



TRAINING MODULE

AI-Based Teaching

Material Development

with Ecological and Intercultural Approaches

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PREFACE & ACKNOWLEDGMENT

The rapid advancement of Artificial Intelligence (AI) and the growing emphasis on sustainability and intercultural understanding have transformed the landscape of global education. Today's educators must possess not only strong pedagogical skills but also the ability to integrate technology, ecological awareness, and cultural diversity into meaningful teaching and learning experiences. Recognizing these challenges and opportunities, this **Training Module – AI-Based Teaching Material Development with Ecological and Intercultural Approaches** has been developed under the Collaborative Community Service Excellence (CCSE) program between Universitas Galuh (Indonesia) and Fatoni University (Thailand).

This module aims to enhance the professional and digital competencies of teachers, enabling them to design innovative, contextually relevant, and inclusive teaching materials supported by AI technologies. The program reflects a shared commitment between the two institutions to advance the Sustainable Development Goals (SDGs), particularly Goal 4: Quality Education and Goal 17: Partnerships for the Goals. Through this collaboration, participants are encouraged to explore the intersection of technology, ecology, and interculturalism—three dimensions that are increasingly vital in 21st-century education.

The training is structured to promote active learning and reflective practice through a blend of theoretical understanding, practical workshops, and mentoring sessions. Participants are guided to create AI-assisted learning materials that integrate ecological perspectives, such as environmental sustainability and conservation, and intercultural dimensions, such as tolerance, inclusion, and mutual respect among diverse learners. These outputs are expected to strengthen the participants' readiness to engage in modern classrooms and contribute to educational transformation both locally and globally.

The Collaborative Community Service Excellence (CCSE) framework serves as the foundation of this initiative, emphasizing synergy between academic institutions and communities in solving real-world challenges. The partnership between Universitas Galuh and Fatoni University demonstrates how cross-border academic cooperation can foster innovation, mutual understanding, and social responsibility. It also provides a platform for knowledge and technology transfer, particularly in developing AI-based tools and digital learning resources tailored to local and regional contexts.

This module would not have been possible without the dedicated efforts and collaboration of many individuals and institutions. The project team extends heartfelt gratitude to the Rector of Universitas Galuh, Prof. Dr. Dadi, M.Si, and the Head of LPPM Universitas Galuh, Dr. Ai Tusi Fatimah, M.Si, for their unwavering institutional support and encouragement. Deep appreciation is also conveyed to Fatoni University for its hospitality, collaboration, and commitment to fostering international educational exchange.

Special thanks are due to the core team members Dr. Romdah Romansyah, M.Si, Dr. Ratnawati, S.Pd., M.Pd, Dr. Asep Amam, M.Pd, Dr. Yeni Wijayanti, S.S., M.Hum, and Assoc. Prof. Dr Rizka Andhika Putra, M.M, and Assoc. Prof. Suraiya Chapakiya for their expertise, dedication, and contribution in developing the training materials, conducting workshops, and mentoring participants. Gratitude is also extended to all pre-service teachers and community partners whose enthusiasm and participation have enriched the program's learning environment.

It is our sincere hope that this module will serve not only as a training resource but also as a catalyst for ongoing collaboration and innovation in education. May it inspire educators, students, and institutions to continue exploring creative ways to harness AI, ecological awareness, and intercultural understanding for building a more sustainable and harmonious global society.

Community Service Team

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EXECUTIVE SUMMARY

This training module, developed under the Collaborative Community Service Excellence (CCSE) program between Universitas Galuh (Indonesia) and Fatoni University (Thailand), aims to enhance the competence of pre-service teachers in integrating Artificial Intelligence (AI), ecological awareness, and intercultural understanding into teaching material development. It provides a structured and experiential framework for teacher education in the digital era, emphasizing sustainability, inclusivity, and cross-cultural collaboration.

The module is designed as a hybrid training and mentoring program composed of three core units and comprehensive evaluation tools. The first unit, *Digital and AI Literacy for Teachers*, introduces participants to AI tools such as ChatGPT, Google AI, and Canva AI, focusing on designing innovative, ethical, and learner-centered teaching materials. The second unit, *Ecological Pedagogy and Sustainability Education*, develops ecological literacy and enables teachers to embed environmental themes and sustainable practices into lesson plans through digital design and simulation. The third unit, *Intercultural Education and Inclusive Pedagogy*, builds intercultural competence by guiding participants to create AI-generated narratives and collaborative learning projects between Indonesian and Thai pre-service teachers.

Supporting these units are three mentoring and evaluation tools: Reflection Sheets, Peer Feedback Forms, and a Digital Performance Rubric that promote self-assessment, collaboration, and continuous professional growth. Together, these components ensure that learning outcomes are aligned with the Education for Sustainable Development (ESD) and UNESCO's global citizenship education framework.

Ultimately, this module empowers future educators to become adaptive, reflective, and globally competent teachers capable of integrating technology, ecology, and cultural inclusivity in their classrooms—preparing them to contribute to sustainable,

innovative, and harmonious education systems across ASEAN and beyond.

