

A Qualitative Analysis of AI Tool Utilization and Its Impact on Academic Workload Management and Practical Skills Among Educators and Post-Graduates in Vientiane, Lao PDR

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Abstract

This study investigates how the current utilization of Artificial Intelligence (AI) influences academic workload management and practical skill development among university scholars in Vientiane, Lao PDR. It addresses two central research questions how AI tool utilization correlates with academic efficiency and effectiveness in multidisciplinary settings, and what systemic barriers hinder the integration of AI technologies into local educational frameworks. Employing a qualitative research design, the study collected data through semi-structured interviews with a sample of 60 educators across engineering, economics, and social science disciplines. Data were analyzed using an 8-step thematic analysis process to identify recurring patterns and latent themes regarding AI integration. The study reveals a dual perception of AI: it is viewed as a transformative collaborative efficiency engine capable of personalizing learning and automating routine tasks, yet also as a source of significant pedagogical and ethical concerns, including the potential for skill atrophy, data privacy risks, and digital equity gaps. Findings underscore that successful AI integration requires a balanced, ethical, and strategically guided approach, emphasizing robust infrastructure, comprehensive AI literacy training, thoughtful curriculum redesign, and clear institutional policies. This study concludes that proactive pedagogical and policy shifts are essential to ensure AI genuinely fosters profound learning and equitable opportunity within the Lao educational context.

Keywords: *Artificial Intelligence (AI), Academic Workload Management, performance paradox, AI Literacy, Higher Education, Lao PDR*

ARTICLE INFO

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Received 20 April 2026
Received in revised form 17
May 2026
Accepted 25 May 2026

1. Introduction

1.1 Background of the study

The global educational landscape is currently undergoing a paradigm shift driven by the rapid proliferation of Artificial Intelligence (AI). From large language models (LLMs) to automated administrative assistants, AI technologies are being integrated into higher education to streamline academic workloads, personalize learning pathways, and enhance operational efficiency. While these tools hold the promise of transforming pedagogy moving from traditional, static teaching models to dynamic, AI-augmented environments their implementation in developing nations remains complex and fraught with unique institutional, cultural, and infrastructural challenges.

In the context of the Lao People's Democratic Republic (Lao PDR), the situation is particularly critical. While the government has expressed interest in digital transformation within the education sector, the practical application of AI in universities, specifically in Vientiane, faces significant hurdles. Currently, educators in Lao PDR are grappling with a "performance paradox": they recognize the potential of AI to reduce administrative burdens and act as a "collaborative efficiency engine" for students, yet they lack the formal frameworks, comprehensive AI literacy training, and clear institutional policies to guide this transition effectively.

The problem is twofold. First, there is a visible gap between the ad-hoc, informal use of general AI tools (such as ChatGPT or Google Gemini) and the strategic, pedagogical integration of specialized AI tools designed to foster executive function, project management, and critical thinking. Students often utilize these tools for immediate output such as writing assistance without the necessary digital literacy to critically evaluate information or manage data privacy risks. Second, the current educational environment in Vientiane lacks a structured approach to bridge the digital equity gap. Without intervention, the reliance on AI threatens to widen disparities between technologically proficient students and those who lack the foundational skills or access to navigate these systems, potentially leading to the atrophy of essential independent reasoning and research skills.

Despite the growing global discourse on AI in education, systematic research documenting these specific dynamics in the Lao PDR context is virtually nonexistent. Existing literature on AI in education

primarily reflects Western, high-resource settings, failing to account for the unique linguistic, cultural, and resource-constrained environments of Vientiane's academic institutions. This study seeks to address this critical gap by providing a qualitative analysis of how AI utilization influences academic workload management and practical skill development. By documenting these local experiences, the research aims to provide a foundational understanding of the systemic barriers and pedagogical shifts required to move from the current, unguided adoption of AI toward a model that supports long-term educational outcomes and equitable opportunities for all students.

1.2 Objective of the Study

The primary objective of this study is to investigate how the current utilization of Artificial Intelligence (AI) influences academic workload management and practical skill development among university scholars in Vientiane, Lao PDR.

