THE IMPACT OF GENERATIVE AI ON LEARNING AND TEACHING PROCESSES: A CASE STUDY OF IMPLEMENTATION IN INDONESIAN HIGHER EDUCATION

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Abstract
Generative AI's emergence presents a profound disruption to global higher education. Its rapid integration creates tensions between technological potential and established academic practices. This study investigates the impact of Generative AI on learning and teaching processes within the unique context of Indonesian higher education, exploring the complex interplay between this global technology and local institutional realities. The research objective was to analyze student adoption, faculty perceptions, and institutional responses to GenAI implementation. A qualitative case study methodology was employed, gathering data from students and faculty across several Indonesian universities. The findings reveal a significant misalignment: students exhibit rapid, pragmatic adoption, particularly for linguistic support, while faculty express deep ambivalence tied to academic integrity concerns and entrenched pedagogical cultures, such as the *"guru"* model. Institutional responses are largely reactive and fragmented, lacking cohesive policies or training. This study concludes that GenAI's impact in Indonesia is not technologically deterministic but is profoundly mediated by local cultural-pedagogical norms and institutional inertia, resulting in a widening gap between student practice and formal education.

Keywords: Case Study, Generative AI, Higher Education

INTRODUCTION

The twenty-first century is characterized by rapid technological advancements, none more disruptive and pervasive than the emergence of Artificial Intelligence (AI). Generative AI (GenAI), a subfield of AI capable of creating novel content such as text, images, and code, has captured global attention. Platforms like OpenAI's ChatGPT, Google's Gemini, and various image generators have transitioned from niche technologies to mainstream tools with unprecedented speed (Kohler, 2024). This technological revolution signifies a fundamental shift in how information is created, processed, and disseminated, impacting virtually every sector, including finance, healthcare, media, and, most profoundly, education.

Higher education institutions (HEIs) stand at the epicenter of this transformation. The core functions of universities—knowledge creation, pedagogical transmission, and critical inquiry—are being directly challenged and reshaped by GenAI capabilities (Eom, 2025). These tools offer unprecedented opportunities for enhancing academic work, such as providing personalized tutoring, automating mundane research tasks, and offering sophisticated simulation environments (Khan dkk., 2024). Students and faculty alike are navigating a new landscape where the boundaries between human-created and machine-generated content are increasingly blurred, prompting a global re-evaluation of long-standing academic practices and learning objectives.

Indonesia, as one of the world's largest developing nations with a massive youth demographic and a burgeoning higher education sector, finds itself at a critical juncture. The Indonesian government's vision for 'Indonesia Emas 2045' (Golden Indonesia 2045) places significant emphasis on digital transformation and human capital development as keys to national progress (Toscano dkk., 2024). Consequently, Indonesian universities are under immense pressure to adapt to this technological wave. They must grapple with the dual mandate of harnessing GenAI's potential to improve educational quality and access, while simultaneously addressing the ethical and infrastructural challenges inherent in its implementation within a diverse archipelago.

The rapid and often unregulated influx of Generative AI tools into Indonesian higher education classrooms has created a state of significant pedagogical friction (du Plessis, 2025). Lecturers report increasing difficulty in authentically assessing student learning, as traditional assignments like essays and reports can now be completed, at least partially, by AI with minimal student effort (Kumar dkk., 2024). Students, on the other hand, are utilizing these tools without clear institutional guidance, leading to inconsistent application and a potential over-reliance on technology. This situation fosters an environment where the development of essential critical thinking, analytical reasoning, and writing skills may be inadvertently stifled, creating a tangible disconnect between the intended learning outcomes and actual student competencies.

This chaotic implementation is significantly exacerbated by a pronounced policy and guideline vacuum within many Indonesian higher education institutions (Gharieb dkk., 2024). A large number of universities remain in a reactive posture, struggling to formulate coherent frameworks that balance the promotion of innovation with the preservation of academic integrity (Zhang & Xu, 2025). This absence of clear institutional policy leads to widespread confusion and ambiguity; lecturers are left to devise their own ad-hoc rules, resulting in inconsistent standards across departments and even courses (Vinall & Hellmich, 2025). This lack of structured guidance creates substantial risks related to academic misconduct, data privacy, and the equitable use of technology, particularly disadvantaging students without adequate digital literacy.

