

**DESAIN 6E INSTRUCTIONAL MODEL TERINTEGRASI
AUGMENTED REALITY UNTUK MENINGKATKAN KEMAMPUAN
BERPIKIR GEOMETRI 3D DITINJAU DARI
GEOMETRY SELF-EFFICACY SISWA SMP**

DISERTASI

Diajukan untuk Memenuhi Sebagian dari Syarat Memperoleh
Gelar Doktor dalam Pendidikan Matematika



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**Desain 6E *Instructional Model* Terintegrasi *Augmented Reality*
Untuk Meningkatkan Kemampuan Berpikir Geometri 3D
Ditinjau dari *Geometry Self-Efficacy* Siswa SMP**

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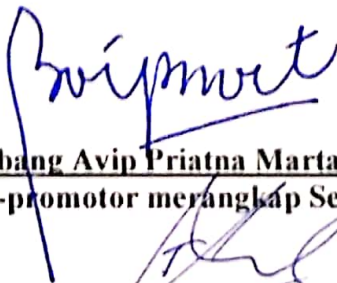
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**DESAIN 6E INSTRUCTIONAL MODEL TERINTEGRASI AUGMENTED
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GEOMETRI 3D DITINJAU DARI GEOMETRY SELF-EFFICACY SISWA
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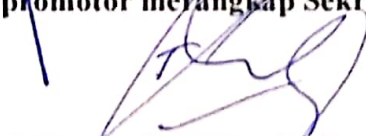
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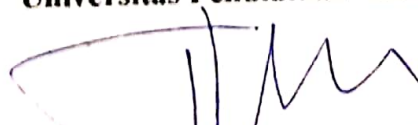


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ABSTRAK

Sudirman. (2020). Desain *6E Instructional Model* Terintegrasi *Augmented Reality* untuk Meningkatkan Kemampuan Berpikir Geometri 3D Ditinjau dari *Geometry Self-efficacy* Siswa SMP

Pandemi COVID-19 telah mendorong penggunaan teknologi informasi dan komunikasi (TIK) dalam pembelajaran matematika secara lebih intensif. Namun, ketidaksiapan sekolah dan rendahnya pengetahuan serta kemampuan guru dalam pemanfaatan TIK, yang harus diintegrasikan dengan aspek didaktis, pedagogis, dan materi, mengakibatkan rendahnya prestasi belajar matematika siswa. Berdasarkan observasi awal ke beberapa sekolah menengah pertama di Kabupaten Indramayu mengindikasikan bahwa di masa pandemi COVID-19, siswa mengalami kesulitan dalam memahami materi geometri 3D, sehingga pembelajaran geometri 3D dipandang kurang efektif. Penelitian ini bertujuan untuk menghasilkan desain pembelajaran 6E-IM terintegrasi AR yang dapat meningkatkan kemampuan berpikir geometri 3D dengan memperhatikan *geometry self-efficacy* siswa. Penelitian ini menggunakan pendekatan *mixed-method* jenis *sequential exploratory*. Partisipan yang terlibat pada penelitian ini yaitu guru matematika dan siswa sekolah menengah pertama di salah satu SMP N di Kabupaten Indramayu. Data yang dikumpulkan dari tahapan kualitatif dianalisis menggunakan prosedur analisis model Miles dan Huberman, sedangkan data yang diperoleh dari pengujian lapangan dianalisis secara kuantitatif menggunakan statistik parametrik yaitu Anava dan Ankova. Temuan penelitian mengungkapkan bahwa 1) siswa mengalami kesulitan dalam merepresentasikan, mengidentifikasi struktur spasial, dan melakukan pengukuran luas permukaan dan volume geometri 3D; 2) teknologi AR dapat diintegrasikan pada bahan ajar geometri 3D dan pembelajaran 6E-IM; 3) terdapat perbedaan signifikan peningkatan KBG3D antara siswa yang belajar menggunakan 6E-IM terintegrasi AR, 6E-IM, dan pembelajaran konvensional; 4) terdapat pengaruh signifikan dari pembelajaran (6E-IM terintegrasi AR dan 6E-IM) terhadap peningkatan kemampuan berpikir geometri 3D dengan memperhatikan *geometry self-efficacy* siswa.

Kata Kunci: Kemampuan Berpikir Geometry 3D, *Geometry Self-Efficacy*, 6E Instructional Model, Augmented Reality

ABSTRACT

Sudirman. (2020). Design of 6E Instructional Model Integrated Augmented Reality to Improve Thinking Ability of 3D Geometry Viewed from Geometry Self-efficacy of Junior High School Students

The COVID-19 pandemic has encouraged more intensive use of information and communication technology (ICT) in mathematics learning. However, school unpreparedness and teachers' low knowledge and ability to use ICT, which must be integrated with didactic, pedagogical, and material aspects, result in low student achievement in mathematics. Based on initial observations of several junior high schools in Indramayu Regency, it was indicated that during the COVID-19 pandemic, students had difficulty in understanding 3D geometry material, so 3D geometry learning was seen as less effective. This study aims to produce an AR-integrated 6E-IM learning design that can improve 3D geometric thinking skills by paying attention to students' geometry self-efficacy. This research used a mixed-method approach with a sequential exploratory type. The participants in this study were mathematics teachers and junior high school students in one of the N SMPs in the Indramayu Regency. Data collected from the qualitative stage were analyzed using the Miles and Huberman model analysis procedure, while the data obtained from field testing was analyzed quantitatively using parametric statistics, namely Anava and Ancova. The findings of the study reveal that 1) at the initial observation, students have difficulty in representing, identifying spatial structures, and measuring the surface area and volume of 3D geometry; 2) AR technology can be integrated into 3D geometry teaching materials and 6E-IM learning; 3) there is a significant difference in the improvement of KBG3D between students who learn using AR integrated 6E-IM, 6E-IM, and conventional learning; 4) there is a significant effect of learning (6E-IM integrated AR and 6E-IM) on increasing the ability to think 3D geometry by paying attention to students' geometry self-efficacy.

Keywords: 3D Geometry Thinking Ability, Geometry Self-Efficacy, 6E Instructional Model, Augmented Reality

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