

Generative AI and Cambodian curriculum: Risks and Rewards for Student Learning and Research Integrity

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Abstract

This paper analyzed the incorporation of generative artificial intelligence (AI) into Cambodian education system, focusing on the curriculum development, pedagogy, and academic integrity. This study reviewed the uses of ChatGPT, Grammarly, and Notion AI by Cambodian students and educators. With the generative AI for education, such as personalized feedback, research assistance, and digital skills training, the perils of facilitating cheating, misinformation, and worsening the digital divide pervasive in education were just as considerable. The tiered policy strategies and practical frameworks were useful for the education institutions, teachers, and technology creators in using ethical and inclusive AI. The research emphasized on contributions to national policy frameworks, advanced educational tools, interoperability, and proactive role and educational equity.

Keywords: *Generative AI, Cambodian education, academic integrity, digital pedagogy, ChatGPT, educational policy*

I. Introduction

The adoption of educational technology tools in Cambodian educational systems has the potential to improve workflows and transform pedagogical practices. In particular, tools such as OpenAI's ChatGPT and the numerous educational technologies using the tool have the potential to improve educational experience. AI Educational technologies have the potential to assist students process learning by answering questions, suggesting learning strategies, and guiding the learning process (Huot & Loch, 2025). Further, as noted by Hok et al. (2026), educators can use educational technologies to improve themselves by generating learning content, answering students' questions, and providing real-time feedback on student work. All of which can enhance learning and streamline classroom processes. In the future,

educators will have access to new educational technologies, the use of which will profoundly affect the Cambodian educational system.

Educational institutions worldwide are trying to find balance on how to incorporate tools like ChatGPT into their systems. Some develop AI-driven tools like writing centres or teaching assistant apps (Holmes et al., 2019). Other institutions have opted to institute bans or use AI-detection tools due to concerns regarding cheating and plagiarism (Dwivedi et al., 2023). As Cambodia rapidly adopts the generative AI technologies, AI applications like ChatGPT, Grammarly, and Quillbot are independently utilized by the Cambodian students at the high school and university (CCHR, 2023; UNESCO, 2023). This grassroots usage corresponds to digital transformation which escalated with the COVID-19 pandemic. School closures necessitated the digital education platforms like Zoom, Google Meet, Google Classroom, and Moodle. Cambodian education community (students and teachers) rapidly acclimated to the digital technologies. However, this digital pivot and the technologies utilized brought to light the considerable unaddressed the gaps in educational infrastructure, digital competencies, and readiness of the educational institutions (ITU, 2022; MoEYS, 2022). This is true in situations where students lack academic support or have insufficient proficiency of language instruction (UNESCO, 2022). With the increased adoption of AI tools in education, Ministry of Education, Youth and Sport (MoEYS) made modifications to curriculum to incorporate educational AI.

The educators and students are left without ethical or practical instructions on the use of educational AI tools (Huot & Such, 2025). Generative AI in the academic context is not harmful or beneficial. Its consequences on learning are contingent on its constructive deployment in the curriculum, institutional regulation, and how learners and educators understand its use. Here, AI educational tool may have positive or negative consequences and may provide the much-needed impetus to the personal learning and skill development or impairs critical thinking (MoPT, 2021). AI is a potential threat to academic integrity or a potential game changing tool for education. With the AI application in Cambodian education systems, developing policy, curriculum and training helps the students and educators use and analyze AI tools with responsibility and creatively (Holmes et al., 2019; Luckin et al., 2016). This study will analyze the integration of generative AI with the academic integrity in Cambodia. Using empirical evidence, fictionalized case studies, and policy reviews, the author weighs the potential benefits and challenges to the implementation of AI in Cambodian education.

II. Conceptual Framework of Literature Review

AI Tools for Research and Academics

AI can generate contents, such as text, image, computer code, and speech. These systems use in a large number with the internet and online text for their training and researching data. Holmes et al. (2019) defined the early AI systems and contemporary generative AI systems as the ability to create new, contextually appropriate, and human-like. Huot and Tep (2025) argued that generative AI systems can prompt users with written text, summary and paraphrased documents, and translation between English and other major languages. AI systems can help users understand complex information. AI systems can generate names and descriptions for documents (Dwivedi et al., 2023; Luckin et al., 2016). Accordingly, Dwivedi et al. (2023) examined the specific functions of generative AI as an assistant in academic settings that required repetitive or language-heavy tasks. They also noted that AI could automate some of the early stages of the academic writing process, such as brainstorming, and outlining, and, in turn, impacting the students' active participation and productivity.

Students, in global and local contexts as well as Cambodia, started to depend on the certain generative AI tools with different educational opportunities. AI tool in education that offered the generative AI was Open AI's Chat GPT. According to the studies confirmed by Holmes et al. (2019), Chat GPT turned into an informal academic assistant, helping students in writing the essays, clarifying topics, translating, and generating citations. Grammarly, an AI-enabled tool that, with its primary function of working as a grammar and style checker, improved writing by fluency and even structures (Luckin et al., 2016). Grammarly, also, was a corrective tool and a real-time tutor in a constructive manner, providing corrective feedback instead of direct teaching. Notion AI served as a digital planner and organizer. QuillBot, on the other hand, had the ability to rephrase and reconstruct documents, avoiding plagiarism (Dwivedi et al., 2023). Google Bard and Bing Copilot combined Large Language Models (LLM) with web search functionalities to a means of querying the higher-level academic questions and obtaining AI-generated answers along with supporting references (Huot & Hok, 2025). Obtaining information to conduct research, preparing drafts, and becoming familiar with a new topic were the most common purposes (Holmes et al., 2019). Although these tools were widely adopted for some time, informal surveys, as well as anecdotal reports, students in Cambodia used these tools to lessen the effects of language deficiency and to fill in the missing pieces (ITU, 2022; UNESCO, 2021).

