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AI Training for Developing English Teaching Materials for Non-EFL Teachers at SMA Negeri 5 Kepulauan Aru

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ABSTRACT

Equitable access to quality English Language Teaching (ELT) in remote, outermost, and underdeveloped (3T) island regions remains constrained by geographical isolation, severe textbook shortages, and an acute deficit of educators holding linear academic degrees in English education At SMA Negeri 5 Kepulauan Aru in Kabalsiang Benjuring Village, English instruction is conducted by non-EFL teachers facing pedagogical and instructional design barriers. This community service initiative, conducted under the Program Dosen Mengabdi scheme, aimed to enhance the pedagogical and digital competencies of non-EFL teachers in independently designing communicative, contextualized English teaching materials using generative Artificial Intelligence (AI). Adopting a four-stage participatory methodology—comprising preparation and diagnostic needs assessment, socialization on educational AI ethics, hands-on prompt engineering workshops, and sustained mentoring—three generative AI platforms (ChatGPT, Gemini, and NotebookLM) were implemented within a teacher-led, human-centered workflow. The program successfully enabled participating teachers to produce localized instructional modules, exemplified by Chapter 1: "Talking About Myself (Me, My Family, My Village and My Island)", which integrates the coastal environment, maritime culture, and daily life of Aru students. The training demonstrated measurable improvements in teachers' conceptual AI literacy, prompt formulation skills, and pedagogical autonomy, establishing an adaptable, sustainable model for technology-assisted instructional design in remote archipelagic schools

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1. INTRODUCTION

Equitable access to quality education remains a fundamental challenge in Indonesia's national education system, particularly in remote and Underdeveloped, Frontier, and Outermost (3T) regions.

Isolated geographical conditions frequently limit educators' access to modern learning resources, instructional media, and regular professional development programs. In the context of English Language Teaching (ELT), this challenge is further compounded by the limited availability of teachers with formal, linear academic qualifications in English Language Education (EFL). Consequently, English instruction in secondary education is frequently assigned to non-EFL teachers who face constraints in specialized language pedagogy and subject-matter mastery.

This situation directly affects the target partner of this community service activity, SMA Negeri 5 Kepulauan Aru, located in Kabalsiang Benjuring (Kaben) Village, East North Aru Batuley District, Aru Islands Regency, Maluku Province. Geographically, the school is situated approximately 66.44 km from the PSDKU Pattimura University campus in Dobo. Access to the partner location requires a time-consuming sea transit followed by walking across challenging terrain. This geographical isolation severely restricts teachers' opportunities to participate in professional development training. Furthermore, the school faces a scarcity of English textbooks and instructional materials relevant to the daily lives and local wisdom of the island community. This issue aligns with findings by Pramesty et al. (2022) and recent reviews (Candrawati & Purbani, 2025; Herdiyanti et al., 2025), which emphasize that rural and 3T ELT continues to struggle with facility constraints, misaligned teacher educational backgrounds, and a lack of curriculum contextualization.

Driven by rapid technological advancements, the utilization of generative Artificial Intelligence (AI) platforms, such as ChatGPT, Gemini, and NotebookL, offers significant potential to bridge educational gaps and assist teachers in flexibly designing instructional materials. Systematic reviews by Syairofi et al. (2025) and Ebrahimi et al. (2025) demonstrate that AI tools effectively support lesson planning, material development, vocabulary enhancement, language feedback, and pedagogical innovation. Other studies on AI implementation in ESL/EFL education also highlight practical benefits for teacher productivity and student learning (Crompton et al., 2024; Lo et al., 2024). Nevertheless, integrating AI into education also presents challenges, such as potential factual inaccuracies, linguistic anomalies, and risks of over-reliance. Therefore, AI implementation must adhere to a human-centred approach as recommended by UNESCO and recent scholarly literature (Kasneci et al., 2023; Miao & Cukurova, 2024; Miao & Holmes, 2023; Tlili et al., 2023). In this approach, AI functions as a supporting assistant, while teachers retain full authority as directors of learning objectives, linguistic accuracy evaluators, and cultural context arbiters.

To address these concrete challenges, the community service team from the English Education Study Program at PSDKU Pattimura University conducted a training and mentoring program on the utilization of generative AI platforms for non-EFL teachers at SMA Negeri 5 Kepulauan Aru. This program was specifically tailored to address three core objectives: 1. Enhancing the pedagogical and digital competence of non-EFL teachers in independently designing interactive and structured language learning materials using ChatGPT, Gemini, and NotebookLM; 2. Overcoming the scarcity of diverse and contextual English instructional materials based on the coastal environment and local wisdom of the Aru Islands; and 3. Establishing a sustainable, teacher-directed workflow that fosters instructional autonomy in low-access areas.