UNIT 1 | INTRODUCTION

The global education landscape is evolving rapidly with the integration of Artificial Intelligence (AI) technologies and the growing importance of sustainability and intercultural education. In this context, teacher education programs are expected to transform, preparing future educators not only as facilitators of learning but also as innovators who can bridge digital intelligence with social, cultural, and ecological awareness. The teaching profession now demands a holistic set of competencies—digital fluency, ecological literacy, intercultural sensitivity, and critical thinking—that together enable teachers to guide students toward sustainable and inclusive futures.

This training module, developed under the Collaborative Community Service Excellence (CCSE) initiative between Universitas Galuh (Indonesia) and Fatoni University (Thailand), serves as a structured learning guide to strengthen pre-service teachers' capacity in designing AI-based teaching materials that embody ecological and intercultural approaches. The program is grounded in the principles of global citizenship education, Education for Sustainable Development (ESD), and digital transformation in higher education. Through this training, participants are encouraged to explore how AI can be harnessed to make learning more contextual, adaptive, and responsive to diverse cultural and environmental realities.

A. Program Orientation

The module is designed as a hybrid learning experience that combines theoretical understanding, practical training, and mentoring. It introduces participants to digital and AI tools that support curriculum development while embedding ecological and intercultural perspectives into classroom practices. The training begins with foundational discussions on the philosophy and ethics of AI in education, followed by hands-on sessions where pre-service teachers practice creating AI-enhanced learning resources. It then progresses to deeper engagement with ecological pedagogy, emphasizing the connection between education, sustainability, and environmental stewardship. Finally, the program culminates in intercultural education sessions that help participants cultivate empathy, inclusivity, and cultural awareness in digital teaching environments.

Throughout the program, learning activities emphasize collaboration, reflection, and innovation. Participants engage in peer discussions, cross-institutional group projects, and mentoring sessions facilitated by experts from both partner universities. The approach ensures that learning outcomes are not only conceptual but also practical and applicable to real classroom contexts in Indonesia, Thailand, and beyond.

B. Program Objectives

The main objectives of this training program are to:

1. Equip pre-service teachers with the digital and pedagogical competence to utilize AI in developing innovative teaching materials.
2. Foster ecological literacy by integrating sustainability concepts and environmental values into educational content.
3. Promote intercultural competence through the creation of inclusive, culturally sensitive instructional materials that respect diversity.
4. Strengthen international collaboration between Universitas Galuh and Fatoni University as a model for ASEAN-level academic partnerships.

C. Expected Outcomes

Upon completion of this training, participants are expected to:

1. Produce AI-assisted lesson plans and digital learning modules that integrate ecological and intercultural themes.
2. Demonstrate improved confidence and skill in applying AI tools ethically and effectively in classroom contexts.
3. Exhibit a deep understanding of how ecological sustainability and cultural inclusivity contribute to quality education.
4. Engage in sustained professional collaboration and knowledge exchange between international partners.
5. Contribute to the creation of a Digital Eco-Cultural Learning Tool (DECLT) repository as a long-term resource for educators.

Ultimately, this module aspires to empower pre-service teachers to become change agents—educators who can navigate the complexities of digital transformation while nurturing ecological balance and intercultural harmony in education.

UNIT 2 | LEARNING PROGRAM & COMPETENCY FRAMEWORK

The competency framework for this training module serves as a roadmap for developing the essential digital, ecological, and intercultural competencies of pre-service teachers. It outlines the specific knowledge, skills, and attitudes that participants are expected to acquire through each stage of the program. The framework aligns with international standards for teacher professional development, emphasizing the integration of AI literacy, sustainability education, and intercultural competence as core areas of modern teaching proficiency. The competencies are developed progressively through a four-stage learning and mentoring process (starting from awareness building to applied innovation). This structure ensures that participants not only gain theoretical understanding but also apply these insights through practical, reflective, and collaborative activities.

At the foundation level, participants are introduced to the concepts of AI in education, ecological pedagogy, and intercultural learning. This is followed by skill-based workshops that promote hands-on experience in using AI tools to design inclusive and sustainability-oriented teaching materials. During the mentoring stage, participants receive personalized feedback and guidance from academic mentors from Universitas Galuh and Fatoni University. Finally, the evaluation and sustainability stages focus on reflection, dissemination, and institutional integration of the outcomes.

The overall goal of the competency framework is to produce educators who are digitally capable, ecologically literate, and culturally responsive—teachers who can adapt AI technology for meaningful educational innovation while upholding values of sustainability and diversity.

Table 2.1 Competency Framework

Stage	Focus Area	Main Activities	Core Competencies Developed	Expected Outputs
Stage 1: Orientation & Awareness (Socialization)	Program introduction and contextual understanding	- Introductory workshop on AI, ecology, and intercultural education - Discussion on challenges and global-local education trends - Establishment of collaborative groups	- Awareness of global educational transformation - Understanding the role of AI in sustainability and diversity - Basic intercultural communication	Participant reflection sheets and group orientation reports
Stage 2: Capacity Building (Training Phase)	Skill development in AI-based material design	- Hands-on training using AI tools (ChatGPT, Canva AI, Google AI) - Workshop on eco-pedagogy and	- Digital literacy and AI application in pedagogy - Integration of ecological and cultural content in lesson design	AI-assisted learning modules and eco-cultural lesson prototypes