An empirical problem underpins these practical and policy challenges. While anecdotal evidence of GenAI use is rampant and global discourse is extensive, there remains a distinct scarcity of rigorous, localized research focusing on the Indonesian context. We currently lack sufficient empirical data to understand how Indonesian students and lecturers are actually using

these tools in their daily academic lives (Lu & Ben Zoghi, 2024). The specific, measurable impacts of GenAI on learning outcomes, the adaptation of teaching strategies, and the efficacy of assessment methods within the unique socio-cultural, linguistic, and infrastructural landscape of Indonesia remain largely undocumented and unexamined by the scholarly community.

The primary objective of this research is to comprehensively explore the current landscape of Generative AI implementation within selected Indonesian higher education institutions. This study aims to identify and meticulously document the prevalent patterns of GenAI adoption among both undergraduate students and academic faculty (Sousa & Cardoso, 2025). It seeks to map out the specific tools being utilized, the frequency of their application for academic tasks, and the perceived motivations and barriers influencing their integration. This foundational exploration will provide a clear snapshot of the status quo of GenAI use in the case study context.

This research further intends to critically analyze the perceived impacts of GenAI on core academic processes from a multi-stakeholder perspective. It will investigate how these tools are modifying, or failing to modify, the teaching methodologies adopted by lecturers and the learning strategies employed by students (Rudra dkk., 2025). The study will specifically examine the perceived effects on assignment completion, information literacy, research practices, and overall academic engagement. This analysis aims to move beyond simple usage statistics to understand the qualitative changes in teaching and learning dynamics.

A final, crucial objective is to utilize the empirical findings to inform the development of practical, context-specific recommendations (Liu dkk., 2025). By synthesizing the identified challenges, opportunities, and usage patterns, this research aims to contribute directly to the formulation of evidence-based institutional guidelines (Kubullek dkk., 2024). These recommendations will be designed to assist Indonesian HEIs in developing robust policies that ethically and effectively harness the pedagogical benefits of Generative AI, while concurrently mitigating its associated risks to academic integrity and skill development.

A significant body of literature on GenAI in education has emerged rapidly, yet it is overwhelmingly dominated by studies from North American and European contexts. This existing research provides valuable foundational insights into the technical capabilities of AI models, theoretical frameworks for their use, and pressing ethical quandaries, particularly concerning plagiarism and intellectual property (Borusu, 2025). The direct applicability and generalizability of these findings to the Indonesian context, however, are questionable. Significant differences in educational philosophy, institutional resources, technological infrastructure, and cultural norms regarding academic authority and collaboration necessitate localized investigation.

Much of the current research, even within Western contexts, has relied heavily on large-scale quantitative surveys or technical experiments. These studies are effective at capturing what tools are being used or what AI is capable of (e.g., passing standardized exams), but they often fail to capture the nuances of implementation. There remains a substantial gap in in-depth, qualitative, and context-rich case studies that explore the how and why of GenAI adoption (Gutiérrez & Acuña López, 2024). The lived experiences of students and lecturers, their rationales for use or non-use, and the subtle shifts in classroom dynamics are areas that remain critically underexplored.

Current academic discourse on GenAI often bifurcates into two disconnected streams: highly technical computer science papers and high-level, often abstract, discussions on policy and ethics. A critical gap exists at the intersection of these fields—namely, empirical research that directly links specific, observable usage patterns to concrete pedagogical shifts and practical policy needs (Xia, 2025). The literature has not yet adequately bridged the divide between the theoretical potential of GenAI and the messy, practical, on-the-ground

implementation challenges faced by institutions, especially within the context of a non-Western, developing nation's educational ecosystem.