2. METHODS

This community service project was conducted collaboratively with non-EFL secondary school teachers at SMA Negeri 5 Kepulauan Aru in September 2026. The implementation followed a structured four-stage participatory methodology designed to foster genuine technology transfer, hands-on competence, and long-term sustainability.

2.1 Stage 1: Preparation and Diagnostic Needs Assessment

The preparatory phase commenced with formal inter-institutional coordination between the PSDKU Pattimura University team and the school leadership of SMA Negeri 5 Kepulauan Aru, led by the Principal, Sibrandus B. Elsoin, S.Sos., formalized through a partnership cooperation agreement. A comprehensive diagnostic assessment was conducted through field observations and semi-structured

interviews with school administrators and teachers. This assessment evaluated teachers' subject-matter hurdles, existing teaching resources, and baseline technological literacy. The findings confirmed that the primary challenges included difficulty in structuring authentic communicative exercises, formulating level-appropriate reading passages, and finding materials reflecting island life. Based on these findings, the team prepared customized training modules, established digital accounts, verified mobile internet connectivity, and configured workstations.

2.2 Stage 2: Socialization and Educational Ethics

The second stage engaged non-EFL secondary school teachers at SMA Negeri 5 Kepulauan Aru in Kabalsiang Benjuring Village in an intensive orientation on the conceptual foundations and educational potential of Artificial Intelligence. Facilitators introduced three distinct platforms: ChatGPT, Gemini, and NotebookLM, outlining their unique functions and strengths. In accordance with UNESCO's human-centred AI framework, the orientation placed heavy emphasis on ethical usage and critical digital literacy. Teachers were taught to recognize AI hallucinations and factual limitations, internalizing the principle that generative AI serves as an assistant rather than a replacement for teacher judgment. The session also introduced foundational prompt engineering principles, including assigning expert personas, specifying student proficiency levels, setting strict topic boundaries, and defining output formatting.

2.3 Stage 3: Hands-on Training and Material Prototyping

The third stage focused on experiential, hands-on practice. Facilitators provided live demonstrations of prompt construction before guiding participants through iterative prompt engineering exercises on personal laptops and computer stations. Teachers worked individually and in collaborative pairs to generate essential instructional components:

- Introductory narrative and descriptive reading passages;
- Contextual dialogues modelling everyday conversational exchanges;
- Thematic vocabulary lists with simple definitions and contextual sentences;
- Comprehension quizzes, fill-in-the-blank drills, and interactive speaking tasks.

A mandatory condition of the workshop required participants to embed local contextual themes from Kabalsiang Benjuring Village and the Aru archipelago—such as coastal ecology, wooden boats, traditional fishing practices, and village community customs—directly into every generated artifact.

2.4 Stage 4: Mentoring, Material Verification, and Sustainability

Following the drafting phase, participants engaged in a systematic review and revision process guided by university lecturers and student assistants. Teachers evaluated all AI-generated texts against four core criteria: linguistic correctness, instructional clarity, developmental appropriateness, and cultural authenticity. Refined materials were compiled into standardized print-ready (A4/F4) and digital formats for immediate classroom deployment. To guarantee project sustainability, the team formed an ongoing communication and consultation channel linking partner teachers with English lecturers at PSDKU Pattimura University for continuous prompt sharing, pedagogical troubleshooting, and material refinement.

3. FINDINGS AND DISCUSSION

3.1 Technological Specifications and Functional Roles of the AI Platforms

The community service project deployed a targeted multi-platform architecture consisting of ChatGPT, Gemini, and NotebookLM. Each system was utilized for specific instructional development tasks aligned with its architectural capabilities. The technological attributes and instructional functions of each platform are summarized in Table 1.

Table 1. Specification and Pedagogical Application of Deployed AI Platforms.

Technology	Platform Specifications	Primary Instructional Functions	Output Characteristics
ChatGPT	Large Language Model (OpenAI); conversational web/mobile interface; prompt-driven generation.	Developing reading passages, conversational dialogues, thematic vocabulary lists, grammar exercises, and comprehension quizzes.	Highly coherent, natural language output; adaptable to specific grade-level and stylistic constraints.
Gemini	Multimodal Generative AI (Google); high-speed web interface; real-time web processing capabilities.	Generating alternative instructional ideas, creative communicative tasks, role-play scenarios, and instructional variations.	Diverse pedagogical suggestions, divergent instructional activities, and rapid alternative phrasing.
NotebookLM	Source-grounded language model (Google); document-anchored synthesis based on user-uploaded files.	Synthesizing national curriculum documents, summarizing official syllabi, extracting learning outcomes, and organizing study notes.	Strictly grounded in uploaded school curricula; free from external hallucinations; highly faithful to reference texts.

The synthesis of these three platforms established a complementary ecosystem. ChatGPT provided the core linguistic texts; Gemini contributed varied activity designs; and NotebookLM anchored development firmly within national curriculum parameters.

