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Artificial Intelligence Governance in Indonesian Education: Regulatory Analysis and the Strengthening of Academic Integrity in the Era of Generative AI

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ABSTRACT

The development of Generative Artificial Intelligence (Generative AI) technologies, such as ChatGPT, Gemini, Claude, and Copilot, has brought significant transformation to the Indonesian education sector. These technologies offer numerous benefits, including supporting personalized learning, enhancing the efficiency of educational administration, and facilitating the retrieval and processing of academic information. However, the increasing use of AI has also raised concerns regarding academic integrity, including AI-assisted plagiarism, information fabrication, excessive dependence on technology, and the decline of students' critical thinking skills. These challenges highlight the necessity of an AI governance framework that can accommodate technological advancement while safeguarding fundamental academic values. This study aims to analyze the governance of Artificial Intelligence in Indonesian education through an examination of existing regulatory frameworks and to formulate a model for strengthening academic integrity in the era of Generative AI. The research employs a normative legal method using statutory, conceptual, and comparative approaches, supported by an extensive literature review of relevant legislation, legal doctrines, and scholarly publications. The findings reveal that AI regulation in Indonesia remains fragmented and sector-specific, lacking a comprehensive legal framework to govern the use of AI in educational settings. In contrast, regulatory practices in various countries emphasize the importance of transparency, accountability, personal data protection, fairness, and human oversight as fundamental principles of AI governance. Based on these findings, this study proposes a model for strengthening academic integrity through five key pillars: institutional policy development, AI literacy and digital ethics, transparency and accountability, adaptive learning and assessment design, and continuous monitoring and evaluation. This model is expected to serve as a foundation for developing educational policies that are adaptive, ethical, and responsible in responding to the rapid advancement of artificial intelligence technologies.

Keywords: *AI Governance, Academic Integrity, Generative AI, Education*

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A. INTRODUCTION

The rapid development of Artificial Intelligence (AI) technology in recent years has transformed various aspects of human life, including the education sector. The utilization of AI has become increasingly widespread in learning processes, instructional material development, academic assessment, and educational administration. The

emergence of technologies such as ChatGPT, Gemini, Claude, and other generative AI applications has provided significant convenience for both students and educators in accessing information and producing various forms of academic work efficiently. In Indonesia, the massive digital transformation that accelerated after the COVID-19 pandemic has further promoted the adoption of AI technologies within educational institutions (Boonlue, 2024). However, alongside these benefits, several concerns have emerged regarding academic integrity, including AI-assisted plagiarism, the use of AI to complete assignments without adequate learning engagement, manipulation of research outcomes, and the misuse of technology in online examinations.

This phenomenon indicates that the advancement of AI presents not only opportunities but also significant challenges for the educational sector (OECD, 2024). Data from the Education Integrity Assessment Survey (SPI Pendidikan) conducted by the Indonesian Corruption Eradication Commission (KPK) reveal that academic dishonesty continues to occur across various educational institutions in Indonesia, including plagiarism and increasingly sophisticated forms of academic misconduct facilitated by digital technologies (Utami et al., 2025). Such conditions make academic integrity an important social issue worthy of investigation, as it is closely related to the quality of education and the character formation of future generations (Kasneci et al., 2023).

A number of studies have examined the utilization of AI in education from various perspectives. Research by Cotton et al. demonstrates that generative AI offers substantial benefits in supporting learning activities but simultaneously increases the risk of academic integrity violations when not accompanied by adequate regulatory frameworks (Cotton et al., 2024). Furthermore, the use of AI in education requires clear ethical guidelines to ensure that the technology is applied responsibly. Likewise, UNESCO emphasizes the importance of AI governance that prioritizes the protection of learners' rights, transparency, and accountability (Tlili et al., 2023). Nevertheless, most existing studies focus primarily on the technical aspects of AI implementation or on ethical concerns in a general sense. Research that specifically examines the relationship between AI utilization, educational regulation, and the preservation of academic integrity within the Indonesian context remains relatively limited. Therefore, this study offers a novel contribution by integrating these three dimensions into a comprehensive analytical framework.

