

## ABSTRAK

Febrianti, Ni Luh Putu Sinta (2023), Pengembangan E-Modul Interaktif Materi Bangun Ruang Sisi Datar Berbasis *Problem-Based Learning* untuk Meningkatkan Kemampuan Berpikir Kritis Siswa Kelas VIII SMP. Tesis, Pendidikan Matematika, Program Pascasarjana, Universitas Pendidikan Ganesha.

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**Kata Kunci:** E-modul interaktif, *problem based-learning*, berpikir kritis

Penelitian ini bertujuan untuk mengembangkan e-modul interaktif materi bangun ruang sisi datar berbasis *problem-based learning* untuk meningkatkan kemampuan berpikir kritis. Jenis penelitian ini adalah penelitian pengembangan dengan model pengembangan 4-D oleh Thiagarajan yang terdiri dari empat tahapan, yaitu (1) *Define*, (2) *Design*, (3) *Develop* dan (4) *Disseminate*. Subjek dari penelitian yaitu subjek uji coba terbatas terdiri dari 10 orang siswa kelas VIII A dan dua guru matematika, serta subjek uji coba lapangan terdiri dari 30 orang siswa kelas VIII SMP Harapan Mulia Denpasar. Data penelitian diperoleh melalui angket validasi, angket kepraktisan dan tes berpikir kritis. Validitas e-modul interaktif yang dikembangkan di evaluasi oleh dua orang ahli dengan rata-rata hasil 3,25 memenuhi kriteria valid. Kepraktisan e-modul interaktif yang dikembangkan diperoleh dari hasil uji coba terbatas dengan nilai angket pengamatan keterlaksanaan 2,99 dengan kriteria baik; angket respon guru 3,38 dengan kriteria sangat praktis; dan angket respon siswa 3,17 dengan kriteria praktis. Sedangkan hasil uji coba lapangan yang diperoleh yaitu angket pengamatan keterlaksanaan 3,09 dengan kriteria baik; angket respon guru 3,75 dengan kriteria sangat praktis; angket respon siswa 3,32 dengan kriteria praktis. Efektivitas diperoleh menggunakan tes pretest dan posttest dengan hasil berturut-turut yaitu 54% dengan kategori cukup kritis dan 83% dengan kategori sangat kritis. Hasil *n-gain* diperoleh rata-rata 0,64 dengan kategori peningkatan sedang. Hasil persentasi efektifitas diperoleh skor 64% dengan kategori efektif. Dengan demikian dapat disimpulkan bahwa e-modul interaktif berbasis *problem-based learning* yang dikembangkan valid, praktis dan efektif untuk meningkatkan kemampuan berpikir kritis. Karakteristik e-modul interaktif yang dikembangkan yaitu, (1) e-modul disajikan dengan media interaktif seperti video, kuis, latihan interaktif dan geogebra, (2) terdapat *hyperlink* menuju halaman tertentu, (3) memuat latihan soal pilihan ganda dan mencocokkan yang dapat memberikan respon, dan (4) memuat permasalahan dan aktivitas yang memungkinkan siswa melatih kemampuan berpikir kritis, (5) kegiatan dalam e-modul disusun berdasarkan sintaks *problem-based learning*.

## ABSTRACT

Febrianti, Ni Luh Putu Sinta (2023), Development of Interactive E-Module on Three-Dimensional Geometric Shapes Material on Problem-Based Learning to Enhance Critical Thinking Skills of VIII Grade Junior High School Students. Thesis, Mathematics Education, Postgraduate Program, Ganesha University of Education.

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**Keywords:** Interactive e-module, *problem based-learning*, *critical thinking skills*

This research has the objective to develop problem-based learning interactive e-module for three-dimensional geometric shapes material to enhance critical thinking skills. This type of research is development research using the 4-D development model by Thiagarajan consist of four stages, namely (1) Define, (2) Design, (3) Development, and (4) Disseminate. The subjects of the research included the limited trials subjects comprised 10 eighth-grade students from class VIII A and two mathematics teachers, while the field trials subjects consisted of 30 eighth-grade students from SMP Harapan Mulia Denpasar. The research data were obtained through validation questionnaires, practicality questionnaires, and critical thinking tests. The validity of the developed interactive e-module was evaluated by two experts, with an average score of 3.25, meeting the validity criteria. The practicality of the developed interactive e-module was obtained from the limited trial results, with observation questionnaire scores for feasibility at 2.99, indicating a good level; teacher response questionnaire scores at 3.38, indicating a highly practical level; and student response questionnaire scores at 3.17, indicating a practical level. In contrast, the results of the field trial yielded the following: an observation implementation questionnaire score of 3.09, indicating a good level of implementation; a teacher response questionnaire score of 3.75, indicating a highly practical level; and a student response questionnaire score of 3.32, indicating a practical level. Effectiveness was assessed using pretest and posttest scores, which were 54% categorized as moderately critical and 83% categorized as highly critical. The average n-gain result obtained was 0.64, categorized as a moderate improvement. The effectiveness percentage result was 64%, categorized as effective. Therefore, it can be concluded that the interactive e-module based on problem-based learning that was developed is valid, practical, and effective for enhancing critical thinking abilities. The characteristics of the developed interactive e-module are as follows: (1) The e-module is presented using interactive media such as videos, quizzes, interactive exercises, and Geogebra, (2) It includes hyperlinks to specific pages, (3) It contains multiple-choice and matching exercises that can provide responses, (4) It includes problems and activities that allow students to practice critical thinking skills, and (5) The activities within the e-module are organized based on the syntax of problem-based learning.