Specifically, this research aims to:

- Determine how the use of AI tools correlates with academic efficiency and effectiveness within multidisciplinary university settings.
- Identify the structural and institutional bottlenecks that currently prevent the adoption of standardized AI integration frameworks in regional administrative infrastructures.
- Provide a foundational understanding of the pedagogical shifts and policy requirements necessary to foster equitable and sustainable AI-augmented learning environments.

1.3 Questions of the Study

It synthesizes qualitative insights from educators, contextualized through a review of some scholarly articles, to investigate two central questions:

- How does AI tool utilization correlate with academic efficiency and effectiveness in multidisciplinary settings ?
- What systemic barriers hinder the integration of AI technologies in Lao PDR's educational frameworks ?

2. Literature review

This review synthesizes existing research on the influence of Artificial Intelligence (AI) on academic workload management, exploring its potential benefits and challenges. A significant body of research highlights the capacity of AI-driven adaptive systems, including generative AI (GAI) and large

language models (LLMs), to personalize learning experiences (Johnson & Lee, 2022; Anderson & Smith, 2023). These systems tailor content and pacing to individual student needs, thereby reducing cognitive load (Lee & Zhang, 2021) and enhancing learning efficiency. AI also facilitates task automation, enabling students to delegate repetitive tasks such as summarizing texts or organizing notes, allowing them to concentrate on higher-order thinking skills (Brown, Davis, & Lee, 2021).

AI-powered tools offer significant advantages in time management and scheduling (Garcia, 2023). Smart scheduling applications optimize student schedules based on deadlines and workload intensity, while automated reminder and alert systems contribute to time management by providing timely notifications (Thompson & White, 2022; Kim & Patel, 2021). The literature also suggests that human-centered AI systems can reduce stress by automating tasks and providing personalized support (Miller, Roberts, & Chen, 2022). Despite these benefits, the successful integration of AI into education faces several challenges. Comprehensive training programs are essential to ensure students can effectively use AI tools, as a lack of familiarity and inadequate training can lead to underutilization (Peterson & Green, 2022). Ethical concerns, such as privacy risks and the potential for over-reliance on technology, must also be carefully addressed (Johnson, Patel, & Thompson, 2023).

The integration of Artificial Intelligence (AI) in education (AIED) has evolved from simple administrative automation to sophisticated systems capable of mimicking human cognitive tasks. To understand the impact of these technologies on academic workload management, it is necessary to examine the convergence of AI capabilities with educational theories, which collectively form the conceptual framework for this study (AlBlooshi S, 2026).

2.1 *The Evolving Role of AI in Pedagogy*

Current research identifies AI as a transformative force that supports personalized learning, gamification, and problem-based learning. By adapting instructional content and pacing to individual student needs, AI-driven adaptive systems minimize unnecessary cognitive load, allowing learners to focus on higher-order thinking rather than repetitive administrative tasks. However, scholars argue that this shift requires a move toward a "human-guided" model, where AI functions as an assistive tool under clear human direction, rather than an autonomous

replacement for pedagogical design. This study adopts this "collaborative efficiency" perspective, viewing AI as a partner in the educational process rather than a standalone solution (Vladan, Enes, & Maja, 2025).

2.2 *The Necessity of AI Literacy*

The literature emphasizes that the effectiveness of AI integration is contingent upon "AI literacy" the competency of educators and students to understand, utilize, and critically evaluate AI outputs. A widely recognized taxonomy of AI literacy includes three interdependent dimensions: knowing and understanding AI concepts, applying AI tools in practice, and critically evaluating AI systems. Without these competencies, users are susceptible to "hallucinations" (false AI-generated information) and ethical risks, such as algorithmic bias and data privacy breaches. Consequently, this study posits that academic success in the AI era depends not just on tool access, but on the capacity to navigate these ethical and technical complexities (Caspari-Sadeghi S, 2026).