Based on these circumstances, this study aims to analyze the utilization of Artificial Intelligence in Indonesian education and examine the regulatory frameworks governing its use in maintaining academic integrity in the digital era. The research seeks to address the following questions: (1) How is AI currently utilized within the Indonesian education system? (2) How do national regulations govern the use of AI in educational environments? (3) What challenges does AI pose to academic integrity? and (4) What regulatory model is most appropriate for supporting the responsible use of AI in Indonesian education? This study argues that the utilization of AI in education is inevitable; however, it must be accompanied by adaptive, ethical, and responsive regulatory frameworks. Without adequate regulation, AI usage may exacerbate academic

misconduct and diminish the quality of learning processes. Conversely, appropriate regulations can encourage the use of AI as a tool for enhancing educational quality while simultaneously safeguarding the principles of academic integrity. Therefore, this research is expected to contribute theoretically to the growing body of literature on AI governance in education and practically by providing policy recommendations for governments, educational institutions, and other stakeholders in fostering an educational ecosystem grounded in academic integrity in the digital age.

B. METHOD

This study employs a normative legal research method (juridical-normative approach) with a library research design. This method was selected because the study focuses on analyzing legal norms governing the utilization of Artificial Intelligence (AI) in education and its implications for academic integrity in Indonesia. In normative legal research, law is understood as a set of norms contained in statutory regulations, legal doctrines, and various legal instruments that possess binding authority and are relevant to the issues under examination. This approach is used to assess the compatibility of existing regulations with the rapid development of AI technologies, which are increasingly utilized in learning processes, academic assessments, and the preparation of scholarly works (Diantha, 2022).

The legal materials used in this study consist of primary, secondary, and tertiary legal sources. Primary legal materials include legislation related to education and digital technology, particularly Law Number 20 of 2003 concerning the National Education System, which regulates the foundations, functions, and objectives of national education as well as the rights and obligations of all educational stakeholders (Law Number 20 of 2003 concerning the National Education System, 2003). In addition, this study refers to Law Number 27 of 2022 concerning Personal Data Protection, which governs the rights of data subjects, the processing of personal data, and safeguards against the misuse of data in digital environments. Another important primary legal source is Law Number 1 of 2023 concerning the Indonesian Criminal Code, which serves as a reference for examining potential legal liability arising from the misuse of AI within academic settings. Secondary legal materials are obtained from books, scholarly journal articles, and previous research discussing AI, digital ethics, and academic integrity (Law Number 27 of 2022 concerning Personal Data Protection, 2022).

The collection of legal materials was conducted through documentation studies and systematic literature searches across various credible academic and legal sources, including the National Legal Documentation and Information Network (JDIH), the Audit Board of Indonesia (BPK) Regulatory Database, Google Scholar, Scopus, and SINTA. All legal materials were selected based on their relevance, authority, and currency to ensure a comprehensive understanding of the development of AI applications in education and the regulatory dynamics surrounding them. This technique enables researchers to establish a strong and academically accountable legal argumentation framework (Diantha, 2022).

The legal materials were analyzed using a descriptive-analytical method through three approaches: the statute approach, the conceptual approach, and the comparative approach. The statute approach was employed to identify and analyze regulations related to the use of AI in education. The conceptual approach was utilized to examine the concepts of academic integrity and AI governance, while the comparative approach was applied to compare AI regulatory policies in various countries as a basis for considering future regulatory development in Indonesia. The results of the analysis were subsequently used to formulate policy recommendations aimed at promoting the responsible use of AI while maintaining academic integrity in the digital era.

C. RESULTS AND DISCUSSION

1. The Utilization of Artificial Intelligence in Indonesian Education

The development of digital technology in the era of the Fourth Industrial Revolution has brought significant changes to various sectors of life, including education. One of the most influential innovations is Artificial Intelligence (AI). AI refers to a technology that enables computer systems to imitate human cognitive abilities, such as learning, analyzing data, recognizing patterns, making decisions, and solving problems automatically. In the context of Indonesian education, the utilization of AI has continued to grow alongside the increasing digital transformation promoted by the government, educational institutions, and the demands of twenty-first-century learning. AI is no longer merely a technological tool but has the potential to transform learning paradigms from conventional approaches into more personalized, adaptive, and data-driven systems (Ashari & Napitupulu, 2024).

In Indonesia, the application of AI in education can be observed through the use of various digital learning platforms capable of adapting educational content to students' individual needs. AI-based learning systems can analyze students' abilities, identify their strengths and weaknesses, and provide recommendations for learning materials that correspond to their levels of understanding. This approach is commonly known as personalized learning. Through such systems, the learning process becomes more effective because each student receives a unique learning experience tailored to their characteristics and needs. Furthermore, AI can provide real-time feedback, enabling students to identify mistakes promptly and improve their understanding more efficiently (Alam et al., 2024).