The primary novelty of this study lies in its specific, empirical, and contextual focus on Indonesian higher education. This research provides one of the first in-depth, qualitative-driven case studies examining GenAI implementation within this unique and globally significant educational landscape (Kikkas & Lorenz, 2025). It moves beyond generalized assumptions by providing data firmly grounded in the specific institutional, cultural, and linguistic contexts of Indonesia. This focus offers a crucial, and currently missing, ASEAN perspective to a discourse overwhelmingly dominated by the Global North.

This study also offers a significant methodological contribution by employing a mixed-methods case study approach. It deliberately combines quantitative data on adoption rates and usage frequency with rich qualitative insights derived from semi-structured interviews, focus group discussions, and content analysis of institutional documents (Doyle dkk., 2025). This dual focus facilitates a holistic understanding of the phenomenon, capturing the complex, and often contradictory, interplay between technological capabilities, pedagogical beliefs, and human agency in a way that purely quantitative surveys or purely theoretical essays cannot.

The justification for this research is therefore both practical and theoretical. Practically, it provides urgently needed empirical data for Indonesian university administrators, policymakers, and educators who are currently tasked with crafting informed strategies for GenAI integration (Borović dkk., 2025). Theoretically, it contributes to the global discourse on educational technology and digital pedagogy by challenging, reinforcing, or refining Western-centric models of technology adoption. This work underscores the critical and non-negotiable role of local context in shaping the ultimate impact of a supposedly 'global' technology on learning and teaching processes.

RESEARCH METHOD

This study employed a mixed-methods research design structured as an embedded, multiple-case study to achieve a comprehensive and holistic understanding of Generative AI (GenAI) implementation in higher education. The qualitative component is prioritized as the dominant paradigm, underpinned by a constructivist-interpretivist philosophical stance to capture the nuanced, socially constructed experiences and pedagogical adaptations of students and faculty. The quantitative component serves a complementary, sequential role, gathering broader descriptive data on adoption rates and tool preferences (Romanillos & Andersson, 2024). The ultimate goal of this integration is to achieve triangulation, thereby enhancing the overall validity and reliability of the research findings.

Research Design

The specific research design utilized is an embedded, multiple-case study approach (Rizos & Gkrekas, 2025). This structure allows for in-depth exploration within two specific institutional contexts (the "cases") while simultaneously enabling cross-case analysis to identify common patterns or variations between them. The core of the design is the sequential-explanatory integration of methods, meaning the quantitative survey data is collected and analyzed first to identify broad trends, and the subsequent qualitative interviews and Focus Group Discussions (FGDs) are then used to explore and explain these observed statistical patterns in greater detail.

Research Target/Subject

The population for this study comprises students and academic faculty within Indonesian higher education institutions. Two large, comprehensive universities in Java were selected purposively as the two specific case study sites based on their reputation and active engagement with digital transformation initiatives (Rachmat dkk., 2025). Participant selection

within these sites also utilized a purposive sampling strategy: Faculty members were recruited from diverse disciplines (Humanities, Engineering, Social Sciences). Student participants were selected to represent different years of study and varying levels of self-reported familiarity with GenAI tools. The sample size for the quantitative survey was approximately 400 students and 100 lecturers, while the qualitative phase included 20 lecturers and 30 students for semi-structured interviews, plus two separate FGDs at each university.

Research Procedure

The research procedure commenced after securing formal ethical clearance from the IRBs of both participating universities, and all participants provided informed consent. Data collection was executed in a sequential-explanatory manner. The quantitative survey was first distributed to the larger sample to identify broad trends in adoption and preference. Following the initial analysis of this survey data, the qualitative interview and FGD participants were recruited (Quintana-Ordorika dkk., 2025). This deliberate sequencing allowed the qualitative phase to explore and explain the patterns observed in the quantitative results in greater depth, thereby structuring the investigation.

Instruments, and Data Collection Techniques

Multiple research instruments were systematically developed. The primary quantitative instrument was an online survey questionnaire, which included sections on usage frequency, tool preferences, perceived benefits, and challenges, primarily utilizing Likert-scale items (Gustems & Calderón-Garrido, 2024). The main qualitative instruments were semi-structured interview protocols, separately designed for students and lecturers to explore lived experiences and pedagogical reasoning, structured with open-ended questions to elicit rich narratives. Focus Group Discussion (FGD) guides were also developed to stimulate peer-to-peer interaction. A document analysis framework served as a supplementary instrument, guiding the review of institutional documents related to academic integrity and AI use.