2.3 *Conceptual Framework for Research*

This study utilizes a conceptual framework grounded in the intersection of three key domains:

- **AI Affordances:** The technical capabilities of AI, such as personalized tutoring, automated feedback, and task management (Sihem, & Nadia, 2025).
- **Pedagogical Integration:** The institutional and instructional strategies required to align AI with learning objectives, including the redesign of assessments to prioritize authentic, process-based work (Tripathi et al., 2025).
- **Contextual Realities:** The specific institutional, cultural, and resource constraints of Vientiane, Lao PDR, which dictate how AI is perceived and implemented (Tripathi et al., 2025).

These domains are linked through the "performance paradox" the phenomenon where AI increases short-term efficiency but may lead to long-term skill atrophy if not balanced with traditional critical thinking practices. By applying this framework, the study examines how educators in Vientiane balance these factors. This approach directly informs our qualitative methodology, as it shifts the focus from merely measuring "AI use" to exploring the *meaning* behind pedagogical choices, the *barriers* to systemic integration, and the *skills* required for sustainable human-AI collaboration (Hing, Him, & Horn, 2026).

3. Methodology

3.1 Research design

This study employs a qualitative research design. This design was selected because it allows for a holistic evaluation of the impact of AI tools by capturing the nuanced, subjective perspectives of educators a level of depth that quantitative surveys cannot achieve (Bryman, 2016). The study utilizes a semi-structured interview approach to ensure a deep understanding of participant insights.

3.2 Participants

The study utilized purposive sampling, a non-probability technique that involves selecting participants who can provide the most relevant information.

This theory is highly suitable for this article because the research focuses on specialized experiences across engineering, economics, and social sciences in Vientiane. By specifically targeting 60 educators with direct experience in these disciplines, the study ensures the data reflects expert perspectives on AI adoption rather than a generalized population.

3.3 Instruments

The principal instrument consisted of comprehensive semi-structured dialogue tracks.

The instrument was developed by curating specific questions to elicit multi-dimensional pedagogical evaluations, procedural workload shifts, operational systemic barriers, and curricula adjustive feedback loops. The structure was designed to guide the interviewers while allowing the flexibility to explore deeper insights as they emerged during conversations.

3.4 Procedure

The procedural workflow was implemented as follows:

- Participant Recruitment and Briefing: Potential participants from engineering, economics, and social science disciplines were identified through purposive sampling. Each participant was provided with a briefing on the study's purpose, the nature of the interview, and data confidentiality protocols before formal consent was obtained.
- Interview Execution: Data were gathered through 60 semi-structured interviews conducted with educators in Vientiane. These dialogues followed a curated set of thematic questions designed to elicit deep insights.

- Recording and Transcription: All interviews were audio-recorded to ensure the capture of nuanced data and subsequently transcribed verbatim to facilitate high-accuracy thematic analysis.

3.5 Data Collection

Data collection involved a systematic approach to gathering qualitative insights, specifically focusing on themes such as AI's role in curriculum design, student engagement, and institutional support. To ensure participant privacy and institutional integrity, all transcriptions were anonymized before being processed in the QDA software, creating a secure "audit trail" that links findings back to the original source while protecting individual identities.

3.6 Data Analysis

Thematic analysis was conducted using Qualitative Data Analysis (QDA) workflows to identify recurring patterns such as AI as a pedagogical aid or resource limitations (Braun & Clarke, 2006; Nowell et al., 2017). This approach aligns with established qualitative methodologies for identifying latent and manifest themes (Saldaña, 2021). The process utilized the following technical stages:

- Data Integration and Case Definition: The QDA workflow began by importing heterogeneous data formats—including verbatim transcripts and field notes—into the analysis environment. These data were structured by defining distinct "cases" for each of the 60 educators.
- Systematic Coding and Tagging: The analysis employed a multi-level coding strategy to identify both manifest and latent meanings. Keywords, concepts, and thematic markers were tagged directly within the transcripts.
- Statistical and Relational Mapping: The software was used to generate frequency statistics on coded segments, providing a quantitative overview of which themes appeared most frequently across the dataset.
- Exploratory Discovery: Cross-tabulation query tools were used to discover relationships between themes, keywords, and sample attributes, permitting the identification of how specific institutional roles or disciplinary backgrounds influenced perceptions of AI.
- Audit Trail: By linking every thematic tag directly to the original transcript segment, the QDA workflow established a rigorous "audit trail,"

ensuring that the study's conclusions remain transparent and reproducible.