The utilization of AI also offers substantial benefits for educators. Teachers and lecturers can employ AI-powered applications to develop learning materials, create assessment instruments, design interactive learning media, and conduct automated evaluations. The emergence of generative AI technologies, such as educational chatbots and natural language processing systems, assists educators in reducing administrative workloads, allowing them to focus more on enhancing the quality of instruction. Several studies have demonstrated that AI can improve educators' work efficiency and support more accurate decision-making through the analysis of student learning data (Noperliani Gea et al., 2025).

In addition to supporting teaching and learning processes, AI plays an important role in educational administration. Many educational institutions have begun utilizing AI technologies to manage academic records, monitor student attendance, predict dropout risks, and provide automated academic services through chatbots. The implementation of AI in administrative processes enables faster, more accurate, and more efficient data management compared to conventional manual systems. Consequently, educational institutions can improve service quality while reducing administrative burdens, which have long been recognized as a major challenge in educational management (Lima et al., 2025).

The advancement of AI has attracted even greater attention following the emergence of various generative AI platforms such as ChatGPT, Gemini, and Copilot, which are widely used by students to search for information, complete assignments, and support independent learning activities. These technologies create significant opportunities to enhance digital literacy and critical thinking skills among learners. When used appropriately, AI can function as a learning partner that helps students understand complex concepts, provides educational simulations, and expands access to high-quality learning resources. Within the framework of Indonesia's Merdeka Curriculum, AI can also support student-centered learning and foster twenty-first-century competencies, including creativity, collaboration, communication, and problem-solving skills (Noperliani Gea et al., 2025).

Despite its numerous benefits, the implementation of AI in Indonesian education faces several challenges. One of the primary concerns is the digital infrastructure gap between urban and rural areas. Not all schools have adequate internet access, sufficient technological devices, or human resources capable of operating AI-based systems. This condition may lead to a widening digital education divide if equitable access to technology is not ensured. Therefore, the government must guarantee that the benefits of educational digital transformation can be experienced equally by all students across Indonesia (Lima et al., 2025).

Another equally important challenge concerns ethical issues and data security. AI systems rely on the collection and analysis of large volumes of data, including students' personal information. Without appropriate regulations, AI utilization may create risks related to privacy violations, data misuse, and discrimination resulting from algorithmic bias. Consequently, comprehensive regulations are required to govern AI implementation in education, including provisions concerning personal data protection, algorithmic transparency, and accountability in technological applications. UNESCO has also emphasized the importance of developing AI systems that uphold human values, justice, and inclusivity within the educational sector (Lima et al., 2025).

Moreover, excessive reliance on AI may foster technological dependency and potentially weaken students' critical thinking abilities. Some scholars have expressed concerns that students may become overly dependent on instant answers generated by AI rather than engaging in independent analysis and reflection. Therefore, the integration of AI into education should be accompanied by the strengthening of digital literacy, ethical

awareness regarding technology use, and the development of higher-order thinking skills. AI should be positioned as a learning support tool rather than a substitute for teachers or the authentic learning process itself (Cukurova, 2025).

Artificial Intelligence possesses tremendous potential to improve the quality of education in Indonesia through learning experiences that are more personalized, efficient, and adaptive. AI can assist students in obtaining educational experiences that better align with their individual needs, support educators in fulfilling their professional responsibilities, and enhance the effectiveness of educational management. Nevertheless, the implementation of AI must be conducted responsibly by considering issues of equitable access, ethical standards, data security, and human resource readiness. With appropriate policies, improved digital literacy, and collaboration among the government, educational institutions, and society, AI can become a strategic instrument for developing an innovative, inclusive, and globally competitive educational system in Indonesia (Ashari & Napitupulu, 2024).

2. Challenges to Academic Integrity in the Era of Generative AI

The rapid development of Generative Artificial Intelligence (Generative AI) technologies, such as ChatGPT, Gemini, Claude, and other large language model-based applications, has significantly transformed the educational landscape. These technologies enable users to generate text, images, computer code, and data analyses quickly and efficiently. Within higher education, Generative AI offers numerous benefits, including assisting students in locating references, summarizing academic literature, improving grammar and writing quality, and supporting more personalized learning experiences. However, alongside these advantages, significant challenges to academic integrity have emerged, raising concerns among educators and researchers (Yusuf et al., 2024).