Stage	Focus Area	Main Activities	Core Competencies Developed	Expected Outputs
		sustainability education - Case study analysis from Indonesia and Thailand	- Ethical use of technology	
Stage 3: Application & Mentoring	Practice and personalized guidance	- Mentoring sessions with lecturers and practitioners - Collaborative creation of AI-based teaching modules - Peer-to-peer mentoring and feedback exchange	- Practical teaching innovation using AI - Collaboration and communication across institutions - Reflective teaching and adaptive design	Final AI-integrated teaching modules and mentor feedback reports
Stage 4: Evaluation & Reflection	Quality assurance and improvement	- Evaluation through rubrics and peer review - Group presentations and self-assessment	- Analytical and evaluative thinking - Continuous improvement and	Evaluation summary and improvement plan

Stage	Focus Area	Main Activities	Core Competencies Developed	Expected Outputs
		- Community and institutional feedback	- professional growth - Research-based reflection	
Stage 5: Sustainability & Dissemination	Long-term impact and institutionalization	- Integration of outputs into DECLT repository - Publication and dissemination of results - Establishment of alumni and partner networks	- Leadership and advocacy for digital-ecological education - Lifelong learning and innovation - Sustainable partnership and knowledge transfer	Online resource repository, articles, and MoA continuation plans

This competency framework ensures a systematic and measurable approach to developing teacher capacity in digital innovation, ecological literacy, and intercultural awareness. It also supports cross-institutional learning, where participants from Indonesia and Thailand can learn from one another's cultural and environmental contexts, strengthening global citizenship values. By the end of the program, participants are not only expected to master the technical aspects of AI-based material development but also to embody the ethical, cultural, and environmental consciousness required of 21st-century educators.

UNIT

3

DIGITAL AND AI LITERACY FOR TEACHERS

A. Introduction

The 21st century has witnessed a dramatic transformation in educational paradigms, driven by the rapid advancement of **Artificial Intelligence (AI)** and digital technologies. In the context of teacher education, digital and AI literacy have emerged as core competencies essential for effective, inclusive, and future-oriented pedagogy. Teachers are no longer mere transmitters of knowledge; they are now expected to be **designers of learning environments** that integrate intelligent technologies to promote critical thinking, creativity, and personalized learning (OECD, 2021). This unit focuses on developing participants' foundational understanding of AI tools, their pedagogical applications, and the ethical considerations that must guide their use in educational contexts.

B. Objectives

The objectives of this unit are threefold:

1. To introduce participants to the concept and practical applications of AI in teaching and learning.
2. To enable pre-service teachers to design AI-assisted lesson plans aligned with context-based and learner-centered pedagogies.
3. To encourage ethical awareness and critical reflection on the implications of AI integration in education.

Through this unit, participants will engage in guided exploration and applied exercises that strengthen both their technological fluency and pedagogical adaptability.

C. Overview of AI in Education

Artificial Intelligence in education refers to the use of computational algorithms and data-driven systems to enhance teaching, learning, and administrative processes. According to Chen et al. (2024), AI-powered systems enable adaptive learning environments, intelligent tutoring systems, automated assessment, and real-time feedback mechanisms that improve learning outcomes and efficiency. For instance, tools like ChatGPT assist teachers in generating instructional texts, prompts, and summaries tailored to students' linguistic levels. Meanwhile, Google AI for Education provides features such as language translation, accessibility support, and predictive analytics to support differentiated instruction.

In addition, creative platforms like Canva AI allow educators to design visually engaging materials – infographics, posters, or digital slides – that integrate both visual literacy and subject content. Such tools not only save time but also enhance teachers' ability to design contextually relevant and culturally sensitive materials (Andrade & Alden-Rivers, 2019). For teachers, understanding how to select and apply these tools is crucial. Rather than replacing human judgment, AI acts as a pedagogical partner that amplifies teachers' creativity, supports data-informed decisions, and encourages personalized learning pathways. As Lee and Hwang (2022) emphasize, the ultimate goal is not technology adoption for its own sake but the meaningful integration of AI into educational practices that promote sustainability, empathy, and social responsibility.

D. Ethical Considerations in AI Use for Education

While AI offers significant pedagogical opportunities, it also introduces ethical, cultural, and privacy-related challenges that must be critically addressed. Key ethical concerns include

data security, algorithmic bias, and the potential dehumanization of learning (OECD, 2021). For instance, AI systems trained on unbalanced datasets can reproduce stereotypes or exclude minority perspectives, undermining the principles of inclusive education (Banks, 2021).

Moreover, the use of AI-generated content raises questions about authenticity, academic integrity, and intellectual ownership. Teachers must develop the capacity to critically assess AI outputs and ensure they align with curricular objectives and local cultural contexts. As Ahmad and Yusuf (2023) point out, teacher educators must guide pre-service teachers to become ethical digital citizens who understand not only how to use AI tools effectively but also when and why to use them responsibly. In multicultural settings such as southern Thailand, where religious and linguistic diversity is significant, ethical AI use also entails cultural sensitivity. Educational materials generated through AI must reflect local values, languages, and intercultural harmony, not impose homogenized global content. This approach supports what Rahman and Abdullah (2022) describe as *contextual digital pedagogy*—an approach that aligns digital innovation with local community identities.