3.2 The Six Stages of Human-Centered Implementation Workflow

To maintain educational quality and prevent passive reliance on automated outputs, the project established a six-stage operational workflow. This framework guarantees that the teacher remains the primary director and validator of all instructional content. The operational workflow progresses through the following sequential stages:

- Needs Identification: The teacher identifies specific learner difficulties, baseline language proficiencies, and required communicative competences.
- Formulation of Objectives: The teacher establishes explicit learning outcomes aligned with the curriculum, such as self-introduction or describing family relations.
- Local Context Integration: The teacher selects authentic socio-cultural and physical elements of Aru Island life to serve as the background context for the lesson.
- Targeted Prompt Engineering: The teacher writes clear, multi-layered instructions specifying the persona, target grade level, vocabulary scope, and contextual parameters for the AI.
- AI Drafting Phase: The selected AI platform processes the prompt and outputs initial draft texts, dialogues, or exercise sets within seconds.
- Teacher-Led Review and Revision: The teacher critically evaluates the raw output, correcting unnatural phrasing, verifying cultural appropriateness, adjusting exercise difficulty, and preparing the final layout.

This workflow ensures that pedagogical intent precedes digital generation and that critical human judgment completes the design cycle.

3.3 Concrete Instructional Products and Contextualized Curriculum Artifacts

A primary tangible result of the training was the independent production of authentic, localized instructional materials by the participating teachers. The prominent product developed during the

workshop was a comprehensive introductory unit entitled: "Chapter 1: Talking About Myself (Me, My Family, My Village and My Island)".

Prior to this intervention, available textbooks relied on self-introduction dialogues situated in urban shopping malls, modern airports, or metropolitan train stations (as found in the official Grade X English textbook for SMA/MA/SMK/MAK, 2013 Curriculum, Revised Edition 2017, published by the Ministry of Education and Culture and authored by Utami Widiati, Zuliati Rohmah, and Furaidah) settings disconnected from the lived realities of students in Kabalsiang Benjuring. Through guided prompt engineering in ChatGPT, teachers transformed this introductory chapter into a culturally grounded learning unit. The finalized module, formatted for both classrooms print distribution and digital archiving, integrated the following components:

- Descriptive Reading Passages: Narratives depicting daily life in Kabalsiang Benjuring, highlighting coastal shorelines, family livelihood, traditional fishing boats, and village routines.
- Contextual Dialogues: Conversational exchanges between high school students introducing themselves, describing their family members, discussing their villages, and sharing their future aspirations.
- Thematic Vocabulary Banks: High-frequency vocabulary paired with contextual explanations focusing on island and maritime environments, including terms such as wooden boat, island, coastal, fisherman, mangrove, and tides.
- Grammar in Context: Structured pronoun exercises (personal, possessive, and objective pronouns) embedded directly within sentences describing village community life.
- Interactive Speaking Activities: Paired simulation drills where students interview classmates about their home villages, family origins, and daily activities.

The structure and instructional design of the localized teaching module are detailed in Table 2.

Table 2. Structural Composition of the Localized Teaching Module Produced by Mitra

Component	Pedagogical Focus	Localized Content Elements
Unit Title	Chapter 1: Talking About Myself	Subtitle: Me, My Family, My Village and My Island.
Core Theme	Self-Introduction and Personal Identity	Grounded in rural coastal identity, island geography, and community living in Kepulauan Aru.
Learning Objectives	Foundational communicative competencies	Introducing oneself; stating age, residence, school, family, and hobbies; asking peer questions; utilizing pronouns correctly; writing a descriptive village paragraph. Slogan: "English is easier when we talk about things we know."
Reading Passage	Descriptive Text: "My Home in Kabalsiang Benjuring"	Depicting village shorelines, family livelihood, traditional boats, and school routines.
Communicative Drills	Paired dialogue simulation	Role-playing conversations between students meeting peers from neighboring island settlements.
Grammar in Context	Pronouns and Simple Present Tense	Fill-in-the-blank and substitution drills based on village scenarios rather than abstract urban settings.

3.4 Teacher Capacity Building and Pedagogical Autonomy

The training program generated noticeable positive shifts in teacher competence and confidence. Before the intervention, non-EFL teachers expressed substantial anxiety regarding English grammar and vocabulary accuracy, leading to excessive reliance on rote memorization from urban textbooks. By mastering ChatGPT, Gemini, and NotebookLM, teachers shifted from passive recipients of rigid textbooks to active creators of customized instructional content. The qualitative and operational gains achieved across key outcome domains are presented in Table 3.