Academic integrity encompasses a set of core values, including honesty, trust, fairness, respect, responsibility, and courage in conducting academic activities. These values are reflected in the originality of scholarly work, respect for intellectual property rights, honesty throughout the learning process, and adherence to ethical research practices. The emergence of Generative AI introduces new dilemmas because these technologies can produce human-like content, making the boundary between legitimate technological assistance and academic misconduct increasingly blurred (Bittle & El-Gayar, 2025).

One of the most significant challenges is the growing risk of AI-assisted plagiarism, often referred to as “aigiarism.” Unlike conventional plagiarism, which involves directly copying another person’s work, AI-assisted plagiarism occurs when students submit assignments that are partially or entirely generated by AI without proper acknowledgment. AI-generated content often appears original because it does not directly replicate existing sources; nevertheless, the work does not represent the student’s authentic intellectual effort. This situation raises important questions regarding the originality of academic work and the validity of assessment outcomes provided by instructors (Irfan et al., 2025).

Another challenge concerns the potential decline in deep learning processes. Excessive reliance on Generative AI for completing assignments may reduce students' critical, analytical, and creative thinking abilities. Academic learning is not solely concerned with the final product, such as essays or reports, but also with the intellectual process required to produce them. When AI replaces rather than supports cognitive engagement, the educational objective of developing higher-order thinking skills may be undermined (Johnston et al., 2024).

In addition, issues related to authorship and academic responsibility have become increasingly prominent. In scholarly writing, authors are accountable for the content, methodology, data, and conclusions presented in their work. However, when a substantial portion of a manuscript is generated by AI, questions arise concerning responsibility for errors, biases, or inaccurate information contained within the text. Numerous international academic journals have clarified that AI cannot be recognized as an author because it lacks both legal standing and ethical accountability comparable to that of human researchers (Bjelobaba et al., 2024).

Another growing concern is the phenomenon of AI hallucination, whereby Generative AI systems produce fabricated references, data, quotations, or research findings that appear credible but do not actually exist. If students or researchers rely on such information without proper verification, the quality of scholarly work may be compromised and misinformation may spread. In research contexts, this problem threatens academic credibility and the integrity of scientific knowledge as a whole.

Further challenges arise from the limitations of AI-detection technologies. Many educational institutions have adopted AI-detection software to identify potential academic misconduct. However, studies indicate that these tools often demonstrate limited accuracy and are susceptible to both false-positive and false-negative results. Consequently, students who complete their work independently may be incorrectly accused of using AI, while actual misuse may go undetected. Such circumstances raise concerns regarding fairness and may undermine trust between students and educational institutions.

From an institutional perspective, many universities continue to face uncertainty regarding policies governing the use of Generative AI. Some institutions impose strict restrictions, whereas others permit AI use under specific conditions. This inconsistency often creates confusion among both students and faculty members. Therefore, clear guidelines are needed regarding acceptable AI usage, citation practices, transparency requirements, and sanctions for violations (Irfan et al., 2025).

Nevertheless, Generative AI should not be viewed solely as a threat. Numerous studies suggest that these technologies can serve as effective educational tools when used responsibly. AI can assist students in understanding complex concepts, provide feedback on written work, and enhance academic productivity. Consequently, a more constructive approach is not to prohibit AI entirely but to foster AI literacy and digital ethics, enabling students to utilize these technologies responsibly and critically (Johnston et al., 2024). To address these challenges, higher education institutions must reconsider and transform

their assessment systems. Evaluation models that focus exclusively on final products should be replaced with assessments emphasizing learning processes, reflective practices, oral presentations, critical discussions, portfolios, and experiential projects. Such approaches can reduce opportunities for AI misuse while ensuring that students genuinely understand the material they study. Recent research consistently highlights that authentic assessment designs are more effective in preserving academic integrity than relying solely on AI-detection software.

The era of Generative AI presents both challenges and opportunities for education. Major concerns include the increased risk of plagiarism, diminished originality in academic work, authorship disputes, fabricated information, limitations of AI-detection systems, and the lack of comprehensive institutional policies. However, through clear regulations, enhanced AI literacy, and innovative approaches to teaching and assessment, Generative AI can be leveraged to improve educational quality without compromising academic integrity. Ultimately, the future of education depends not on the ability to prohibit AI, but on the capacity of educational institutions to cultivate an adaptive, ethical, and responsible academic culture in an increasingly technology-driven world.