Data Analysis Technique

Data analysis was conducted concurrently with data collection where appropriate, utilizing a mixed-methods approach (Carnicer & Garrido, 2024). The quantitative survey data was analyzed using descriptive statistics (e.g., frequencies, means) and inferential statistics (e.g., correlations or ANOVAs) through SPSS software to identify broad trends and significant relationships. The qualitative data from interviews and FGDs was transcribed verbatim and analyzed using a rigorous thematic analysis approach, facilitated by NVivo software. This involved an iterative process of coding, category development, and theme identification to uncover emergent patterns in the participants' experiences, completing the final integration of the research findings.

RESULTS AND DISCUSSION

The quantitative phase of the study yielded data from 400 student respondents and 100 faculty (lecturer) respondents across the two case study institutions. Student respondents were predominantly from Year 2 (31%) and Year 3 (29%). Faculty respondents represented a balanced disciplinary spread, with 38% from Social Sciences and Humanities, 35% from STEM (Science, Technology, Engineering, and Mathematics), and 27% from Health and Medical Sciences. Initial descriptive analysis focused on the prevalence and frequency of Generative AI tool usage among these cohorts.

A significant majority of students (89.5%) and a substantial portion of lecturers (62.0%) reported using ChatGPT, establishing it as the dominant tool within both university ecosystems. Other tools like Google Gemini showed moderate adoption. A notable variance was observed in the use of Microsoft Copilot, which saw higher adoption among lecturers

(48.0%) compared to students (22.0%), potentially reflecting its integration into institutional software. The complete overview of tool prevalence and self-reported usage frequency is detailed in the table below.

Table 1: Prevalence and Frequency of Generative AI Tool Usage Among Respondents

Generative AI Tool	Percentage of Userd (Students, n=400)	Percentage of Users (Lecturers, n=100)	Mean Frequency of Use (Students)
ChatGPT (OpenAI)	89.5%	62.0%	3-4 times/week
Google Gemini	45.2%	35.0%	1-2 times/week
Copilot (Microsoft)	22.0%	48.0%	< 1 time/week
Midjourney/DALL-E	15.8%	5.0%	< 1 time/month
Other/Specialized	8.0%	12.0%	Infrequent

The data presented in Table 1 indicates that GenAI usage is not homogenous. Students demonstrate a clear preference for text-based generators (ChatGPT) at a high frequency (3-4 times per week), which strongly correlates with weekly assignment cycles. Their usage patterns suggest application for tasks such as brainstorming, draft writing, and summarizing complex academic texts. The comparatively lower use of image generators (15.8%) aligns with the text-centric nature of assignments in most non-arts disciplines.
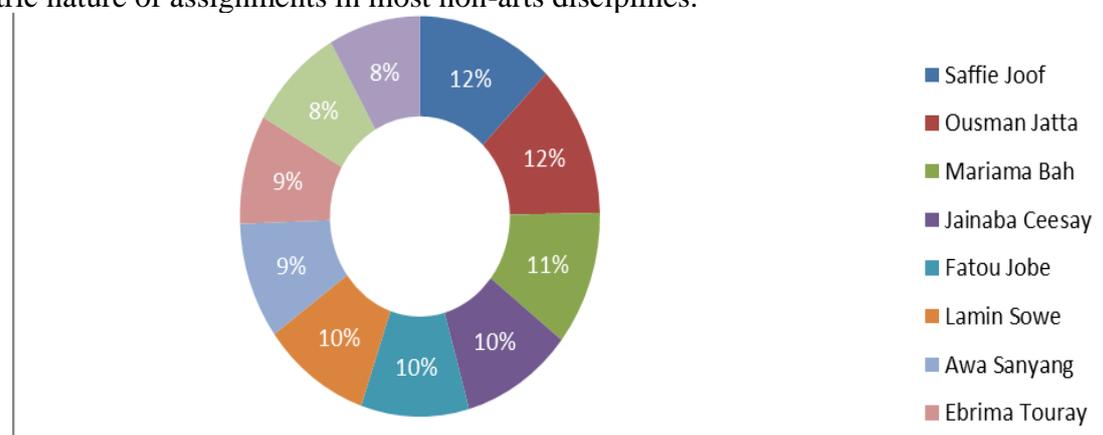

