABSTRAK

Di era digital, pemanfaatan teknologi dalam pembelajaran menjadi tuntutan untuk menjawab tantangan pendidikan abad ke-21. Pembelajaran matematika, sebagai ilmu yang fundamental namun sering sulit dipahami, membutuhkan pendekatan interaktif dan inovatif. Observasi di SMP Kanisius Pakem menunjukkan rendahnya minat belajar matematika dan keterbatasan penggunaan media berbasis teknologi. Peserta didik kesulitan memvisualisasikan bangun ruang sisi datar, tetapi menyukai pembelajaran berbasis teknologi yang kolaboratif. Penelitian ini bertujuan menerapkan metode *Design Thinking* dalam perancangan modul elektronik berbasis *Augmented Reality* (AR) untuk meningkatkan keterlibatan belajar.

Penelitian menggunakan model pengembangan Ir-FAN, yang mengintegrasikan R&D dan pendekatan *Design Thinking*, melalui empat tahap: Identifikasi & Riset, Fase Desain, Aktivitas Refleksi, dan Nilai Efektif. Subjek penelitian adalah 17 peserta didik kelas VIII tahun ajaran 2024/2025 SMP Kanisius Pakem. Metode pengumpulan data melalui observasi, wawancara, validasi produk, dan uji coba, kemudian dianalisis secara deskriptif kualitatif dan kuantitatif. Hasil penelitian menunjukkan bahwa pembuatan modul melalui tahapan *empathy, define, ideate, prototype* dan *test* menghasilkan modul elektronik berbasis AR menggunakan aplikasi *Assemblr Edu*. Modul divalidasi melalui uji keterbacaan, validasi materi, validasi media, dan uji kepraktisan. Hasil validasi ahli materi sebesar 88,75% dan ahli media sebesar 88,27% berada pada kategori sangat baik. Uji kepraktisan memperoleh 82,5% dan keterbacaan 90%, menunjukkan bahwa modul sangat layak dan praktis digunakan dalam pembelajaran bangun ruang sisi datar.

Kata kunci: *Augmented Reality, Design Thinking, Modul Elektronik*

ABSTRACT

In the digital era, the integration of technology in education is essential to meet the challenges of 21st-century learning. Mathematics, as a fundamental yet often difficult subject, requires a more interactive and innovative approach. Observations at SMP Kanisius Pakem revealed low student interest in learning mathematics and limited use of technology-based media. Students struggle to visualize three-dimensional shapes but show a preference for collaborative, technology-driven learning. This study aims to apply the Design Thinking method in developing an electronic module based on Augmented Reality (AR) to enhance student engagement.

The research adopts the Ir-FAN development model, which integrates R&D with the Design Thinking approach through four phases: Identification & Research, Design Phase, Reflection Activities, and Achievable Effective Value. The research subjects were 17 eighth-grade students in the 2024/2025 academic year. Data collection methods included observation, interviews, product validation, and testing, analyzed using both qualitative and quantitative techniques. The results showed that the module design followed the stages of empathy, define, ideate, and prototype, resulting in an AR-based electronic module developed using the Assemblr Edu application. Validation was conducted through readability tests, material validation, media validation, and practicality testing. The material expert validation scored 88.75%, and media expert validation scored 88.27%, both categorized as excellent. Practicality testing scored 82.5%, and the student readability test reached 90%, indicating that the module is highly feasible and practical for learning solid geometry.

Keywords: *Design Thinking, Augmented Reality, Electronic Module*