

PENGEMBANGAN E-MODUL FISILOGI TUMBUHAN TERINTEGRASI MODEL *INQUIRY PROJECT-BASED LEARNING* (IPJBL) DENGAN KONTEKS *TRI HITA KARANA* UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KRITIS DAN KREATIF MAHASISWA

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ABSTRAK

Transformasi pendidikan tinggi dalam era *volatile, uncertain, complex, ambiguous (VUCA)* menuntut transformasi bahan ajar berbasis digital yang adaptif, interaktif, dan kontekstual. Namun, kenyataannya masih banyak ditemui perkuliahan yang menggunakan modul konvensional, e-modul yang bersifat asinkron, dan materi yang kurang kontekstual. Penelitian *Research dan Development* (R&D) dengan Model ADDIE ini bertujuan untuk menghasilkan E-Modul Fisiologi Tumbuhan terintegrasi *Inquiry Project-Based Learning* (IPjBL) dengan konteks *Tri Hita Karana* (THK) yang memiliki karakter inovatif, valid, praktis, dan efektif. Uji instrumen kemampuan berpikir kritis dan kreatif serta uji praktikalitas penelitian ini dilaksanakan di tiga perguruan tinggi swasta di Bali. Sejumlah 26 mahasiswa terlibat dalam uji praktikalitas dan uji *preliminary effectiveness test* dengan desain pre-eksperimental. Lebih lanjut, 78 mahasiswa terlibat dalam uji efektivitas dengan desain quasi eksperimen. Adapun instrumen utama penelitian yang digunakan dalam penelitian ini yaitu *California Critical Thinking Skills Test* (CCTST) dan *Verbal Torrance Tests of Creative Thinking* (VTTCT). Data uji *preliminary* dalam penelitian ini uji *t paired test*, sedangkan data uji efektivitas dianalisis menggunakan MANCOVA Satu Jalur dengan pengetahuan awal sebagai kovariat. Hasil penelitian menunjukkan bahwa (1) Karakteristik dari e-modul IPjBL yang tidak dimiliki oleh e-modul lainnya yaitu adanya fitur *meet the expert* dan *Project Based Canvas*, (2) Hasil uji validitas ahli mengindikasikan bahwa e-modul yang dikembangkan tergolong dalam kategori dengan validitas sangat tinggi, (3) Rancangan dan konten e-modul yang dikembangkan telah memenuhi aspek praktikalitas karena mengakomodasi kebutuhan pengguna dalam aktivitas perkuliahan, (4) Hasil uji *preliminary* dan uji eksperimental menunjukkan terdapat perbedaan signifikan dalam keterampilan berpikir kritis dan kreatif antara mahasiswa yang menggunakan e-modul IPjBL THK dengan e-modul Inkuiri THK. Disarankan penelitian selanjutnya agar menitikberatkan pada perancangan mekanisme kolaboratif antara dosen dan praktisi serta memperluas ruang lingkup dan variabel penelitian.

Kata Kunci: Pengembangan E-Modul, Model *Inquiry Project-Based Learning* (IPJBL), *Tri Hita Karana*, Keterampilan Berpikir Kritis dan Kreatif Mahasiswa

***DEVELOPMENT OF AN INTEGRATED PLANT PHYSIOLOGY
E-MODUL OF THE INQUIRY PROJECT-BASED LEARNING
(IPJBL) MODEL WITH THE CONTEXT OF TRI HITA KARANA
TO IMPROVE STUDENTS' CRITICAL AND CREATIVE
THINKING SKILLS***

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ABSTRACT

The transformation of higher education in the volatile, uncertain, complex, and ambiguous (VUCA) era demands a shift to digital learning materials that are adaptive, interactive, and contextual. However, in reality, many courses still rely on conventional moduls, asynchronous e-moduls, and materials that lack contextual relevance. This Research and Development (R&D) study using the ADDIE model aims to produce an integrated Plant Physiology E-Modul incorporating Inquiry Project-Based Learning (IPjBL) within the *Tri Hita Karana* (THK) framework, characterized by innovation, validity, practicality, and effectiveness. The testing of critical and creative thinking skills instrumens, as well as the practicality test of this research, was conducted at three private universities in Bali. A total of 26 students participated in the practicality test and preliminary effectiveness test using a pre-experimental design. Furthermore, 78 students participated in the effectiveness test using a quasi-experimental design. The primary research instrumens used in this study were the California Critical Thinking Skills Test (CCTST) and the Verbal Torrance Tests of Creative Thinking (VTTCT). Data from the preliminary tests were analyzed using a paired t-test, while effectiveness test data were analyzed using a one-way MANCOVA with prior knowledge as a kovariate. The results of the study indicate that (1) The characteristics of the IPjBL e-modul that are not found in other e-moduls include the “Meet the Expert” feature and the Project-Based Canvas, (2) The results of the expert validity test indicate that the developed e-modul falls into the category of very high validity, (3) The design and content of the developed e-modul met practicality requirements by accommodating user needs in classroom activities, (4) Results from the pre-experimental and experimental tests showed significant differences in critical and creative thinking skills between students using the IPjBL THK e-modul and the Inquiry THK e-modul. It is recommended that future research focus on designing collaborative mechanisms between lecturers and practitioners and expand the scope and variables of the study.

Keywords: E-Modul Development, Project-Based Learning Inquiry Model (IPJBL), Tri Hita Karana, Students' Critical and Creative Thinking Skills