E. Designing AI-Assisted Lesson Plans Using Context-Based Learning

Integrating AI into lesson planning allows teachers to create dynamic, adaptive, and student-centered learning experiences. Context-based learning, rooted in constructivist theory, emphasizes that knowledge is best constructed when learners engage with real-world situations relevant to their cultural and ecological contexts. Through AI applications, teachers can simulate these contexts digitally, facilitating experiential and problem-based learning.

For example, biology or environmental science teachers can use AI-powered simulation tools to model ecosystem dynamics, enabling students to visualize the impact of

deforestation or climate change. Similarly, language educators can employ AI translation and storytelling tools to develop bilingual intercultural narratives that foster cross-cultural understanding (Watson & Flores, 2023). Teachers participating in this training will learn to design lesson plans that incorporate such AI applications while maintaining alignment with curricular standards and learning outcomes. They will practice generating differentiated instructional materials—worksheets, quizzes, multimedia content—using ChatGPT or Canva AI, and critically review these outputs through a reflective and ethical lens.

The process of designing AI-assisted lesson plans also includes peer collaboration and mentorship. Participants will work in mixed groups—combining Indonesian and Thai teacher candidates—to co-create digital materials that reflect shared ecological and intercultural themes. This collaborative element reinforces intercultural competence and highlights the transnational value of digital pedagogy (Alhabsi & Hashim, 2021).

F. Workshop Activities

1. Practice Session Using AI Text/Image Generation Tools:

Participants engage in guided exploration of selected AI platforms to generate content related to their teaching subjects. They experiment with text generation, question design, and visual layout, evaluating the pedagogical relevance and ethical implications of each product.

2. Peer Discussion on AI Ethics and Learning Personalization:

Participants reflect on case studies involving AI misuse or bias in education, followed by structured dialogue on ethical teaching practices. They collaboratively develop short guidelines for ethical AI use in their own teaching contexts.

Through these activities, participants will not only acquire technical skills but also cultivate critical digital literacy—the ability to evaluate, interpret, and apply AI responsibly within diverse educational settings.

As a result, this unit lays the groundwork for more advanced modules on ecological and intercultural education, ensuring that participants' use of technology is guided by both pedagogical excellence and ethical consciousness.

UNIT 4

ECOLOGICAL PEDAGOGY & SUSTAINABILITY EDUCATION

A. Introduction

The integration of ecological pedagogy and sustainability education has become a critical dimension of teacher preparation in the 21st century. As the global community faces mounting environmental challenges—climate change, biodiversity loss, and unsustainable resource consumption—teachers play an essential role in shaping environmentally literate citizens. Ecological pedagogy emphasizes the interconnection between humans and the natural world, encouraging learners to recognize their responsibility in maintaining ecological balance and sustainability (UNESCO, 2021). For pre-service teachers, particularly in regions such as Indonesia and southern Thailand, this approach provides a meaningful framework to contextualize teaching within local environmental realities while aligning with the global agenda of Education for Sustainable Development (ESD).

This unit aims to cultivate participants' ecological literacy, enhance their understanding of sustainability concepts, and equip them with the ability to design AI-assisted educational resources that foster ecological awareness and environmental stewardship. Through theory, case studies, and hands-on practice, pre-service teachers will learn to embed sustainability principles into lesson design and classroom activities.

B. Understanding Ecological Education and Eco-Pedagogy Concepts

Ecological education is rooted in the idea that learning is not confined to human-centered experiences but extends to the relationships between people, environments, and living systems. According to Chankrajang (2020), ecological education in Southeast Asia must address regional challenges such as deforestation, coastal degradation, and the impact of agricultural practices on biodiversity. Teachers must therefore help students connect scientific knowledge with the ethical, cultural, and social dimensions of sustainability.

Eco-pedagogy, as a teaching philosophy, goes beyond environmental awareness—it advocates transformative learning that promotes critical reflection, social justice, and sustainable action (Zhang et al., 2024). Inspired by Freirean critical pedagogy, eco-pedagogy challenges the mechanistic worldview that separates humans from nature and calls for an educational practice that nurtures empathy toward all forms of life. In this framework, the teacher's role is not merely to transmit environmental facts but to facilitate learning experiences that enable students to question, act, and innovate for a sustainable future.

AI technology can reinforce eco-pedagogical goals by offering immersive and interactive simulations that visualize environmental systems and consequences. For example, AI-driven digital maps can show deforestation trends, while predictive models can demonstrate the long-term effects of carbon emissions. Such technologies allow students to perceive environmental problems dynamically, fostering both cognitive understanding and emotional connection to sustainability issues (Lee & Hwang, 2022).

C. Integrating Environmental Themes in Subject-Specific Content

Ecological and sustainability principles are not confined to environmental science alone; they can be integrated across all disciplines. Teachers can weave environmental themes into language arts, mathematics, social studies, and technology education, transforming every subject into a platform for sustainability learning.

