

**PENGEMBANGAN PROGRAM PERKULIAHAN PENGETAHUAN
LINGKUNGAN BERTEMA REVITALISASI EKOSISTEM HUTAN SAGU
(PPPL-REHS) DALAM USAHA MENINGKATKAN *KEY COMPETENCIES*
FOR SUSTAINABILITY (KCS) UNTUK BERKONTRIBUTSI PADA
SUSTAINABLE DEVELOPMENT GOALS (SDGs)**



DISERTASI

Untuk memenuhi sebagai syarat untuk memperoleh gelar Doktor
Pendidikan Ilmu Pengetahuan Alam

Abdul Rachman Tiro
NIM. 2113135

**PROGRAM STUDI PENDIDIKAN ILMU PENGETAHUAN ALAM (S3)
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Pengembangan Program Perkuliahan Pengetahuan Lingkungan Bertema Revitalisasi Ekosistem Hutan Sagu (PPPL- REHS) dalam Usaha Meningkatkan *Key Competencies for Sustainability* (KCS) untuk Berkontribusi pada *Sustainable Development Goals* (SDGs)

Oleh
Abdul Rachman Tiro

S.Pd. Universitas Cenderawasih, 2011
M.Pd in Universitas Cenderawasih, 2014

Sebuah Disertasi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Doktor
Pendidikan (Dr.) pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam

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HALAMAN PENGESAHAN

ABDUL RACHMAN TIRO

PENGEMBANGAN PROGRAM PERKULIAHAN PENGETAHUAN
LINGKUNGAN BERTEMA REVITALISASI EKOSISTEM HUTAN SAGU
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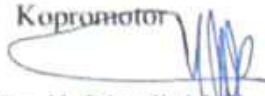
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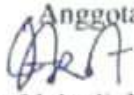
Prof. Hj. RR. Hertien Koosbandiah Surtikanti, M.Sc., ES., Ph.D
NIP : 196104191985032001

Kopromotor



Prof. Dr. H. Riandi, M.Si.
NIP. 196303011988031002

Anggota



Prof. Dr. Nahadi, M.Pd, M.Si
NIP. 197102041997021002

Penguji Internal,



Prof. Dr. Phill. H. Ari Widodo, M.Ed
NIP : 196705271992031001.

Penguji Eksternal,



Prof. Dr. Niken Subekti, S.Si, M.Si
NIP. 197302141999032001

Mengetahui

Ketua Program Studi Pendidikan Ilmu Pengetahuan Alam



Prof. Dr. Phill. H. Ari Widodo, M.Ed
NIP : 196705271992031001.

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Abdul Rachman Tiro
2113135

ABSTRAK

Penelitian ini mengembangkan Program Perkuliahan Pengetahuan Lingkungan bertema Revitalisasi Ekosistem Hutan Sagu (PPPL-REHS) untuk meningkatkan *key competencies for sustainability* (KCS) mahasiswa. Menggunakan model ADDIE dengan pendekatan *mixed methods investigation*, penelitian melibatkan 160 mahasiswa dalam tiga tahap: uji coba terbatas (100 mahasiswa), uji coba mendalam (30 mahasiswa), dan implementasi (30 mahasiswa). Program PPPL-REHS memiliki karakteristik: (1) pembelajaran berbasis proyek terintegrasi *fieldwork* dan *personal digital inquiry* dalam enam tahapan sistematis; (2) pendekatan kontekstual berbasis isu lokal ekosistem hutan sagu; (3) *collaborative learning* dengan masyarakat melalui *participatory action research*; (4) *authentic assessment* terintegrasi; dan (5) *technology-enhanced learning* menggunakan *platform digital*. Kelebihan program meliputi: efektivitas tinggi dengan *effect size Cohen's d* = -1.90 (kategori *large effect*) dan N-gain 0,33 (kategori sedang) yang signifikan secara statistik pada seluruh KCS, pembelajaran bermakna melalui integrasi *seamless* teori-praktik, relevansi kontekstual lokal-global, pengembangan *soft skills*, dan transferabilitas model. Hasil menunjukkan peningkatan signifikan pada kedelapan KCS, dengan skor tertinggi kesadaran diri (78,0) dan berpikir kritis (75,9). Respon mahasiswa positif (rata-rata 70,73, kategori "baik"). Program berkontribusi pada SDGs 2, 4, 13, dan 15. PPPL-REHS terbukti efektif sebagai model pembelajaran inovatif untuk mengembangkan kompetensi keberlanjutan yang dapat diadaptasi berbagai konteks pendidikan tinggi.

.

Kata Kunci : revitalisasi ekosistem hutan sagu, *key competencies for sustainability* , ADDIE terintegrasi, PjBL terintegrasi, pendidikan lingkungan berbasis kearifan lokal.

ABSTRACT

This research develops an Environmental Knowledge Lecture Program themed Sago Forest Ecosystem Revitalization (PPPL-REHS) to enhance students' *key competencies for sustainability* (KCS). Using the ADDIE model with a mixed methods *investigation* approach, the study involved 160 students in three stages: limited trial (100 students), in-depth trial (30 students), and implementation (30 students). The PPPL-REHS program has the following characteristics: (1) *Project-Based Learning* integrated with *fieldwork* and *personal digital inquiry* in six systematic stages; (2) a contextual approach based on local issues of the sago forest ecosystem; (3) collaborative learning with the community through participatory action research; (4) integrated authentic assessment; and (5) technology-enhanced learning using a digital platform. The advantages of the program include: high effectiveness with a Cohen's d effect size = -1.90 (large effect category) and N-gain 0.33 (moderate category) that is statistically significant on all KCS, meaningful learning through seamless integration of theory and practice, local-global contextual relevance, soft skills development, and model transferability. The results show a significant increase in all eight KCS, with the highest scores in self-awareness (78.0) and critical thinking (75.9). Student responses were positive (average 70.73, "good" category). The program contributes to SDGs 2, 4, 13, and 15. PPPL-REHS has proven effective as an innovative learning model for developing sustainability competencies that can be adapted to various higher education contexts.

Keywords: sago forest ecosystem revitalization, *key competencies for sustainability*, integrated ADDIE, integrated PjBL, local wisdom-based environmental education

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