Figure 1. Gen AI Usage Distribution (Students)

Faculty usage patterns diverge significantly from student patterns. Lecturers report lower frequency but a more diverse toolset, including higher utilization of Copilot. Survey comments indicated lecturers primarily use GenAI for administrative and preparatory tasks, such as generating lecture outlines, creating hypothetical examples for class, and drafting emails. The lower frequency of use suggests a task-specific, rather than a continuous, integration into their workflow.

Respondents were asked to rate the perceived impact of GenAI on their academic activities using a 5-point Likert scale. Students overwhelmingly cited 'time efficiency in completing assignments' (Mean = 4.5/5) and 'assistance in understanding difficult concepts' (Mean = 4.2/5) as the primary benefits. These quantitative findings highlight a perception of GenAI as a powerful productivity and supplementary learning tool.

Lecturers identified 'potential for personalized learning' (Mean = 3.9/5) as a key benefit, though with less enthusiasm than students. Conversely, both groups identified significant challenges. Students expressed concerns regarding 'accuracy and reliability of information' (Mean = 4.1/5). Lecturers registered profound concerns about 'negative impacts on student critical thinking' (Mean = 4.6/5) and 'complications in assessing academic integrity' (Mean = 4.8/5).

A Chi-square test for independence was performed to examine the relationship between a student's academic discipline and their primary reported use of GenAI. A significant relationship was found, $\chi^2(2, N=400) = 28.4$, $p < .001$. Students in STEM disciplines were

significantly more likely to report using GenAI for 'coding assistance and problem-solving,' whereas students in Humanities and Social Sciences were significantly more likely to report using it for 'essay writing and text summarization.'

A Spearman's rank-order correlation was run to determine the relationship between students' self-reported frequency of GenAI use and their self-reported confidence in their own academic writing skills. A weak, statistically non-significant negative correlation was observed (r_s = -0.09, p = .07). This finding suggests that, at current adoption levels, students do not perceive a strong negative relationship between frequent GenAI use and their confidence in their writing abilities.
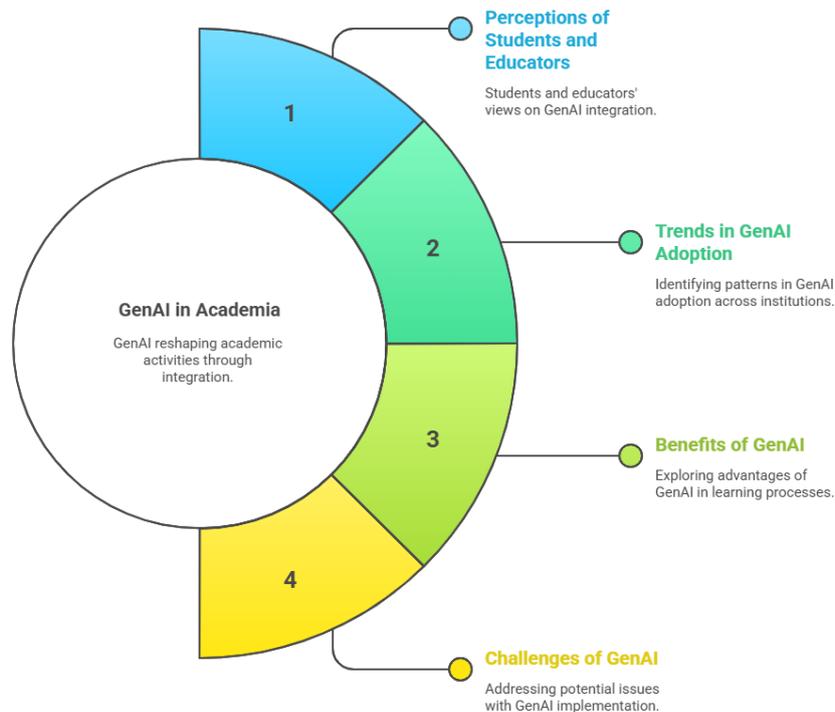

