

**PENGEMBANGAN PERANGKAT PEMBELAJARAN BERBASIS
PROYEK DALAM JARINGAN BERORIENTASI HOTS UNTUK
MENINGKATKAN KETERAMPILAN ABAD KE-21 DAN HASIL
BELAJAR IPA PADA TEMA EKOSISTEM
KELAS V SEKOLAH DASAR**

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ABSTRAK

Tujuan penelitian adalah menghasilkan *prototype* serta mendeskripsikan dan menjelaskan validitas, kepraktisan, dan efektivitas perangkat *PjBL* dalam jaringan berorientasi *HOTS* dalam meningkatkan keterampilan belajar dan berinovasi abad ke-21 atau keterampilan 4C dan hasil belajar IPA peserta didik sekolah dasar. Jenis penelitian adalah penelitian pengembangan dengan model 4D. Data kesesuaian *prototype* dengan kebutuhan dikumpulkan dengan metode wawancara dan penyebaran angket, data validitas perangkat pembelajaran dikumpulkan dengan lembar kuesioner, data kepraktisan perangkat pembelajaran dikumpulkan dengan angket dan lembar pengamatan, dan data efektivitas perangkat pembelajaran berkaitan dengan keterampilan 4C dikumpulkan dengan tes esay (untuk berfikir kritis), lembar observasi (untuk komunikasi, kolaborasi, kreativitas) dan data tentang hasil belajar dikumpulkan dengan tes obyektif. Sebelum instrumen tersebut dipergunakan terlebih dahulu dilakukan validasi instrumen dengan menggunakan formula Gregory. Analisis data menggunakan teknik analisis deskriptif dan inferensial. Hasil penelitian adalah: (1) *Prototype* produk berupa perangkat pembelajaran yaitu RPP, bahan ajar, LKPD, media powerpoint, dan instrumen evaluasi sesuai dengan kebutuhan; (2) Validitas produk hasil pengembangan berada pada kategori sangat valid; (3) Kepraktisan perangkat pembelajaran hasil pengembanaan berada pada kategori praktis; dan (4) Hasil analisis *MANOVA* menunjukkan bahwa perangkat pembelajaran yang dihasilkan efektif untuk meningkatkan keterampilan 4C dan hasil belajar IPA peserta didik.

Kata Kunci: perangkat pembelajaran, PjBL online, HOTS, 4Cs, hasil belajar



**DEVELOPING HOTS-ORIENTED ONLINE PROJECT BASED LEARNING
TOOLS FOR IMPROVING 4C's SKILLS AND SCIENCE LEARNING
OUTCOMES AT ECOSYSTEM LEARNING THEME OF V
-GRADED ELEMENTARY SCHOOL STUDENTS**

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ABSTRACT

The aims of this study were to describe the prototype as well as to describe and to explain validity, practicality, and effectiveness of HOTS-oriented online project-based learning (HOTS-oriented e-PjBL) tools in improving 21st Century learning and innovation skills or 4Cs skills and science learning outcomes of elementary school students. The conducted research type was the 4D model of development research. Data about well-fitness the prototype of HOTS-oriented e-PjBL tools with the needs were collected by interview and questionnaires; meanwhile, the product validity data were collected by questionnaire sheets, data of the developed learning tool practicality by using questionnaires and observation sheets, and their effectiveness data related to 4C's skills by using essay tests (for critical thinking skills), and observation sheets (for communication, collaboration, and creativity skills), as well as the science learning achievement data were collected by objective tests, respectively. Before the instrumentis used, they were validated by using the Gregory formula. The collected data were analyzed by using descriptive and inferential analysis techniques. The research results show that (1) the prototype of HOTS-oriented e-PjBL tools namely, lesson plans, teaching materials, student worksheets, PowerPoint media, and evaluation instruments are well-fit with the needs; (2) the validity of the developed HOTS-oriented e-PjBL was in the very valid category; (3) The practicality of the developed learning tools was in the practical category; and (4) the MANOVA analysis results show that the developed learning tool products are proofed to be effective to the 4Cs skills and students' science learning achievements.

Keywords: *learning tools, PjBL, HOTS, 4Cs, learning outcomes*