3. Regulations and Policies on the Use of Artificial Intelligence (AI) in Indonesian Education

The development of Artificial Intelligence (AI) has brought significant changes to the global education sector, including in Indonesia. AI technology enables learning processes to become more personalized, adaptive, and efficient through various applications such as intelligent tutoring systems, educational chatbots, learning analytics, and automated assessment tools. However, the increasing use of AI has also generated various legal, ethical, and academic concerns that require clear regulations and policies. Consequently, the Indonesian government has begun formulating policies to ensure that AI is utilized in education in a safe, responsible, and quality-oriented manner (Efendi et al., 2025).

From a normative perspective, as of 2025 Indonesia had not yet enacted a specific law governing Artificial Intelligence. Existing AI-related regulations remain dispersed across various legal frameworks concerning personal data protection, electronic systems, copyright, and national digital transformation policies. This situation indicates that AI governance in Indonesia is still in an emerging regulatory stage. Scholars have argued that the absence of comprehensive AI-specific legislation may increase the risk of technological misuse, particularly regarding data privacy, algorithmic transparency, and accountability in AI applications across various sectors, including education (Revolusi & Febriandy, 2025).

Within the educational context, the Indonesian government, through several ministries, has begun developing guidelines for AI utilization in response to the growing adoption of generative AI platforms such as ChatGPT, Gemini, Claude, and other AI-based educational applications. These policies are intended to safeguard academic integrity, protect students from potential misuse of technology, and ensure that AI

functions as a learning support tool rather than a substitute for critical thinking and independent learning processes (Efendi et al., 2025).

One significant development was the issuance of national guidelines on AI utilization in education through the Joint Ministerial Decree of Seven Ministers in 2026, which regulates the use of digital technologies and artificial intelligence across formal, non-formal, and informal education sectors. The policy emphasizes that AI use must be aligned with students' developmental stages and remain under the supervision of educators. Furthermore, AI should not replace learning activities that require critical thinking, creativity, and problem-solving skills.

Even before the introduction of these guidelines, Indonesia's educational policy direction had already reflected a commitment to digital transformation. The Ministry of Education promoted the use of digital technologies through initiatives such as the Merdeka Mengajar Platform, school digitalization programs, and the strengthening of digital literacy. AI has subsequently been viewed as an integral component of educational transformation capable of supporting personalized learning, accelerating the provision of learning materials, and assisting teachers in conducting more effective assessments. Nevertheless, the government continues to emphasize the importance of developing digital literacy and AI literacy competencies among both teachers and students to ensure the responsible use of these technologies (Syahputra et al., 2026).

From an educational policy perspective, several key principles have begun to shape AI governance. The first is the principle of transparency, whereby users should be informed when information or recommendations are generated by AI systems. Transparency is essential to prevent information manipulation and to ensure accountability within the learning process. The second principle is accountability, which requires that every AI application in education have clearly identifiable parties responsible for its impacts. The third principle concerns fairness and non-discrimination, ensuring that AI algorithms do not generate biased outcomes that disadvantage particular groups. The fourth principle involves the protection of students' personal data, which has become one of the most critical concerns regarding AI implementation in educational environments (Revolusi & Febriandy, 2025).

Data protection has become a major concern because most AI applications require user data to provide personalized services. In educational settings, such data may include student identities, academic records, learning activities, and learning preferences. Therefore, AI implementation must comply with regulations concerning personal data protection and information security. Educational institutions must ensure that student data are not misused, transferred, or processed without legitimate consent and legal authorization (Raharjo & Rohmadi, 2025).

Beyond legal concerns, AI use in education is closely associated with issues of academic integrity. Generative AI technologies enable students to produce essays, assignments, and responses automatically. If left unregulated, such capabilities may increase instances of plagiarism and diminish the quality of the learning process. Consequently, numerous studies recommend that educational institutions establish ethical

guidelines for AI usage, including mandatory disclosure of AI assistance in academic work. This approach aims to preserve academic honesty while encouraging the productive and responsible use of AI technologies.

Recent studies also indicate that the challenges of AI implementation in Indonesia extend beyond regulatory concerns to include the readiness of human resources and educational infrastructure. Many teachers still lack sufficient competence regarding AI operations, potential benefits, and associated risks. Therefore, governments and educational institutions must provide continuous AI literacy training to enable educators to integrate these technologies effectively into teaching and learning processes.

Looking ahead, AI regulation in Indonesian education is expected to evolve toward a more comprehensive governance framework. The Ministry of Communication and Digital Affairs has initiated the development of a national AI roadmap and regulatory framework encompassing ethical principles, transparency, data security, and oversight mechanisms for AI applications. These regulations are expected to provide legal certainty for educational institutions while protecting students' rights in the era of digital transformation.