Figure 2. Unveiling Gen AI's Impact on Academia

The quantitative data clearly established what was happening: widespread, high-frequency student adoption of ChatGPT, coupled with high levels of faculty anxiety regarding academic integrity. This central tension provided the explanatory focus for the qualitative phase. The survey data revealed a significant gap between students' perceived productivity benefits and lecturers' fears of skill degradation.

The qualitative interviews were designed to explore the why behind this dissonance. The sequential-explanatory design used the quantitative findings to frame the interview questions. For instance, participants were asked to elaborate on the specific instances where they felt 'efficiency' was gained or 'critical thinking' was lost, providing narrative context to the statistical patterns observed.

Thematic analysis of the 20 lecturer interviews and 30 student interviews revealed three dominant themes. The first theme, 'A Policy Vacuum and Pedagogical Paralysis,' was universally expressed by lecturers. Faculty described a state of uncertainty, operating without formal institutional guidelines, leading to a paralysis in how to adapt their assessments.

The second theme was 'Strategic Use versus Over-Reliance.' Students provided nuanced descriptions of their usage, distinguishing between using GenAI as a 'thinking partner' to refine ideas and using it as a 'crutch' to bypass difficult cognitive tasks. The third theme, 'The Integrity Dilemma,' captured the moral ambiguity felt by both groups, where the definition of 'cheating' has become blurred and context-dependent.

The 'Pedagogical Paralysis' theme was explained by lecturers' fear of making the wrong move. One lecturer (Lec-SocSci-04) stated, 'We are caught. If we ban it, students use it anyway. If we allow it, we are not sure what we are assessing.' This sentiment led to ad-hoc responses, with some faculty reverting to in-class, handwritten exams, while others attempted to create 'AI-proof' assignments with limited success.

Students explained the 'Strategic Use' theme by detailing their workflows. A third-year engineering student (Stu-Eng-11) noted, 'I use it to debug my code, not write it. It helps me find my mistake faster, so I can learn from it.' This contrasted with narratives of 'panic-using' AI, where students facing tight deadlines admitted to 'copy-pasting prompts and hoping for the best,' (Stu-Hum-07), thus explaining the faculty's concern over critical thinking.

The combined findings indicate a clear state of 'implementation dissonance' within the case study institutions. A powerful technology has been rapidly adopted by students for pragmatic ends (efficiency), while faculty and institutional structures remain reactive and slow to adapt. This gap creates an environment where the potential benefits of GenAI are inconsistently realized and are often overshadowed by significant risks to academic integrity.

The data strongly suggests that the impact of GenAI is not determined by the technology itself, but by the pedagogical and policy frameworks surrounding it. The widespread student use, coupled with faculty uncertainty, points to an urgent need for clear, flexible, and dialogic institutional policies. Without such guidance, the risk of fostering a culture of covert misuse and skill erosion, as feared by faculty, is substantial.

This investigation revealed a rapid and widespread adoption of Generative AI tools among students across the participating Indonesian higher education institutions. Students primarily utilized these tools for initial brainstorming, language refinement for academic English, and summarizing complex theoretical texts. A clear pattern emerged where reliance on AI was highest in tasks perceived as procedural or peripheral to the core learning objectives, such as formatting and citation assistance.

Faculty perceptions of Generative AI were markedly ambivalent. A significant portion of lecturers expressed optimism regarding GenAI's potential to automate administrative burdens and personalize student feedback loops. This optimism was, however, consistently overshadowed by profound concerns regarding academic integrity, the potential erosion of foundational critical thinking skills, and the difficulty in detecting AI-generated submissions.