1. **In language education**, AI-assisted storytelling tools can help students compose narratives about local ecosystems, indigenous environmental wisdom, or cultural practices that sustain biodiversity. This not only enhances literacy skills but also strengthens cultural identity and environmental ethics.
2. **In mathematics**, students can analyze real-world environmental data—such as pollution levels or rainfall statistics—using AI-supported graphing and visualization tools, thus linking mathematical reasoning with ecological inquiry.
3. **In social studies**, AI simulations can recreate community planning or disaster management scenarios where students explore sustainable decision-making and policy impacts (OECD, 2021).
4. **In art and design**, AI tools such as Canva AI can assist in creating eco-themed digital posters and awareness campaigns that communicate sustainability messages effectively.

The key pedagogical principle is **contextualization**. Ecological pedagogy thrives when environmental learning reflects local conditions. For instance, in southern Thailand, where communities depend on rubber plantations and fisheries, lessons can explore sustainable agriculture and marine conservation. In Indonesia, particularly in Ciamis or West Java, topics such as reforestation, waste management, and water resource protection can be adapted to classroom contexts. As Yodmani (2020) notes, such localized environmental learning

deepens students' sense of belonging and responsibility toward their immediate ecosystems.

D. Case Studies from Indonesia and Thailand on Sustainable Teaching Practices

The unit includes an analysis of two comparative case studies that highlight how ecological and sustainability education can be effectively practiced and digitally supported in ASEAN teacher education contexts.

1. Case Study 1: Integrating Eco-Pedagogy in Indonesian Teacher Education

At Universitas Galuh, a pilot course on *AI-based Environmental Learning Design* was implemented in 2024, combining digital storytelling with ecological content. Pre-service teachers used AI writing tools to generate lesson outlines and Canva AI to produce interactive visuals that illustrated local biodiversity. The learning outcomes showed significant improvement in students' environmental knowledge and digital design skills. Teachers reported that using AI helped them **personalize environmental content**, making it more relevant to students' local realities. This aligns with Zhang et al. (2024), who emphasize that AI-supported visual learning enhances comprehension of complex sustainability issues.

2. Case Study 2: Sustainability Education in Southern Thailand

At Fatoni University, the Faculty of Education collaborated with local schools to develop community-based projects on waste management and energy conservation. Pre-service teachers used Google AI applications to analyze waste reduction patterns and create sustainability campaigns in bilingual formats—Thai and Bahasa Indonesia. According to Chankrajang (2020), this initiative bridged intercultural collaboration while promoting environmental stewardship. The students reported increased confidence in using digital tools for ecological education and improved intercultural communication skills. Both cases underscore the synergy

between technology, ecology, and culture. When sustainability education is digitally mediated and contextually grounded, it becomes a transformative force for both teachers and learners.

E. Workshop Activities

The practical component of this unit enables participants to translate theoretical understanding into actionable classroom designs through two structured workshops:

1. Designing Eco-Themed Digital Modules Using AI Tools

Participants will work collaboratively to design AI-assisted digital learning modules that promote environmental awareness. Using platforms such as ChatGPT, Google AI, and Canva AI, they will create teaching materials on topics like renewable energy, waste management, and biodiversity. The process involves:

- a. Selecting a sustainability theme aligned with their subject area;
- b. Generating text-based and visual content using AI tools;
- c. Incorporating interactive components, such as quizzes or reflection prompts;
- d. Embedding local ecological examples from Indonesia and Thailand.

Participants will receive mentorship from facilitators who provide feedback on the accuracy, creativity, and cultural appropriateness of their materials. The goal is to demonstrate that **AI can enhance ecological learning**, not by replacing teachers, but by amplifying their ability to design engaging, evidence-based, and locally meaningful resources (Ahmad & Yusuf, 2023).

2. Simulations on Ecological Issues Using Digital Platforms

In the second workshop, participants will engage in **AI-based ecological simulations** that model environmental systems. For instance, using Google Earth and AI-driven environmental simulators, they can visualize how urbanization affects local ecosystems or how community

actions can mitigate carbon emissions. Participants will experiment with data manipulation, observe outcomes, and design follow-up lessons that encourage students to take real-world actions—such as school recycling programs or energy-saving campaigns.

The simulation exercise also encourages **collaborative inquiry** across borders: mixed groups of Indonesian and Thai pre-service teachers will co-analyze a shared environmental issue, such as coastal erosion or plastic waste. This cross-cultural collaboration promotes not only digital competence but also **global ecological consciousness**—a sense of shared responsibility for the planet (Banks, 2021).

F. Conclusion

By the end of this unit, participants will have gained both conceptual understanding and practical experience in designing and implementing eco-pedagogical learning resources supported by AI. They will recognize that ecological education is not an isolated discipline but an interdisciplinary framework that enriches all areas of teaching. Moreover, they will understand that sustainability education is fundamentally transformative, aiming to cultivate learners who think critically, act responsibly, and care deeply for their communities and environments.

Through continued mentoring and reflection, pre-service teachers will be encouraged to adapt these eco-pedagogical practices within their own cultural and ecological contexts—bridging local wisdom with global sustainability goals.

UNIT

5

INTERCULTURAL EDUCATION AND INCLUSIVE PEDAGOGY

A. Introduction

In an era marked by global interconnectedness and rapid technological advancement, the ability to engage respectfully and effectively with cultural diversity has become an essential teaching competence. **Intercultural education** seeks to foster mutual understanding, empathy, and collaboration among learners from diverse cultural, linguistic, and religious backgrounds. Meanwhile, inclusive pedagogy ensures that education systems respond to the varied needs of all learners, regardless of identity, ability, or social status. When combined with digital and AI-based learning approaches, these pedagogies can transform classrooms into dynamic spaces for intercultural dialogue and inclusive participation (Banks, 2021).

