

**PENGEMBANGAN E-MODUL INTERAKTIF
BERBASIS *PROBLEM BASED LEARNING*
PADA TOPIK FOTOSINTESIS SISWA
KELAS IV SEKOLAH DASAR**

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ABSTRAK

Karena dominasi media tradisional juga adanya teknologi digital yang kurang memadai, rendahnya kemahiran pola pikir kritis siswa dalam materi fotosintesis di sekolah dasar masih menjadi persoalan. Namun, transformasi digital di bidang pendidikan menuntut inovasi dalam media pembelajaran interaktif. Untuk mengoptimalkan kemahiran pola pikir kritis siswa kelas empat SD Negeri 2 Sidetapa, proyek ini guna menciptakan media e-modul interaktif berbasis *problem based learning* pada konten fotosintesis. *Research and Development* (R&D) menghingai paradigma perkembangan ADDIE (*Analysis, Design, Development, Implementation, Evaluation*) yakni metodologi pengkajian yang dipakai. Efektivitas dinilai menghingai uji-t, kepraktisan dinilai melalui jawaban guru dan siswa (pengujian individu dan kelompok kecil), dan kelayakan media dinilai melewati uji validitas oleh pakar materi pelajaran juga spesialis media. Menurut temuan, validitas pakar media memperoleh angka rerata 3,85 dan validitas pakar materi memperoleh angka rerata 3,9, keduanya sangat valid. Setiap tahap uji kepraktisan menjabarkan area pembelajaran yang sangat bermanfaat. Setelah menghingai media e-modul interaktif, terjadi peningkatan yang cukup signifikan pada kemahiran pola pikir kritis, menurut hasil analisis efektivitas menghingai uji-t, yang menjabarkan angka signifikan sejumlah 0,000 ($<0,05$). Berlandaskan hasil tersebut, media e-modul interaktif dianggap layak, bermanfaat, dan berhasil sebagai cara kreatif guna menaikkan kemahiran pola pikir kritis siswa dalam konten fotosintesis sekolah dasar.

Kata kunci: e-modul interaktif, *problem based learning*, kemahiran pola pikir kritis, IPAS, model ADDIE.

**THE DEVELOPMENT OF AN INTERACTIVE E-MODULE
BASED ON PROBLEM BASED LEARNING
ON THE TOPIC OF PHOTOSYNTHESIS FOR GRADE
FOUR ELEMENTARY SCHOOL STUDENTS**

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ABSTRACT

Due to the predominance of traditional media and the inadequate use of digital technology, science students' poor critical thinking abilities in photosynthesis material in elementary schools continue to be a problem. However, the digital transformation of education necessitates innovation in interactive learning media. In order to help fourth-grade students at SD Negeri 2 Sidetapa enhance their critical thinking abilities, this project intends to create interactive e-module media based on problem-based learning on photosynthetic content that is valid, useful, and successful. Research and development (R&D) utilizing the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation) is the research methodology employed. Effectiveness is assessed using a t-test, practicality is assessed through teacher and student answers (individual and small group tests), and the viability of the media is assessed through validity tests of material and media specialists. According to the findings, the validity of media experts received a mean of 3.85 with a very valid qualification, whereas the validity of material experts received a mean of 3.9. Every stage of the practicality test revealed a really useful category for learning. After utilizing the interactive e-module, the effectiveness analysis results using a t-test revealed a significance value of 0.000 (<0.05), showing a significant gain in critical thinking abilities. Based on these results, the interactive e-module media is considered feasible, useful, and successful as a creative way to improve the critical thinking skills of elementary school students when studying photosynthesis.

Keywords: *interactive e-modules, problem based learning, critical thinking skills, IPAS, ADDIE model.*