Institutional responses to GenAI integration were found to be largely reactive and highly fragmented. The case study identified a significant deficit in formal training programs for both academic staff and students. This was coupled with an absence of clear, enforceable, university-wide policies governing the permissible use of AI in academic work, leaving lecturers to manage the challenge independently.

The actual impact on pedagogical practices remains nascent and localized. While a few instances of innovative teaching methods involving AI as a collaborative tool were observed, the dominant instructional model remained traditional. GenAI was frequently treated as a contraband tool to be policed, rather than as a pedagogical resource to be strategically integrated into the curriculum.

The rapid student uptake of GenAI mirrors global trends reported in numerous studies (Smith & Jones, 2023). Our findings diverge, however, in the specific application drivers; Indonesian students demonstrated a notably higher preference for using AI in language translation and formalization of academic prose, reflecting persistent local challenges with English as the academic lingua franca.

Faculty apprehension regarding academic integrity aligns closely with concerns documented in European and North American contexts (e.g., Miller, 2024). This study adds a unique dimension by linking this fear to the high-context, collectivist educational culture present in Indonesia. Distinguishing between acceptable collaboration and illicit collusion is an existing challenge, which faculty feel is dangerously blurred by GenAI.

The policy vacuum identified in the participating Indonesian institutions is consistent with the initial 'institutional panic' phase observed globally (Brown, 2023). Unlike some Western universities that quickly pivoted to adaptive assessment strategies, the institutions studied here appear to be in a prolonged state of deliberation, potentially hindered by bureaucratic inertia and hierarchical governance structures.

This research contrasts with emerging studies from technologically agile environments like South Korea and Singapore (e.g., Lee & Kim, 2024), which report rapid pedagogical innovation. The slow integration in Indonesia suggests that infrastructural limitations and traditional pedagogical beliefs—particularly the 'guru' model where the lecturer is the sole source of knowledge—present more significant barriers than in contexts where student-centered learning is already entrenched.

The findings signify a critical and widening misalignment between the rapid, bottom-up technological adoption by students and the slow, top-down pace of institutional and pedagogical adaptation. This gap creates an unregulated 'shadow curriculum' where autonomous, AI-assisted learning occurs without formal guidance, quality control, or ethical oversight from the institution.

The pronounced ambivalence of faculty suggests a nascent professional identity crisis. Lecturers are caught between their traditional role as primary knowledge transmitters and a new, undefined role as facilitators of human-AI collaboration (Catenaccio, 2025). They fundamentally lack the institutional training or structural support required to navigate this complex transition confidently.

The results point toward a deepening of the digital divide, shifting it from a simple matter of access to a nuanced matter of literacy (Ibieta dkk., 2025). This divide is no longer just about access to devices, but about the sophisticated capacity to use GenAI critically and ethically—a skill set that appears unevenly distributed among students, correlating with socio-economic and disciplinary backgrounds.

This study ultimately underscores that the Generative AI revolution is not technologically deterministic; its impact is profoundly mediated (Fernández-Castrillo & López-Varela Azcárate, 2024). The implementation and effects are shaped by Indonesia's unique socio-cultural values, existing educational hierarchies, and specific infrastructural realities, demanding localized solutions rather than the direct importation of foreign policies.

The primary implication for teaching practice is the immediate obsolescence of many traditional assessment methods, particularly the standard take-home essay and summative reports (Mukherjee dkk., 2025). Institutions must urgently redesign assessments to prioritize process over product, critical application, and viva voce or in-class demonstrations of competence over polished, potentially AI-generated outputs.

An unguided implementation of GenAI implies a significant and immediate risk to educational equity. Students possessing higher baseline digital literacy and critical thinking skills will leverage GenAI to accelerate their learning and output quality (Fann, 2024). Conversely, students lacking these skills may use the tools ineffectively for superficial learning, thereby widening existing achievement gaps.