This unit aims to strengthen pre-service teachers' capacity to integrate intercultural and inclusive principles into their teaching practices using digital and AI-assisted tools. Participants will learn how to create learning materials that reflect cultural diversity, promote inclusion, and support cross-cultural understanding between Indonesian and Thai students. The activities in this unit are designed to build both conceptual understanding and practical application through collaborative design, critical reflection, and digital exchange.

B. Concepts of Intercultural Education and Inclusive Pedagogy

Intercultural education is not limited to teaching about different cultures; it involves creating learning environments that value diversity as a source of enrichment and collective growth. According to Andrade and Alden-Rivers (2019), intercultural competence includes three key dimensions: knowledge (understanding cultural systems and perspectives), skills (communicating and collaborating across cultures), and attitudes (openness, respect, and empathy). For teachers, intercultural competence entails recognizing how cultural norms, communication styles, and learning preferences influence classroom dynamics and adapting their instruction accordingly.

Inclusive pedagogy, on the other hand, promotes equality of access, participation, and achievement. It challenges exclusionary practices and embraces diversity as a pedagogical resource. Inclusive educators employ differentiated instruction, universal design for learning (UDL), and culturally responsive teaching strategies to ensure that every student can succeed. As Ahmad and Yusuf (2023) highlight, digital tools—including AI—can support inclusivity by providing adaptive learning experiences, translation features, and accessibility options for students with different abilities or linguistic backgrounds.

Integrating both perspectives allows pre-service teachers to move beyond superficial multicultural celebrations toward **transformative teaching** that fosters critical awareness, intercultural dialogue, and social justice. For instance, when AI is used thoughtfully, it can become a bridge across languages, cultures, and worldviews—an enabler of inclusivity rather than a technological divide.

C. Creating AI-Generated Intercultural Narratives and Media Content

AI tools offer powerful opportunities to design and disseminate intercultural learning materials that represent diverse voices and perspectives. Using platforms such as ChatGPT, Canva AI, or Google AI, teachers can co-create

narratives, dialogues, and digital media that illustrate real-world intercultural encounters. For example, participants can use AI-assisted storytelling to generate bilingual stories featuring characters from Indonesian and Thai cultures who navigate ecological or social issues together. This activity allows pre-service teachers to weave cultural values—such as cooperation, respect, and harmony—into learning materials while practicing linguistic and narrative creativity. In line with Chen et al. (2024), AI-supported collaboration helps pre-service teachers develop *context-aware educational resources* that resonate with local realities while maintaining global relevance.

Visual and media design tools can also support intercultural communication through inclusive representation. Teachers can create posters, infographics, or short videos using Canva AI that highlight shared Southeast Asian heritage, traditional ecological knowledge, or examples of intercultural cooperation. Such digital resources encourage students to appreciate both cultural uniqueness and common humanity. However, educators must remain critical and responsible when using AI-generated content. As OECD (2021) notes, algorithms can unintentionally reproduce cultural bias if data inputs are unbalanced. Therefore, this unit emphasizes critical digital literacy, guiding participants to evaluate AI outputs for accuracy, inclusivity, and cultural sensitivity before using them in classrooms.

To deepen reflection, participants will analyze examples of intercultural media and discuss how visual symbols, language, and narratives shape perceptions of cultural identity. They will then revise their own AI-created materials to ensure that they promote understanding, not stereotypes. This reflective process fosters what Banks (2021) calls “civic multicultural competence”—the ability to use education as a platform for peaceful coexistence and democratic participation.

D. Strategies for Cross-Cultural Collaboration and Digital Dialogue

Cross-cultural collaboration is central to developing authentic intercultural competence. In this unit, participants from Universitas Galuh (Indonesia) and Fatoni University (Thailand) will engage in structured intercultural exchanges using digital platforms. This collaboration models the principles of digital intercultural pedagogy, where learning occurs through sustained communication across borders and cultures (Watson & Flores, 2023).

Key strategies for effective digital collaboration include:

1. **Collaborative Project-Based Learning (PjBL):** Participants work in mixed cultural teams to co-design AI-enhanced learning materials on themes such as “Cultural Harmony through Ecology” or “Technology for Peace Education.” Each team integrates perspectives from both cultural contexts, ensuring inclusivity and shared ownership of learning products.
2. **Online Dialogue and Reflection:** Students participate in asynchronous and live discussions using online forums, learning management systems, or virtual classrooms. These dialogues encourage participants to share cultural practices, classroom experiences, and challenges in promoting inclusion. Facilitators guide them using **intercultural dialogue principles**—active listening, empathy, and non-judgmental inquiry (Andrade & Alden-Rivers, 2019).
3. **Peer Mentoring:** Mentoring pairs are formed between Indonesian and Thai pre-service teachers to exchange feedback on lesson design and cultural representation. This peer mentoring fosters mutual respect and provides a platform for professional collaboration beyond the training period.
4. **Reflective Journaling:** Participants document their intercultural learning journey, focusing on insights gained from collaboration, challenges in communication, and personal growth in empathy and tolerance. Reflection

journals will later serve as qualitative data for evaluation and continuous improvement of intercultural programs.

