

Gita Melina. 2022. *Pengembangan E-Modul Berbasis STEM Dipadu Dengan Project Based Learning Pada Mata Pelajaran Dasar Desain Grafis Untuk Meningkatkan Kemampuan Berpikir Kritis*. Skripsi, Program Studi Pendidikan Informatika, Fakultas Ilmu Pendidikan, Universitas Trunojoyo Madura. Pembimbing : Etistika Yuni Wijaya.

ABSTRAK

Penelitian ini bertujuan untuk mengembangkan bahan ajar berupa E-modul berbasis STEM dipadu dengan *project based learning*, karena kurangnya sumber belajar dan kurangnya kemampuan berpikir kritis siswa. Penelitian ini dilakukan di SMK Muhammadiyah 1 Pandaan dengan jumlah peserta didik 30. Model pengembangan yang digunakan adalah ADDIE (*Analysis, Design, Development, Implementation, Evaluation*). Hasil uji validasi ahli materi 89% dan ahli media 97.6%, dikategorikan sangat valid dan sangat baik digunakan. Hasil rata-rata gabungan validasi ahli diperoleh 93.3% dengan kategori sangat valid dan sangat baik digunakan. Hasil uji coba oleh kelompok kecil sebesar 86.5% dan uji coba oleh kelompok besar sebesar 82.3% dinyatakan sangat valid. Hasil *pretest* dan *posttest*, terdapat peningkatan kemampuan berpikir kritis peserta didik sebelum dan sesudah menggunakan E-modul Berbasis STEM. Hasil *pretest* menunjukkan kemampuan berpikir kritis siswa dengan kategori indikator sangat rendah, rendah, dan cukup. Hasil *posttest* menunjukkan kemampuan berpikir kritis siswa dengan kategori indikator rendah, cukup, tinggi, dan sangat tinggi. Berdasarkan hal tersebut maka disimpulkan bahwa produk pengembangan E-modul berbasis STEM dipadu dengan *project based learning*, dinyatakan valid digunakan sebagai penunjang bahan ajar.

Kata Kunci : E-modul, STEM, *Project Based Learning*, dan Berpikir Kritis.

Gita Melina. 2022. *Development of STEM-Based E-Modules Combined with Project Based Learning in Basic Graphic Design Subjects to Improve Critical Thinking Skills*. Thesis, Informatics Education Study Program, Faculty of Education, University of Trunojoyo Madura. Supervisor : Etistika Yuni Wijaya.

ABSTRACT

This research aims to develop teaching materials through STEM-based E-modules combined with project-based learning due to the lack of learning resources and students' critical thinking skills. Furthermore, it was conducted at SMK Muhammadiyah 1 Pandaan with 30 students using ADDIE Model. ADDIE was the development model (Analysis, Design, Development, Implementation, Evaluation). Moreover, the validation test showed that 89% of the material and 97.6% of media experts were highly valid and well-used. The combined average results of expert validation obtained 93.3% with very accurate and well-used categories. However, the results of trials by small groups of 86.5% and by large groups of 82.3% were declared valid. In addition, the pretest and post-test results showed increased students' critical thinking skills before and after using STEM-Based E-modules. The pretest results showed students' critical thinking skills were deficient, low, and sufficient categories. However, the post-test results showed students' critical thinking skills were low, sufficient, high, and very high categories. Hence, based on these results, it concluded that the STEM-based E-module development product integrated with project-based learning is considered valid as supporting teaching materials.

Keywords : *E-module, STEM, Project-Based Learning, and Critical Thinking.*