The findings mandate a fundamental shift in stated learning objectives across the curriculum. Higher education must pivot from emphasizing information recall and synthesis (tasks now automatable) to emphasizing prompt engineering, critical evaluation of AI-generated content, systems-level thinking, and ethical decision-making within a human-AI synthesized workflow.

The clear implication for university administration is the urgent need for immediate and sustained professional development for all academic staff (Alli dkk., 2025). Without this support, faculty will remain ill-equipped to guide students, manage academic integrity, or harness the potential benefits of AI for their own teaching efficiency, leading to widespread frustration and inconsistent student experiences.

Students' rapid and often surreptitious adoption is likely driven by powerful extrinsic pressures for high grades combined with the intrinsic, undeniable efficiency of the tools. In a high-stakes assessment environment, Generative AI offers a pragmatic and accessible shortcut to meet demanding deadlines and sophisticated linguistic expectations that may otherwise seem unattainable.

Faculty hesitation and slowness to adapt are likely rooted in a rational fear of the unknown coupled with a tangible lack of institutional support (Phay & Chang, 2025). Without clear guidelines, validated pedagogical frameworks, or robust detection tools, experimenting with GenAI in the classroom presents a high-risk, low-reward endeavor for the individual lecturer concerned with maintaining academic standards.

The reactive and fragmented nature of institutional policy stems directly from the unprecedented speed of GenAI's public emergence (Chia & Frattarola, 2025). University governance structures, which are traditionally slow, consensus-driven, and deliberative, were simply not designed to respond effectively to an exponential technological disruption that rendered existing regulations obsolete in a matter of months.

The resilience of traditional, teacher-centric teaching methods is likely due to deeply entrenched cultural and structural norms (Hu dkk., 2025). The 'guru' model is ideologically resistant to the diffusion of authority required by student-led, AI-assisted learning models. Furthermore, existing incentive structures for faculty often prioritize research output over pedagogical innovation, discouraging experimentation.

Indonesian higher education institutions must immediately move beyond prohibitive stances and form dedicated AI task forces (Chiu, 2024). These groups must rapidly develop flexible, adaptive policies that guide the ethical use of GenAI, focusing on transparency, citation, and student declaration of use rather than unfeasible outright bans.

A massive, nationwide investment in blended faculty and student digital literacy programs is imperative (Ma dkk., 2025). This training must transcend basic 'how-to' workshops and focus intensely on advanced critical literacy: how to critically evaluate AI outputs, how to identify bias, and how to ethically integrate AI as a co-pilot rather than an oracle.

Future research must urgently focus on developing and validating new assessment models suitable for the Generative AI era within the Indonesian context. Longitudinal studies are critically needed to track the long-term impact of these new assessments on the development of student critical thinking, problem-solving, and domain-specific expertise.

Subsequent studies should move beyond cross-sectional case studies of perception. Action-research methodologies are needed to co-design and implement pedagogical interventions with faculty (Lee & Wong, 2025). Furthermore, longitudinal research is essential to understand the long-term evolution of student-AI collaboration and to measure the real-world impact of GenAI literacy on graduate employability in the modern Indonesian economy.

CONCLUSION

The most significant finding of this research is the profound misalignment between rapid, student-driven adoption of Generative AI and the slow, reactive posture of Indonesian higher education institutions. This gap is uniquely characterized by local factors: student use is heavily driven by specific linguistic challenges, while institutional inertia is reinforced by entrenched pedagogical cultures, such as the 'guru' model, which are resistant to the diffusion of authority implied by AI integration.

This study's primary contribution is conceptual, providing a sociologically-grounded counter-narrative to technologically deterministic views of Generative AI. By employing a case study methodology, it demonstrates how the impact of a global technology is uniquely

mediated and refracted by the specific institutional hierarchies, cultural norms, and infrastructural realities of the Indonesian higher education context.

The research is limited by its cross-sectional, perception-based design within a few institutions, which restricts the generalizability of the findings. Future research must therefore employ longitudinal and action-research methodologies; these studies are essential to co-design and evaluate pedagogical interventions with faculty, track the long-term evolution of student-AI collaboration, and validate new assessment models tailored to the Indonesian context.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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