Such digital collaborations mirror the ASEAN vision of a harmonious regional community based on cultural understanding and shared development. They also strengthen the cross-institutional partnership between Universitas Galuh and Fatoni University, demonstrating how technology can sustain meaningful international engagement even across geographical distances (Alhabsi & Hashim, 2021).

E. Workshop Activities

1. Group Project: Design Intercultural Learning Content with AI Tools

In this activity, participants collaborate in culturally mixed groups to design an **intercultural learning unit** using AI tools. They begin by identifying a cultural or social issue – such as food diversity, festivals, environmental values, or social inclusion – that resonates with both Indonesian and Thai contexts. The group then uses ChatGPT to draft content, Canva AI to design visuals, and translation tools to ensure bilingual presentation.

Facilitators will guide participants in reviewing their content for **cultural sensitivity, inclusivity, and educational relevance**. The final product may take the form of a digital storybook, interactive slideshow, or educational video. This project strengthens teamwork, creativity, and cross-cultural communication while demonstrating the pedagogical potential of AI for intercultural education.

2. Online Forum Exchange Between Indonesian and Thai Pre-Service Teachers

The second workshop component involves an online exchange program where participants engage in structured discussions through forums, video conferences, or collaborative documents. Each group shares their intercultural project, explains the cultural elements

embedded in their design, and reflects on the experience of collaboration.

Discussion topics may include: (1) How do cultural values influence teaching and learning?, (2) What are the similarities and differences in ecological or educational beliefs between Indonesia and Thailand?, (3) How can AI support intercultural dialogue in diverse classrooms?. Facilitators moderate the discussions to ensure inclusive participation and respectful communication. This activity provides authentic experience in digital intercultural dialogue, fostering empathy and cross-border professional relationships that extend beyond the duration of the program.

F. Conclusion

By the end of this unit, participants will have developed a practical understanding of how to integrate intercultural education and inclusive pedagogy into AI-assisted teaching practices. They will not only have produced tangible intercultural learning materials but also cultivated the interpersonal and reflective skills needed to foster inclusive classrooms in multicultural societies. More importantly, the collaboration between Universitas Galuh and Fatoni University serves as a living example of the intercultural principles being taught—mutual respect, knowledge exchange, and co-creation across cultures. As Watson and Flores (2023) emphasize, such international mentoring and collaboration are crucial in preparing globally competent teachers capable of bridging cultural divides and using digital technology for peace, inclusion, and sustainability.

UNIT 6

MENTORING AND EVALUATION TOOLS

To ensure that the learning process is comprehensive, reflective, and measurable, this program employs three main evaluation tools: Reflection Sheets, Peer Feedback Forms, **and** Digital Performance Rubrics. These tools support formative and summative assessment during the training and mentoring phases, aligning with the CCSE program's outcomes. Each instrument is designed using **instructional design principles** to promote self-awareness, collaboration, and accountability among participants.

A. Reflection Sheet

Instructional Design Purpose: The reflection sheet serves as a metacognitive tool that encourages participants to think critically about their learning experiences throughout the training and mentoring sessions. It aligns with the experiential learning model (Kolb, 1984), which emphasizes reflection as an essential process in transforming experience into knowledge. The reflection sheet is completed after each major activity—training session, mentoring meeting, and workshop—to help participants analyze what they learned, what challenges they encountered, and how they plan to apply new knowledge in classroom contexts.

Structure and Content: Each reflection sheet consists of four guiding prompts:

1. **Description:** What did you do during this unit?
2. **Analysis:** What new insights or skills did you gain?

3. **Connection:** How does this learning relate to ecological and intercultural teaching practices?
4. **Action Plan:** How will you apply this learning in your teaching or material development?

Use and Outcome: Mentors will review participants' reflections to monitor growth in digital, ecological, and intercultural competencies. The tool also helps identify areas needing further mentoring. Reflection sheets promote self-directed learning and ensure participants internalize the connection between AI-based pedagogy, sustainability, and inclusivity—core goals of this module.

B. Peer Feedback Form

Instructional Design Purpose: The peer feedback form is designed following social constructivist principles, emphasizing that learning occurs through interaction, dialogue, and collaboration. It encourages participants to evaluate one another's work critically but constructively, fostering mutual learning and accountability. Peer assessment also helps participants recognize quality indicators of effective teaching modules and inclusive educational design.

Structure and Content: The feedback form includes a mix of rating scales and open-ended questions, focusing on three criteria:

1. **Clarity and Relevance:** Is the content aligned with learning objectives and appropriate for the target audience?
2. **Innovation and Creativity:** Does the module effectively use AI tools to enhance learning and engagement?
3. **Ecological and Intercultural Integration:** How well does the material reflect sustainability and inclusivity principles?

A section for "Suggestions for Improvement" allows peers to provide actionable recommendations for refinement.

Use and Outcome: Participants exchange their AI-based teaching modules with peers from different cultural backgrounds (Indonesia and Thailand) to receive diverse perspectives. This cross-review process reinforces intercultural

dialogue and collective problem-solving. Mentors will facilitate a debriefing session where students reflect on feedback received and revise their work accordingly. The form thus supports iterative learning, ensuring quality improvement and deeper intercultural understanding.