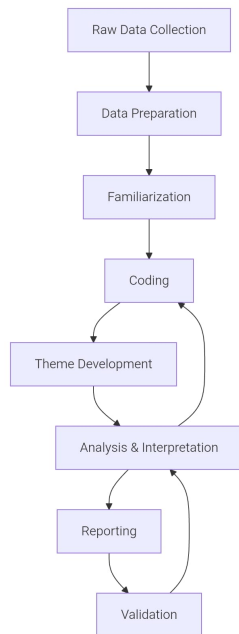


Figure 1: Phases of Qualitative Data Analysis Flowchart

The flowchart of figure 1 illustrates the stages of thematic analysis: (1) Transcribing interviews, (2) Open coding to identify initial themes, (3) Axial coding to refine categories, and (4) Selective coding to synthesize overarching insights (Braun & Clarke, 2006).

The following table demonstrates the practical application of our 8-step analysis process in table 1:

Table 1: Qualitative Data Analysis Steps

No.	Stage	Evidence of Implementation
1	Raw Data Collection	Gathered audio recordings and field notes from 60 educators.
2	Data Preparation	Transcribed audio, anonymized data, and cleaned text in QDA software.
3	Familiarization	Conducted repeated reading/listening to identify initial latent ideas.
4	Coding	Used QDA tagging: Open coding for segments, axial for categories, and selective for core themes.

5	Theme Development	Synthesized codes into themes and created thematic maps.
6	Analysis and Interpretation	Used QDA query tools (e.g., word frequency, matrix) to compare themes across groups.
7	Reporting	Wrote conclusions and visualized findings supported by direct data excerpts.
8	Validation	Applied triangulation of sources and peer-review for inter-coder reliability.

The use of QDA software allowed for an "audit trail," where every coded segment such as those categorized under "performance paradox" is directly linked to the specific transcript file, ensuring transparency and reproducibility.

4. Results

The analysis of the semi-structured interviews yielded four core thematic results, derived from the systematic coding and synthesis of raw data. The following themes reflect the participants' lived experiences regarding AI integration, moving from specific raw data points back to synthesized conceptual categories.

4.1 Theme 1: AI as a Collaborative Efficiency Engine

Participants frequently described AI as an "efficiency engine" that reduces cognitive load by automating routine tasks. Raw data indicates that educators associate this primarily with the delegation of administrative burdens. One educator noted: "Using ChatGPT for lesson planning isn't just about speed; it's about shifting my role from a note-taker to a mentor during class time". This theme emerged from coding segments related to "time-saving" and "task automation".

4.2 Theme 2: The Performance Paradox and Critical Thinking

A dominant theme across disciplines was the tension between short-term academic gains and long-term skill development, which participants termed a "performance paradox". Analysis of raw interview transcripts revealed widespread concern regarding the erosion of independent reasoning. As one participant

remarked: *"Students see improved grades from AI assistance, but their ability to synthesize information without AI support is declining rapidly"*. This theme was synthesized from axial codes linking "high grades" with "superficial engagement".

4.3 Theme 3: The Gap in Specialized AI Literacy

Raw data analysis highlighted a significant disconnect between casual AI use and specialized professional application. While nearly all participants reported using conversational AI, very few had exposure to project management or data-driven AI tools. A participant highlighted: *"We are using AI for writing, but we are completely missing the tools that could help us manage complex academic projects or research data"*. This theme originated from data queries comparing "general conversational tool usage" against "specialized task management".

