

## ABSTRAK

**MI. Dika Meilinda Putri. 2026. Pengembangan Media Pembelajaran *GeoGebra* Berbasis Gamifikasi untuk Memfasilitasi Kemampuan Spasial Siswa pada Materi Balok dan Kubus. Program Studi Pendidikan Matematika. Jurusan Pendidikan Matematika dan Ilmu Pengetahuan Alam. Fakultas Keguruan dan Ilmu Pendidikan. Universitas Sanata Dharma.**

Penelitian ini bertujuan untuk mengembangkan media pembelajaran *GeoGebra* berbasis gamifikasi pada materi balok dan kubus pada siswa kelas VIII, mengetahui kualitas media pembelajaran *GeoGebra* berbasis gamifikasi pada materi balok dan kubus pada siswa kelas VIII, dan mengetahui apakah media pembelajaran *GeoGebra* berbasis gamifikasi yang dikembangkan dapat memfasilitasi kemampuan spasial siswa.

Penelitian ini merupakan penelitian dan pengembangan dengan model ADDIE (*Analyze, Design, Development, Implementation, Evaluation*). Subjek penelitian adalah siswa kelas VIIIA SMP Maria Assumpta Klaten. Data dikumpulkan melalui observasi, wawancara, penyebaran kuesioner, dan tes kemampuan spasial. Teknik analisis data yang digunakan adalah teknik analisis data kualitatif dan kuantitatif.

Proses pengembangan media pembelajaran *GeoGebra* diawali dengan tahap *analyze* melalui wawancara guru dan tes siswa untuk mengetahui kebutuhan dan kemampuan spasial siswa. Pada tahap *design*, peneliti merancang media pembelajaran *GeoGebra* berbasis gamifikasi dan materi pada setiap pertemuan. Tahap *development*, peneliti mengembangkan produk yang terdiri dari media *GeoGebra*, berbasis gamifikasi, menyusun tes kemampuan spasial. Produk yang telah dikembangkan kemudian dilakukan validasi oleh para ahli dan melakukan revisi. Tahap *implementation*, peneliti melakukan uji coba media pembelajaran *GeoGebra* yang dikembangkan dilakukan dalam empat kali pertemuan dan siswa melakukan tes akhir. Tahap *evaluation*, dilakukan dengan menganalisis hasil kuesioner dan hasil wawancara siswa serta guru untuk menilai kepraktisan dan keefektifan. Analisis hasil tes siswa digunakan untuk menilai keefektifan media pembelajaran *GeoGebra* berbasis gamifikasi selama pembelajaran.

Kualitas media pembelajaran yang dikembangkan memenuhi kriteria layak, praktis dan efektif. Media pembelajaran *GeoGebra* berbasis gamifikasi layak digunakan setelah direvisi terkait dengan eksplorasi dalam rotasi dan tampilan *GeoGebra*. Presentase rata-rata kepraktisan media pembelajaran *GeoGebra* mencapai 73% dengan kriteria praktis. Media pembelajaran *GeoGebra* yang dikembangkan efektif mencapai 79% dengan kriteria efektif dan mampu memfasilitasi kemampuan spasial siswa kelas VIIIA pada materi balok dan kubus yang ditunjukkan dengan presentase rata-rata nilai kelas sebesar 87% dengan kriteria tinggi. Hal ini didukung dengan perolehan presentase siswa yang memperoleh kategori tinggi sebesar 30%, kategori sedang 57%, dan kategori rendah 13%.

**Kata kunci:** media pembelajaran, *GeoGebra*, gamifikasi, kemampuan spasial, penelitian dan pengembangan.

## ABSTRACT

**MI. Dika Meilinda Putri. 2026. *Development of Gamification-Based GeoGebra Learning Media to Facilitate Students' Spatial Ability in the Topic of Cuboid and Cubes. Mathematics Education Program. Department of Mathematics and Natural Sciences Education. Faculty of Teacher Education and Educational Sciences. Sanata Dharma University.***

*This study aims to develop gamification-based GeoGebra learning media on the topic of cuboid and cubes for eighth-grade students, to assess the quality of the gamification-based GeoGebra learning media on the topic of cuboid and cubes for eighth-grade students, and to determine whether the developed gamification-based GeoGebra learning media can enhance students' spatial abilities.*

*This study is a research and development study using the ADDIE model (Analyze, Design, Development, Implementation, Evaluation). The subjects of this study were eighth-grade students in Class VIIIA at Maria Assumpta Junior High School in Klaten. Data were collected through observation, interviews, questionnaires, and spatial ability tests. The data analysis techniques used were qualitative and quantitative data analysis.*

*The process of developing GeoGebra learning media began with the analysis phase, which involved interviewing teachers and administering student tests to identify students' spatial needs and abilities. In the design phase, the researcher designed gamification-based GeoGebra learning media and materials for each session. In the development phase, the researcher developed a product consisting of gamification-based GeoGebra media and created spatial ability tests. The developed product was then validated by experts and revised. In the implementation phase, the researcher pilot-tested the developed GeoGebra learning media over four sessions, and students took a final test. The evaluation phase involved analyzing the results of questionnaires and interviews with students and teachers to assess the practicality and effectiveness of the media. Analysis of student test results was used to evaluate the effectiveness of the gamification-based GeoGebra learning media during instruction.*

*The quality of the learning media developed meets the criteria of suitability, practicality, and effectiveness. The gamification-based GeoGebra learning media is suitable for use after revisions related to exploration within rotations and the GeoGebra interface. The average practicality score for the GeoGebra learning media reached 73% based on the practicality criteria. The developed GeoGebra learning media is effective at 79% based on the effectiveness criteria and is capable of facilitating the spatial abilities of 8th-grade students on the topic of blocks and cubes, as indicated by an average class score of 87% based on high criteria. This is supported by the percentage of students who achieved the high category at 87%, the moderate category at 13%, and the low category at 13%.*

**Keywords:** learning media, GeoGebra, gamification, spatial ability, research and development.