C. Digital Performance Rubric

Instructional Design Purpose: The digital performance rubric is the core summative evaluation tool for assessing participants' final outputs—AI-based teaching modules and intercultural learning designs. It follows the Backward Design framework (Wiggins & McTighe, 2005), aligning evaluation criteria with intended learning outcomes. The rubric ensures objectivity, transparency, and consistency in assessing the multidimensional competencies targeted by the program.

Structure and Indicators: The rubric consists of four primary indicators rated on a four-point scale (Excellent–Good–Fair–Needs Improvement):

1. **Technical Quality:** Effective and ethical use of AI tools; accuracy, clarity, and accessibility of digital materials.
2. **Pedagogical Design:** Alignment with learning outcomes, learner engagement, and contextual relevance.
3. **Ecological and Intercultural Integration:** Representation of sustainability themes, cultural inclusivity, and local wisdom.
4. **Collaboration and Reflection:** Evidence of teamwork, mentoring participation, and critical reflection throughout the project.

Use and Outcome: Mentors will apply the rubric during the final evaluation stage, complemented by peer and self-assessment. The digital rubric will be distributed via shared online forms (e.g., Google Sheets or Moodle). This method allows real-time scoring and feedback, creating a transparent, data-driven evaluation process. The rubric ensures that participants not only produce creative outputs but also demonstrate authentic understanding of AI-supported, eco-intercultural pedagogy.

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APPENDIX

Appendix A: Reflection Sheet

1. Participant Information

Name : _____
Institution/Program: _____
Session Title : _____
Date : _____
Mentor's Name : _____

2. Purpose of the Reflection Sheet

This reflection sheet is designed to help participants engage in *critical self-reflection* after each learning or mentoring activity. Reflection encourages deeper understanding, connects theory with practice, and supports continuous professional growth in AI integration, ecological literacy, and intercultural competence. Participants are encouraged to write freely and honestly. There are no right or wrong answers – the aim is to document your thinking, growth, and insights throughout the training process.

3. Part I: Learning Description (What happened?)

- Briefly describe what activities you participated in during this session.
- What tools or resources did you use (e.g., AI platforms, digital materials, collaborative discussions)?
- What were your main responsibilities or tasks?

Response:

4. Part II: Key Insights and Learning (What did you learn?)

- What new knowledge or skills did you gain from this session?
- How has this session changed your understanding of teaching with AI or sustainability education?

c. What challenges did you face while completing the activity?

Response:

5. Part III: Ecological and Intercultural Connection (Why is it important?)

- How does this learning relate to ecological awareness or intercultural understanding?
- What specific aspects of ecology or culture did you integrate or notice in your work?
- How might these insights improve your teaching practice in diverse or multicultural classrooms?

Response:

6. Part IV: Action Plan (What will you do next?)

- What actions will you take to apply this knowledge in your future teaching or learning material development?
- What kind of support or mentoring do you need to improve further?
- How can AI tools help you sustain your ecological and intercultural teaching practice?

Response:

7. Part V: Reflection Summary (Personal Evaluation)

- What was your most meaningful takeaway from this session?
- Rate your confidence level after completing this session (circle one)

Response:

Appendix B: Peer Feedback Form

1. Participant Information

Reviewer's Name:

Institution:

Project/Module Title Reviewed:

Creator(s):

Date of Review:

2. Purpose of the Feedback Form

This form aims to promote collaborative learning and peer evaluation by allowing participants to review and provide constructive feedback on one another's AI-based teaching modules. Peer assessment encourages critical thinking, intercultural understanding, and mutual growth. Feedback should be respectful, specific, and solution-oriented, helping peers refine their teaching designs in line with AI integration, ecological pedagogy, and inclusivity principles.

3. Part I: Evaluation Criteria

Please rate each aspect of your peer’s work using the following scale:

5 = Excellent | 4 = Good | 3 = Fair | 2 = Needs Improvement | 1 = Poor

Criteria	Description	Score (1-5)	Comments / Suggestions
1. Content Relevance and Clarity	The teaching module aligns with stated objectives, learning outcomes, and target audience needs.		
2. Use of AI Tools and Innovation	AI applications (e.g., ChatGPT, Canva AI, Google AI) are used effectively and creatively to enhance learning.		
3. Ecological Integration	Environmental and sustainability themes are meaningfully incorporated into the content or activities.		
4. Intercultural Sensitivity and Inclusivity	The module demonstrates awareness and respect for cultural diversity; promotes inclusion.		
5. Pedagogical Design and Engagement	Lesson design promotes active learning, reflection, and student engagement.		
Total Score (out of 35)			
Average Score			

4. Part II: Open-Ended Feedback

- a. What aspects of the module did you find most effective or inspiring?

- b. What areas could be improved for greater clarity, creativity, or inclusivity?

- c. How effectively did the AI tools enhance the ecological or intercultural learning experience?

- d. What new ideas or approaches would you recommend to strengthen this module?

5. Part III: Reflection on Peer Collaboration

- a. How did providing feedback help you reflect on your own learning design practices?

- b. What insights did you gain from reviewing materials from another cultural or educational context?