In conclusion, regulations and policies governing AI use in Indonesian education have become increasingly necessary as the adoption of artificial intelligence technologies continues to expand within learning environments. The establishment of adaptive regulations focused on protecting students' rights will serve as a crucial foundation for ensuring that AI functions as a tool for improving educational quality rather than creating new challenges. Through a combination of robust regulations, adequate digital literacy, and effective oversight, AI can be utilized optimally to support the realization of an innovative, inclusive, and sustainable Indonesian education system (Revolusi & Febriandy, 2025).

4. Regulatory Practices of Artificial Intelligence in Various Countries and Their Relevance to Indonesia

The rapid development of Artificial Intelligence (AI) has encouraged many countries to establish regulatory frameworks aimed at mitigating risks while simultaneously promoting technological innovation. Since 2020, discussions on AI governance have intensified as AI applications have expanded beyond industry and business sectors into education, healthcare, finance, security, and public administration. This expansion has raised numerous legal and ethical concerns, including personal data protection, algorithmic transparency, accountability of automated decision-making, algorithmic discrimination, and the protection of human rights. Consequently, many countries have begun developing AI regulations tailored to their respective legal systems, economic priorities, and national interests (Lo, 2025).

The European Union is widely regarded as one of the most progressive regions in AI regulation through the implementation of the AI Act, which adopts a risk-based approach. This regulation classifies AI systems into several categories: unacceptable risk, high risk, limited risk, and minimal risk. High-risk AI systems, including those used in

education, employment recruitment, public services, and law enforcement, are required to comply with stringent standards regarding transparency, security, technical documentation, and human oversight. This approach seeks to ensure that technological innovation progresses without compromising the rights and freedoms of citizens.

In contrast, the United States has adopted a more flexible and innovation-oriented regulatory model. Rather than enacting a comprehensive AI-specific law, the U.S. government has developed sector-specific policies tailored to the needs of individual industries. This approach provides technology companies with greater freedom to innovate and accelerate AI development. Nevertheless, the government continues to uphold principles of safety, consumer protection, and risk mitigation through federal guidelines and regulatory agency policies. The American model reflects an effort to balance regulatory oversight with economic competitiveness within the global technology ecosystem (Lo, 2025).

Meanwhile, China has developed a more centralized and state-controlled AI regulatory framework. The Chinese government has introduced regulations governing recommendation algorithms, generative AI services, and data security. These regulations require AI companies to ensure that their systems do not threaten national security, maintain social stability, and comply with information control policies established by the state. China's approach demonstrates that AI regulation can serve not only as a mechanism for public protection but also as an instrument for strengthening governmental control over digital technologies.

Within Southeast Asia, Singapore has emerged as a leading example of adaptive AI governance. The government introduced the Model AI Governance Framework, which emphasizes transparency, fairness, accountability, and risk management. This framework adopts a collaborative approach by involving government agencies, private sector organizations, academic institutions, and civil society in policy development. Beyond regulatory measures, Singapore also provides practical implementation guidelines for organizations utilizing AI, thereby facilitating responsible technology adoption. This approach is often regarded as a suitable model for developing countries seeking to promote innovation while safeguarding ethical and legal considerations (Revolusi & Febriandy, 2025).

Japan and South Korea have likewise developed AI policies oriented toward technology-driven economic growth. Both countries consider AI a strategic component of national digital transformation and global competitiveness. Their regulatory approaches emphasize ethical principles, human resource development, technological security, and research capacity enhancement. Governments primarily act as facilitators, creating favorable environments for innovation while ensuring that AI development and deployment remain aligned with societal values and citizens' rights (Yang & Li, 2026).

In the education sector, various countries have begun formulating specific policies governing AI utilization. The European Union categorizes educational AI systems as high-risk because of their potential influence on learning processes, assessments, and academic decision-making. Similarly, UNESCO advocates a human rights-based

approach to AI governance in education, emphasizing student data protection, algorithmic transparency, and human oversight of automated systems. Numerous studies indicate that the implementation of AI in education should be accompanied by regulatory mechanisms capable of preventing algorithmic bias, discrimination, and inequalities in technological access (Wang, 2024).

