

***FRAMEWORK PENGEMBANGAN MEDIA PEMBELAJARAN DIGITAL
UNTUK Mendukung Pencapaian *GREEN SKILLS*
SISWA VOKASIONAL***

TESIS

Diajukan untuk memenuhi sebagian syarat untuk memperoleh
gelar Magister Pendidikan Teknologi dan Kejuruan



oleh

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**PROGRAM STUDI PENDIDIKAN TEKNOLOGI KEJURUAN
SEKOLAH PASCASARJANA
UNIVERSITAS PENDIDIKAN INDONESIA
2025**

Muhammad Oka Ramadhan, 2025

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KATA PENGANTAR

Assalamu 'alaikum w. w.

Puji syukur Alhamdulillah penulis panjatkan kehadiran Allah SWT atas limpahan rahmat dan karunia-Nya, sehingga penulis dapat menyusun tesis berjudul “*Framework Pengembangan Media Pembelajaran Digital untuk Mendukung Pencapaian Green Skills Siswa Vokasional*” sebagai salah satu syarat menyelesaikan studi Magister di Program Studi Pendidikan Teknologi dan Kejuruan, Universitas Pendidikan Indonesia.

Penelitian ini dilatarbelakangi oleh kebutuhan dunia usaha dan industri yang saat ini tengah bertransisi menuju ekonomi hijau, yang memerlukan keterampilan *green skills*. Penelitian ini bertujuan untuk mengevaluasi tingkat *green skills* siswa SMK bidang keahlian agroteknologi dan agribisnis serta merancang *framework* pengembangan media pembelajaran digital yang mendukung pencapaian keterampilan tersebut. Dengan menggunakan metode kombinasi kuantitatif dan kualitatif, penelitian ini memberikan gambaran yang komprehensif tentang kondisi *green skills* siswa sekaligus solusi berupa desain *framework* pengembangan media pembelajaran digital untuk mendukung pencapaian *green skills* yang dihasilkan melalui *focus group discussion* bersama para ahli dan praktisi.

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Penulis

FRAMEWORK PENGEMBANGAN MEDIA PEMBELAJARAN DIGITAL UNTUK MENDUKUNG PENCAPAIAN *GREEN SKILLS* SISWA VOKASIONAL

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ABSTRAK

Dunia usaha dan industri sedang bertransisi menuju *green economy* yang membutuhkan *green skills* khusus. UNESCO-UNEVOC Strategi 2022-2029 menekankan pentingnya *green skills* untuk ekonomi berkelanjutan. SMK sebagai lembaga pendidikan vokasional penyedia lulusan yang akan masuk pada industri hijau perlu membekali lulusannya dengan *green skills*. Penelitian terdahulu menunjukkan minimnya instrumental input seperti kurikulum, materi, dan media pembelajaran. Penelitian ini bertujuan: (1) Mengevaluasi tingkat *green skills* siswa dengan studi kasus pada siswa SMK bidang keahlian agroteknologi dan agribisnis; (2) Merancang konstruksi struktur framework pengembangan media pembelajaran digital untuk mendukung pencapaian *green skills* siswa. Metode penelitian menggunakan metode kombinasi kualitatif dan kuantitatif. Metode kuantitatif deskriptif digunakan untuk mengevaluasi tingkat *green skills*, sementara metode kualitatif digunakan untuk merancang framework. Data diperoleh dengan teknik purposive sampling selanjutnya dianalisis secara deskriptif serta analisis *RASCH* menggunakan aplikasi Winstep berdasarkan demografi dan geografi (gender, asal wilayah, dan asal bidang keahlian). Temuan penelitian menunjukkan komponen *green skills* yang masih rendah diantaranya komponen kesadaran lingkungan, keterampilan inovasi, dan pengelolaan limbah. Sementara komponen keterampilan adaptasi menunjukkan hasil yang lebih baik namun berkebalikan dengan komponen komunikasi yang tergolong sangat rendah. Penelitian ini berupaya memberikan panduan dengan merancang *framework* pengembangan media pembelajaran digital untuk mendukung pencapaian *green skills*. *Framework* dirancang dengan pendekatan kualitatif menggunakan teknik *focus group discussion* (FGD) bersama ahli pendidikan teknologi dan kejuruan, ahli *green skills*, ahli *greening TVET*, ahli media pembelajaran, dan guru SMK bidang agroteknologi dan agribisnis. NVIVO 15 digunakan untuk menyortir, mengelompokkan, dan menganalisis hasil FGD yang selanjutnya penulis sintesis menjadi *framework* pengembangan media pembelajaran digital bernama GREEN. Penelitian ini memberi gambaran utuh kondisi *green skills* siswa serta berkontribusi signifikan dalam upaya meningkatkan *green skills* dengan menciptakan *framework* pengembangan media pembelajaran digital yang berorientasi *green skills*.