4.4 Theme 4: Institutional Barriers and Digital Equity

The final theme relates to the systemic bottlenecks preventing effective AI adoption in Vientiane. The data indicates that current infrastructure does not support equitable AI access. One educator stated: *"Without institutional policy or training, AI access just creates a wider gap between students who have the right tools and those who are left behind"*. This finding was synthesized from repeated coding of "resource limitations" and "lack of institutional support".

5. Discussion

The findings of this qualitative study reveal a complex, dualistic reality regarding AI integration in Vientiane, Lao PDR. By synthesizing these results with the theoretical perspectives introduced in the literature review, this study clarifies the "performance paradox" and the underlying systemic barriers currently hindering sustainable AI adoption.

5.1 Reinterpreting the Collaborative Efficiency Engine

While the initial literature suggested that AI functions as a neutral tool for productivity, our findings reveal that educators in Vientiane perceive this utility through the lens of a "collaborative efficiency engine." This conceptualization supports the framework of human-AI collaboration, where the educator's role shifts from content transmitter to mentor. However, our data indicates that this shift is currently constrained by a lack of institutional scaffolding, suggesting that efficiency gains are being realized in isolation rather than as part of a cohesive pedagogical strategy.

5.2 The Performance Paradox and Pedagogical Implications

The emergent theme of the "performance paradox"—where short-term efficiency gains (better writing, faster research) potentially result in long-term skill atrophy directly challenges the overly optimistic view presented in some global studies. This tension underscores the necessity of the "AI literacy" framework proposed in our literature review. Our findings suggest that if educators continue to focus solely on the output (grades/tasks) rather than the process (critical evaluation/independent reasoning), the pedagogical shift required to foster deep learning will remain elusive. This reinforces the need for curricula that explicitly teach students *how* to interact with AI, rather than just *how* to use it for task completion.

5.3 Addressing the Gap in Specialized Awareness

The data highlights a clear disconnect between the educators' theoretical understanding of AI and their practical, specialized application. While global discourse has moved toward advanced, domain-specific AI tools, our participants' focus remains largely on general conversational models. This gap is not merely a matter of training; it is a manifestation of the "contextual realities" within Vientiane's academic institutions, where limited exposure to advanced tools reinforces a reliance on basic AI, further widening the digital equity gap.

5.4 Synthesis: Moving Toward Systematic Integration

The discussion points toward a central tension: the misalignment between the transformative potential of AI and the institutional/systemic readiness of the Lao academic framework. To resolve this, the study posits that pedagogical redesign must go hand-in-hand with institutional policy. Without a formal framework that addresses data privacy, critical literacy, and equitable access, AI adoption in Vientiane risks being a superficial addition rather than a structural improvement. Our findings confirm that successful integration requires a balanced, strategically guided approach that prioritizes long-term cognitive development over immediate logistical convenience.

Policy Implications for the Ministry of Technology and Communication (MTC) Lao PDR:

- Establishment of National AI-in-Education Guidelines: The MTC should lead the development of a national policy framework that defines ethical AI usage standards in academic settings. This framework must address data privacy, intellectual

property, and guidelines for institutional AI governance to ensure that technological adoption is both secure and ethical.

- **National AI Literacy Certification Program:** Recognizing the identified gap in specialized AI awareness, the MTC could launch a tiered certification program for educators and students. This program should move beyond basic prompting (conversational AI) to include training on specialized AI tools for data analysis, project management, and automated planning.
- **Infrastructure Investment and Digital Equity Initiatives:** The "contextual realities" identified in this study emphasize that institutional bottlenecks are a significant barrier to adoption. The MTC should prioritize investment in cloud-based research infrastructure and high-speed campus networks to ensure that AI-driven tools are accessible across different socioeconomic levels, thereby mitigating the digital equity gap.
- **Collaboration with the Ministry of Education and Sports (MOES):** Policy implementation must be a cross-ministerial effort. The MTC should partner with the MOES to integrate AI literacy into the national curriculum, ensuring that the shift from "content delivery" to "AI-augmented learning" is supported by standardized pedagogical redesign strategies.
- **Longitudinal Monitoring and Evaluation Framework:** Since this study captures perceptions at a single point in time, the MTC should establish a long-term monitoring system to evaluate the impact of AI on student career readiness and skill retention. This data-driven approach will allow for the iterative adjustment of national policies as AI technologies evolve.