Table 3. Target Indicators and Achieved Outcomes of the Community Service Program

Outcome Domain	Initial Baseline Condition	Program Output and Realized Indicator
Conceptual AI Literacy	Minimal awareness; perception of AI as overly complex, inaccessible, or untrustworthy.	Teachers articulate the operational differences, capabilities, and ethical boundaries of ChatGPT, Gemini, and NotebookLM.
Prompt Engineering Competence	Absence of prompting skills; unfamiliarity with structured instructional prompt design.	Teachers independently construct contextualized, multi-constraint prompts specifying target audience, grade level, and local context.
Material Availability	Severe textbook shortage; reliance on outdated, non-contextual national commercial books set in urban environments.	Production of complete, print-ready and digital instructional units (Chapter 1) tailored specifically to Aru coastal culture.
Pedagogical Autonomy	High dependency on external teaching aids; lack of confidence in drafting English materials.	Teachers independently generate, evaluate, edit, and refine reading passages, vocabulary lists, and assessment sheets.
Institutional Continuity	Isolated professional environment without external pedagogical support networks.	Formalized academic partnership and active digital communication channels with PSDKU Pattimura University.

3.5 Discussion: Human-Centered AI Integration in Remote Archipelagic Schools

The findings of this community service project provide meaningful insights into educational technology adoption within underdeveloped, isolated island regions. The project demonstrates that generative AI, when deployed under structured pedagogical frameworks, serves as an equalizer that offsets geographic and infrastructural deficits. Non-EFL teachers who lack formal degrees in English linguistics can overcome instructional hesitation by leveraging conversational AI as an expert interlocutor that generates initial draft material tailored to their explicit classroom parameters.

These outcomes directly affirm the systematic review findings of Syairofi, Emilia, and Purnawarman (2025) and Syuhra, Chandra, and Rosalina (2025), who identified material development, vocabulary enrichment, and instructional drafting as the most impactful applications of generative AI in Indonesian English teaching. Furthermore, the observed expansion in teacher confidence and pedagogical experimentation aligns with the conclusions of Ebrahimi et al. (2025) and Lo, Hew, and Chen (2024), confirming that AI-assisted workflows stimulate instructional innovation and lesson customization among educators who previously felt constrained by their subject-matter limitations.

Crucially, the success of the intervention in Kabalsiang Benjuring underscores the absolute necessity of the human-centered approach advocated by UNESCO (Miao & Cukurova, 2024; Miao &

Holmes, 2023) and contemporary AI education scholars (Kasneci et al., 2023; Tlili et al., 2023). In remote schools where students possess low baseline exposure to English, uncritical adoption of raw AI outputs would prove counterproductive, as generative models frequently default to Western or urban Indonesian cultural tropes, complex lexical choices, and occasional factual errors. By training teachers to enforce a mandatory review and editing phase, the project ensured that cultural gatekeeping remained firmly in local hands. Teachers actively excised foreign metaphors and injected authentic terminology celebrating coastal marine environments, thereby creating an inclusive and culturally sustaining learning atmosphere. This finding resonates with the recommendations of Herdiyanti, Suherdi, and Musthafa (2025) and Candrawati and Purbani (2025), who argue that contextualizing learning resources is the single most critical factor in motivating learners and preserving cultural identity in frontier island schools.

Finally, the project addresses the persistent structural challenges of rural education highlighted by Pramesty, Maghfiroh, and Mustikawati (2022). While physical isolation, costly maritime transportation, and infrastructure deficits remain formidable challenges in the Aru archipelago, empowering teachers with mobile-friendly digital tools cultivates decentralized resilience. When teachers master prompt engineering and content curation, the barrier of textbook scarcity is fundamentally dismantled, allowing schools in 3T territories to build rich, self-sustaining instructional repositories.

4. CONCLUSION

The community service initiative at SMA Negeri 5 Kepulauan Aru demonstrated that generative Artificial Intelligence can serve as an effective catalyst for educational empowerment in remote, 3T archipelagic environments. By training non-EFL teachers to utilize ChatGPT, Gemini, and NotebookLM through a disciplined, human-centered workflow, the program successfully transformed instructional material development from a burdensome obstacle into an accessible, creative process. Participating teachers developed essential competencies in prompt engineering, critical content validation, and curriculum localization, culminating in the successful creation of culturally grounded instructional modules such as Chapter 1: "Talking About Myself (Me, My Family, My Village and My Island)".

To maintain and expand these achievements, several strategic steps are recommended. First, participating teachers should sustain regular practice by compiling a localized institutional prompt bank and collaborative repository of digital teaching modules for subsequent grade levels. Second, the English Education Study Program at PSDKU Pattimura University needs to expand ongoing mentoring programs and the application of digital products through regular field visits and collaborative workshops. Finally, regional educational authorities and local governments are encouraged to support school connectivity infrastructure, provide dedicated digital devices, and facilitate professional development programs that scale AI-assisted pedagogical innovation across all rural and island schools in the Aru archipelago.

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