For Indonesia, international experiences in AI regulation provide valuable lessons for the development of a national governance framework. As of 2025, Indonesia has not yet enacted a comprehensive law specifically regulating AI. Existing regulations remain fragmented across various legal instruments, including the Personal Data Protection Law, the Electronic Information and Transactions Law, and several government-issued ethical guidelines concerning AI use. This regulatory fragmentation has created legal gaps regarding accountability for AI systems, algorithmic transparency, and the protection of users' rights in AI-driven environments (Revolusi & Febriandy, 2025).

The European Union's experience suggests that Indonesia could benefit from adopting a risk-based regulatory approach. AI systems utilized in strategic sectors such as education, healthcare, finance, and public services require stricter oversight compared to those used for general purposes. Furthermore, Indonesia may draw lessons from Singapore's flexible and adaptive governance model, ensuring that regulation supports rather than hinders technological innovation. A collaborative approach involving government institutions, universities, industry stakeholders, and civil society organizations is essential to developing regulations that effectively address the interests of all stakeholders.

Within the educational context, AI regulation in Indonesia should focus on academic integrity, student data protection, and transparency in the use of generative AI technologies throughout the learning process. The emergence of technologies such as ChatGPT, Gemini, and other generative AI platforms has transformed traditional approaches to teaching and learning. Therefore, clear guidelines are needed regarding the permissible use of AI, oversight mechanisms, and the responsibilities of educational institutions in ensuring that AI serves as a tool to support learning rather than replace students' critical thinking and intellectual development.

Thus, regulatory practices across different countries demonstrate that no single AI governance model is universally applicable. Each nation develops regulatory approaches that reflect its unique social, political, economic, and cultural contexts. Nevertheless, several fundamental principles consistently underpin modern AI governance, including transparency, accountability, security, personal data protection, fairness, and respect for human rights. Indonesia can draw upon these international experiences as references in establishing an adaptive, inclusive, and sustainable AI regulatory framework capable of supporting national digital transformation while safeguarding public interests (Barus et al., 2025).

5. Strengthening Academic Integrity through Responsible AI Governance

The rapid development of Artificial Intelligence (AI), particularly Generative AI technologies such as ChatGPT, Gemini, and Copilot, has significantly transformed higher education. These technologies offer numerous benefits, including assisting with information retrieval, idea generation, data analysis, and enhancing learning effectiveness. However, their widespread use has also raised serious concerns regarding academic integrity, including AI-assisted plagiarism, data fabrication, reference manipulation, excessive dependence on technology, and the decline of students' critical thinking skills. Recent studies indicate that the increasing adoption of Generative AI has compelled higher education institutions to reconsider assessment systems, academic policies, and learning supervision mechanisms (Bittle & El-Gayar, 2025).

In this context, a model for strengthening academic integrity should not rely solely on restrictive measures or prohibitions on AI use. Instead, it should be based on Responsible AI Governance, an approach that positions AI as a learning support tool that must be used ethically, transparently, accountably, and in accordance with academic values. Responsible AI Governance encompasses a set of principles, policies, procedures, and oversight mechanisms designed to ensure that AI use aligns with educational objectives. This concept is grounded in the principles of transparency, fairness, accountability, data security, and respect for human values. Within educational settings, responsible AI governance seeks to ensure that technological advancement does not undermine the fundamental purpose of learning: the development of critical thinking, creativity, and integrity among students (Francis et al., 2024). A model for strengthening academic integrity through Responsible AI Governance can be developed around five key pillars.

a. Institutional Policy and Regulatory Framework

Higher education institutions should establish clear policies governing the use of AI in academic activities. These policies should define the boundaries of AI usage, identify permissible applications, specify disclosure requirements, and outline sanctions for misuse. Students must receive clear guidance regarding when AI may be used as a supportive tool and when academic work must be entirely their own. Well-defined policies reduce ambiguity, which is often a major factor contributing to academic misconduct involving AI. Research suggests that students are more likely to use AI responsibly when institutions provide clear and accessible guidelines (Johnston et al., 2024).

b. AI Literacy and Digital Ethics

Academic integrity cannot be maintained solely through monitoring and enforcement; it must also be fostered through education. Therefore, both students and educators should develop adequate AI literacy. This literacy includes understanding how AI systems function, recognizing their limitations, identifying potential biases, acknowledging the risk of AI hallucinations, and understanding the ethical implications of their use. Digital ethics education constitutes an essential component of this pillar. Students should understand that using AI to automatically generate assignments without

substantive engagement constitutes academic misconduct. Conversely, the use of AI for brainstorming, language improvement, or idea exploration may be considered acceptable when conducted transparently and responsibly (Yusuf et al., 2024).