6. Conclusion

This qualitative analysis reveals AI's transformative yet complex duality in education in Vientiane, Lao PDR. AI is widely perceived as a powerful 'collaborative efficiency engine' for personalized learning and task automation, freeing educators for higher-value interactions. However, these benefits are tempered by substantial concerns about the erosion of critical thinking and independent reasoning if AI is not strategically and ethically guided.

The qualitative comparison between AI users and non-users underscores that while AI enhances efficiency and job readiness, traditional learning remains vital for cultivating foundational skills, self-discipline, and profound conceptual understanding. The

challenge lies in harmonizing AI's augmentative capabilities with the enduring principles of deep, critical, and ethical learning to ensure AI truly enables profound learning and equitable opportunity.

This qualitative study set out to determine how the current utilization of Artificial Intelligence (AI) influences academic workload management for multidisciplinary university scholars and to identify the structural and institutional bottlenecks preventing the adoption of standardized AI frameworks in Vientiane, Lao PDR.

The findings confirm that AI acts as a "collaborative efficiency engine," offering significant potential for personalizing learning and automating routine administrative tasks. However, this study also reveals a critical "performance paradox". While AI adoption drives short-term efficiency, it simultaneously presents risks regarding the erosion of critical thinking and independent reasoning if not managed through a structured pedagogical approach. Our analysis highlights that the current utilization of AI in Vientiane remains largely ad-hoc, centered on general conversational tools, which indicates a significant gap in specialized AI literacy and awareness among both educators and students.

Furthermore, the study successfully identified the structural and institutional bottlenecks hindering progress. These include a lack of formal policy frameworks, limited access to advanced, domain-specific AI tools, and the absence of comprehensive training programs, all of which contribute to a widening digital equity gap.

Ultimately, the research concludes that for AI to genuinely foster profound learning, institutions must move beyond passive or uncritical usage. A successful transition requires the strategic integration of AI into curriculum design, the establishment of clear ethical and privacy policies, and a shift toward an educator-mentored model of AI interaction. By implementing the proposed recommendations—including mandatory AI literacy programs and cross-ministerial policy coordination—educational institutions in Vientiane can harmonize the augmentative capabilities of AI with the enduring, core principles of critical, ethical, and profound academic learning.

7. Recommendations

Based on the empirical findings of this qualitative analysis, the following specific recommendations are proposed to address the challenges identified by educators in Vientiane:

- 1) Implement a Targeted “Specialized AI” Literacy Curriculum: Given that educators primarily rely on general conversational tools (e.g., ChatGPT) while lacking awareness of domain-specific software, institutions should move beyond generic AI training. The curriculum must specifically introduce AI-driven tools for project management (e.g., Notion AI) and data analysis relevant to engineering, economics, and social sciences to bridge the identified literacy gap.
 - 2) Redesign Assessments to Mitigate the 'Performance Paradox': To prevent the erosion of critical thinking, educators should shift from content-based assessments to process-based evaluations. This includes integrating mandatory "AI-reflexive" assignments where students must document their AI usage process and critically evaluate the limitations of AI-generated outputs, rather than simply submitting a final product.
 - 3) Establish a Multi-Layered Data Privacy and Ethical Policy: Addressing the identified concerns regarding data privacy, the MTC and individual universities must co-create clear, accessible policies that dictate which data types can be processed by AI and which must remain confidential. These policies must be communicated through standardized workshops, ensuring all academic staff understand the risks of data leakage in their specific disciplines.
 - 4) Develop a Shared Resource Hub for Institutional AI Tools: To mitigate the "digital equity gap," the MTC should spearhead the creation of a centralized, vetted repository of AI tools. This hub would provide all educational institutions with equitable access to reliable, secure AI applications, ensuring that students' professional development is not limited by their individual capacity to afford or identify high-quality tools.
 - 5) Formalize the Educator’s Role as 'AI Mentor': Institutional support structures should be updated to recognize and reward the evolving role of educators as AI mentors. This includes institutionalizing time for professional development, where educators can collaborate on best practices for integrating AI into curriculum design, thereby fostering a "collaborative efficiency engine" across departments rather than allowing AI usage to remain an isolated practice.
- 1) *Phased Deployment of the "Specialized AI" Literacy Curriculum*
 - Phase I (0-6 months): Conduct a "Needs Assessment Survey" across the engineering, economics, and social science faculties to identify current tool-gaps.
 - Phase II (6-12 months): Launch a "Train-the-Trainer" pilot program where faculty leads from each department are trained on specialized project management and data-analysis tools.
 - Phase III (12+ months): Integrate these specialized tools into the core syllabus for 1st-year bachelor’s students, with the Ministry of Technology and Communication (MTC) providing technical support and software licenses.
 - 2) *Assessment Redesign: The AI-Reflexive Portfolio Model*
 - Policy Change: Departments should update assessment guidelines to require an "AI-Reflection Appendix" for all major research papers.
 - Execution: In this appendix, students must explain their prompt-engineering process, describe how they cross-referenced AI-generated data with traditional scholarly sources, and justify the ethical use of the tool. This ensures students remain in control of the cognitive process, directly mitigating the "performance paradox".
 - 3) *Centralized Resource Hub and Digital Equity Access*
 - Infrastructure Strategy: The Ministry of Technology and Communication (MTC), in collaboration with the Institute of Information and Communication Technology (IICT), should establish a secure, cloud-based "Academic AI Sandbox".
 - Accessibility: This platform will house vetted AI tools that are pre-configured with Lao data-privacy settings, ensuring that students from all economic backgrounds have the same high-level technological access, effectively closing the digital equity gap identified in the research.
 - 4) *Institutionalizing the 'AI Mentor' Framework*
 - Professional Development: Universities should formalize "AI Pedagogical Workshops" as part of the annual faculty development schedule.
 - Incentivization: The administration should provide credits or institutional recognition for educators who successfully redesign their curriculum to incorporate AI as a "collaborative efficiency engine," fostering a community-driven approach to teaching rather than isolated adoption.

Implementation Strategy for AI Integration

- 5) *Governance and Policy Oversight*
 - Establishment of an Ethics Committee: Form a cross-institutional committee comprising faculty members and MTC technical experts to review AI policy quarterly.
 - Standardized Ethical Protocols: Publish a “Code of Conduct for AI Use in Lao Universities” that explicitly details data privacy expectations, preventing the uncritical use of tools that might expose student or research data to external, non-secure environments.

8. Limitations

While this study provides a foundational qualitative analysis of AI integration in Vientiane, several limitations must be acknowledged to contextualize the findings:

- 1) **Geographic and Scope Constraints:** This study focuses exclusively on educators within Vientiane Capital. Consequently, the findings may not capture the full diversity of pedagogical experiences and the specific infrastructural constraints prevalent in rural or semi-urban educational environments across Lao PDR, where

digital access and institutional support structures may differ significantly.

- 2) **Temporal and Subjective Nature:** The qualitative nature of the research captures subjective perceptions at a single, specific point in time. As AI technologies and pedagogical practices are evolving rapidly, these perceptions may shift as users gain more experience or as new tools become available.
- 3) **Need for Longitudinal Data:** Due to the cross-sectional design of this research, it does not track the long-term trajectory of AI implementation. Future longitudinal studies are essential to evaluate the enduring impacts of AI integration on student professional outcomes, skill retention, and career readiness over an extended period.
- 4) **Sample Demographics:** While the study targeted 60 educators across engineering, economics, and social sciences, the results may not be generalizable to other disciplines or to the student population itself. Future research should aim to broaden the participant base to include a more comprehensive range of institutional roles and student perspectives to ensure a more holistic understanding of AI-driven educational transformation.

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