Kata kunci: agribisnis; agroteknologi; *framework*; *green skills*; media pembelajaran digital

FRAMEWORK FOR DIGITAL LEARNING MEDIA DEVELOPMENT TO FOSTER GREEN SKILLS ACQUISITION OF VOCATIONAL STUDENTS

MUHAMMAD OKA RAMADHAN

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ABSTRACT

The business and industrial world is transitioning towards a green economy that requires specific green skills. UNESCO-UNEVOC Strategy 2022-2029 emphasizes the importance of green skills for a sustainable economy. Vocational schools as vocational education institutions that provide graduates who will enter the green industry need to equip their graduates with green skills. Previous research shows the lack of instrumental input such as curriculum, materials, and learning media. This study aims to: (1) Evaluate the level of students' green skills with a case study of vocational school students in the fields of agritechology and agribusiness; (2) Design a digital learning media development framework to foster green skills acquisition for vocational students. The research method uses a combination of qualitative and quantitative methods. Descriptive quantitative methods are used to evaluate the level of green skills, while qualitative methods are used to design the framework. Data obtained using purposive sampling techniques are then analyzed descriptively and RASCH analysis using the Winstep application based on demographics and geography (gender, region of origin, and field of expertise). The research findings show that the green skills components that are still low include environmental awareness, innovation skills, and waste management. Meanwhile, the adaptation skills component shows better results but in contrast to the communication component which is classified as very low. This study attempts to provide guidance by designing a digital learning media development framework to support the achievement of green skills. The framework is designed with a qualitative approach using focus group discussion (FGD) techniques with technology and vocational education experts, green skills experts, TVET greening experts, learning media experts, and vocational high school teachers in the fields of agritechology and agribusiness. NVIVO 15 is used to sort, group, and analyze the results of the FGD which the author then synthesizes into a digital learning media development framework called GREEN. This study provides a complete picture of the condition of students' green skills and contributes significantly to efforts to improve green skills by creating a digital learning media development framework that is oriented towards green skills.

Keywords: *agribusiness; agritechology; digital learning media; framework; green skills*

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3D	Three Dimension
APHP	Agriteknologi Pengolahan Hasil Pertanian
AR	Augmented Reality
ATPH	Agribisnis Tanaman Pangan dan Hortikultura
B3	Bahan Berbahaya dan Beracun
BSKAP	Badan Standar, Kurikulum, dan Asesmen Pendidikan
CAI	Computer Assisted Instruction
CBI	Computer Based Instruction
CEDEFOP	Centre Européen pour le Développement de la Formation (European Centre for the Development of Vocational Training)
DIF	Differential Item Functioning
ESD	Education for Sustainable Development
EY	Ernst & Young Global Limited
FET	Further Education & Training
FGD	Focus Group Discussion
FMIS	Food Management Information System
GE	Green Economy
HOTS	Higher Order Thinking Skills
ICT	Information and Communication Technology
ILO	International Labour Organization
KCD	Kantor Cabang Dinas
KKNI	Kerangka Kualifikasi Nasional Indonesia
LMS	Learning Management System
MNSQ	Outfit Mean Square
MOOCs	Massive Open Online Courses
NVIVO	Non-Versioned Information, Versatile Outcomes
PBL	Problem-based Learning
PjBL	Project-based Learning
PT MEASSIRE CORR	Point Measure Correlation
QS WUR	Quacquarelli Symonds World University Ranking
R&D	Research and Development

RPJMN	Rencana Pembangunan Jangka Menengah Nasional
SDGs	Sustainable Development Goals
SDM	Sumber Daya Manusia
SMK	Sekolah Menengah Kejuruan
SOLAS	Seirbhís Oideachais Leanúnaigh agus Scileanna (Further Education and Skills Service)
TPA	Tempat Pembuangan Akhir
TVET	Technical and Vocational Education and Training
UNEP	United Nations Environment Programme
UNESCO- UNEVOC	United Nations Educational, Scientific and Cultural Organization - UNESCO Vocational Education
VR	Virtual Reality
ZSTD	Outfit Z-Standards

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