

## ABSTRAK

**Gusti Ayu Dewi Wismayani** (2026). Pengembangan E-modul IPA Berbasis *Predict Observe Explain* Terintegrasi *Socio-Scientific Issues* untuk Meningkatkan Literasi Sains dan Keterampilan Berpikir Kritis Siswa SMP. Tesis. Pendidikan IPA, Program Pascasarjana, Universitas Pendidikan Genesha.

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**Kata kunci:** E-modul IPA, literasi sains, keterampilan berpikir kritis, POE-SSI.

Penelitian ini bertujuan untuk menghasilkan E-modul IPA berbasis *Predict–Observe–Explain* (POE) terintegrasi *Socio-Scientific Issues* (SSI) yang valid, praktis dan efektif untuk meningkatkan literasi sains dan keterampilan berpikir kritis peserta didik SMP. Penelitian ini menggunakan metode *Research and Development* dengan model pengembangan 4D (*Define, Design, Develop, Disseminate*). Subjek uji coba terbatas adalah peserta didik kelas IX di SMP Negeri 1 Kubutambahan. Penelitian ini menggunakan desain *pre-experimental one group pretest–posttest*. Hasil penelitian menunjukkan: (1) e-modul dikemas dengan sintaks model POE dilengkapi dengan SSI, *simulasi Physics Education Technology* (PhET), video, dan kuis interaktif (2) e-modul IPA berbasis POE-SSI dinyatakan sangat valid dengan rata-rata *Koefisien Validitas Gregory* sebesar 1,00 berdasarkan penilaian ahli materi, media, dan desain. (3) E-modul dinilai sangat praktis oleh guru dan peserta didik dengan nilai rata-rata masing-masing 95,8 dan 95,3. (4) E-modul dinyatakan efektif untuk meningkatkan literasi sains dan keterampilan berpikir kritis peserta didik dengan nilai *N-gain* masing-masing sebesar 0,51 dan 0,46 yang berkualifikasi sedang. Berdasarkan hasil penelitian, disimpulkan bahwa e-modul IPA berbasis POE-SSI dinyatakan valid, praktis, dan efektif meningkatkan literasi sains dan keterampilan berpikir kritis peserta didik pada uji coba terbatas.

## ABSTRACT

Gusti Ayu Dewi Wismayani (2026). Development of a Science E-Module Based on Predict–Observe–Explain Integrated with Socio-Scientific Issues to Improve Junior High School Students’ Scientific Literacy and Critical Thinking Skills. Thesis. Science Education, Postgraduate Program, Ganesha University of Education.

This thesis has been approved and examined by Supervisor I: Prof. Dr. Rai Sujanem, M.Si., and Supervisor II: Prof. Dr. Ni Made Pujani, M.Si.

Keywords: critical thinking skills, POE-SSI Science e-module, scientific literacy.

This study aimed to develop an e-module based on Predict–Observe–Explain (POE) integrated with Socio-Scientific Issues (SSI) that is valid, practical, and effective in improving junior high school students’ scientific literacy and critical thinking skills. The research employed a Research and Development method using the 4D development model (Define, Design, Develop, Disseminate). The limited trial subjects were Grade IX students of SMP Negeri 1 Kubutambahan. The study applied a pre-experimental one-group pretest–posttest design. The results of the study indicate that: (1) the e-module was designed based on the POE model syntax and enriched with socio-scientific issues, Physics Education Technology (PhET) simulations, instructional videos, and interactive quizzes; (2) the POE-SSI-based Science e-module was categorized as highly valid, with an average Gregory Validity Coefficient of 1.00 based on evaluations by subject matter, media, and instructional design experts; (3) the e-module was considered highly practical by teachers and students, with average scores of 95.8 and 95.3, respectively; and (4) the e-module was effective in improving students’ scientific literacy and critical thinking skills, with N-gain scores of 0.51 and 0.46, respectively, both categorized as moderate. Based on the findings, it can be concluded that the POE-SSI-based Science e-module is valid, practical, and effective in enhancing students’ scientific literacy and critical thinking skills in a limited trial setting.