c. Transparency and Accountability

The principle of transparency requires that any use of AI in academic work be openly disclosed. For example, students may be required to include a statement describing how AI tools were utilized in completing assignments or scholarly work. Such disclosure enables instructors to evaluate the extent of AI involvement and distinguish it from the student's intellectual contribution. Accountability further requires users to assume full responsibility for the outputs generated with AI assistance. Although AI can support writing and research processes, students remain responsible for verifying the accuracy of information, the validity of data, and the authenticity of references used. This is particularly important because numerous studies have demonstrated that Generative AI systems may still produce inaccurate information or fictitious citations (Francis et al., 2024).

d. Adaptive Learning Design and Assessment

The emergence of AI necessitates a shift in assessment paradigms. Traditional evaluation methods that rely heavily on written assignments or take-home essays have become increasingly vulnerable to AI misuse. Consequently, educational institutions should adopt more authentic, process-oriented assessment strategies. Assessment formats such as oral presentations, case-based projects, reflective essays, portfolios, fieldwork observations, and discussion-based examinations can serve as more effective alternatives. These approaches enable instructors to assess students' critical thinking, creativity, and conceptual understanding more directly. Several studies have even suggested that attempting solely to detect AI-generated content is insufficient; instead, assessment reform represents a more sustainable long-term solution.

e. Continuous Monitoring and Evaluation

Strengthening academic integrity requires ongoing monitoring and evaluation mechanisms. Universities should establish AI ethics committees or dedicated oversight bodies responsible for evaluating policy implementation, addressing violations, and updating regulations in response to technological developments. Monitoring activities may include academic audits, surveys of students and faculty members, and assessments of policy effectiveness. Such measures ensure that AI governance remains dynamic and responsive to the rapidly evolving technological landscape (Bittle & El-Gayar, 2025).

In Indonesia, the implementation of Responsible AI Governance should be aligned with national educational values, academic culture, and prevailing ethical principles. Universities can integrate AI usage guidelines into academic codes of conduct, institutional regulations, and digital literacy curricula. Furthermore, collaboration among government agencies, higher education institutions, professional associations, and technology developers is essential to establish national standards for AI use in education.

The existence of consistent national standards would facilitate more effective implementation of AI governance and reduce policy disparities among institutions.

Ultimately, academic integrity in the AI era cannot be achieved through prohibiting technology. Rather, it requires the development of an adaptive, ethical, and responsible academic culture. Responsible AI Governance enables educational institutions to harness the benefits of AI while preserving the core values of honesty, originality, and academic responsibility. In this way, AI should not be viewed as a threat to academic integrity but as a valuable tool that can enhance educational quality when managed appropriately (Francis et al., 2024).

D. CONCLUSION

The development of Artificial Intelligence (AI) has brought fundamental changes to Indonesia's educational system through various innovations that support learning processes, assessment, and educational management. The utilization of AI offers significant opportunities to create more personalized, adaptive, and efficient learning environments, thereby improving the overall quality of education. However, these advancements also pose new challenges to academic integrity, particularly concerning AI-assisted plagiarism, information fabrication, technological dependency, and the potential decline of students' critical thinking skills when technology is used without adequate supervision.

This study reveals that Indonesia has not yet established a specific and comprehensive regulatory framework governing the use of AI in education. Existing regulations remain fragmented across various legal instruments related to education, electronic systems, and personal data protection. This condition highlights the urgent need for a more adaptive, integrated, and responsive regulatory framework capable of addressing rapid technological developments. The experiences of several countries, including the European Union, the United States, Singapore, Japan, and South Korea, demonstrate that effective AI governance should be founded upon the principles of transparency, accountability, fairness, personal data protection, and respect for human rights.

As an effort to safeguard academic integrity in the digital era, this study proposes a responsible AI governance model based on five key pillars: strengthening institutional policies and regulations, enhancing AI literacy and digital ethics, implementing principles of transparency and accountability, reforming adaptive learning and assessment designs, and establishing continuous monitoring and evaluation mechanisms. Through the implementation of this model, AI can be optimally utilized as an instrument for improving educational quality without compromising the values of honesty, responsibility, and academic originality. Therefore, the future of Indonesian education does not lie in restricting the use of AI, but rather in developing governance mechanisms that can guide the ethical, responsible, and integrity-oriented utilization of technology.

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