Influences of AI Tools on Future Teaching

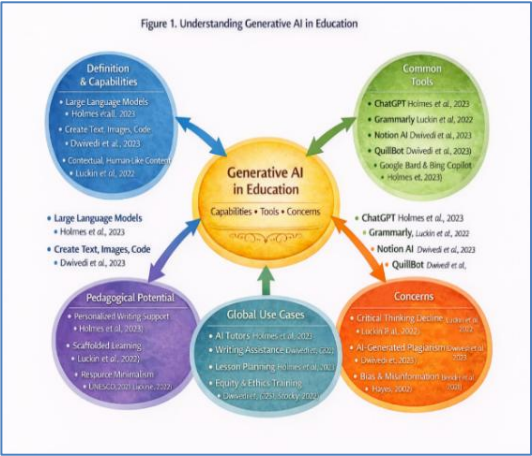
Generative AI can be acted as an adaptable resource for understaffed pedagogical resources constructive, reinforcing approaches. The significant impacts of AI have been in the fields of education, language, and writing. According to Holmes et al. (2019), AI tools can assist learners in revising and improving quality of their texts. This was extremely valuable in multilingual developing countries like Cambodia, where the lack of English proficiency was a significant barrier to the academic achievement (UNESCO, 2021). Accordingly, Luckin et al. (2016) pointed out that generative AI can assist in scaffolded learning, particularly with writing and research assignments. In large classrooms, where the teacher feedback was primary, an AI generated, model answer can function as a guiding template for students to complete their own work. In addition, generative AI provided time lag feedback, which was an enormous burden for teachers to provide. AI suggestions about tone, structure, and vocabulary can assist students in revising their work, creating a self-directed learning environment. Holmes et al. (2019) stated that feedback was the most transformative in education systems.

Institutions globally began experimenting with various structured-uses of generative AI within teaching and academic assistance. For instance, the tutors replicated the function of individual teachers in helping students work through problem-solving processes and providing customized explanations (Holmes et al., 2019). AI tutors can respond to student queries, administer quizzes, and cater to varying learning preferences. Moreover, university libraries employed the generative AI to help students with research focused synthesis, bibliographic construction, and academic keyword queries. As reported by Dwivedi et al. (2023), AI enriched writing labs were designed to assist the users at the brainstorming, argument structuring, and peer review simulation steps of the writing process. AI was used by educators to produce lesson plans, quizzes, and rubrics, which saved time and fosters increased instructional uniformity. Holmes et al. (2019) state that AIs had the potential to create more inclusive instructional designs by providing students with adaptive learning resources. While these examples served to illustrate the usefulness and adaptability of generative AIs, they also illustrated the need for structured oversight, ethics, and professional development for the educators and students.

AI Risks for Learning and Research Integrity

The generative AIs can be useful, but some challenges can occur when trying to use them in the correct manner. Luckin et al. (2016) stated that students became more passive in their learning if there was an over-reliance on using

AI to do work for them. However, there was less thinking employed at any level, whether it was by evaluating something, synthesizing thoughts, or by using logic to come to conclusions. Chheang and Huot (2025) supposed that AI was used to perform tasks for students and make basic loss of educational value. The next challenge tried to identify AI as the author of the plagiarized work. Dwivedi et al. (2023) suggested a traditional plagiarism scanner such as Turnitin cannot pick up an AI author while the AI was the author. But this led to questions about authorship and teacher’s ability to verify what a student accomplished. When there was a lack of developed institutional policies on academic integrity, the bias and misinformation could be happened. Bender et al. (2021) detailed the issues of large language models reproducing the bias present in training data and producing outputs that were the racist, sexist, and erroneous. With the problematic in schools, learners were often ill-equipped to apply the critical literacy and necessary skills to interrogate or validate information produced by AI. Generative AI also presented the possibility of amplifying digital inequality. The ITU (2022) and UNESCO (2022) reports described the inequitable access to the high-speed internet, digital devices, and English language skills within Cambodia, meaning rural and economically disadvantaged learners may not access and benefit from AI-supported learning, thereby increasing the disparity in learning outcomes of the more and less socially privileged. These issues highlighted the importance of Cambodia and similar lower and middle-income countries devising relevant policy frameworks, prioritizing investment in AI literacy, and developing ethical safeguards to defend the integrity of education, while utilizing the potential of AI, as shown in Figure 1.



III. Critical Arguments

Effects of AI Tools in Cambodian Education-contexts

Cambodian education level is managed by a government official through Ministry of Education, Youth and Sports (MoEYS). The national education system is divided into two subsections: general education (grades 1 through 12) and higher education. The education system is described by various education specialists (UNESCO, 2022), having a curriculum relied on the educational methods and assessments, with recall and high-stakes testing. The Curriculum Framework for General identifies the 21st century skills as valuable, with teacher-centred and textbook-driven pedagogy dominating classrooms Education (MoEYS, 2019). The rote memorization advocated by Luckin et al. (2016) will continue to become decreasingly useful in helping students to develop skills relating to problem solving, digital communication, and ethical reasoning which are necessary in a world filled with technology that violated human rights. The lack of adopting technology into pedagogy and curriculum amplifies the dissonance between curriculum objectives and classroom practice.

Cambodia tried to broaden digital education, and it continued to experience a digital divide. According to reports by the ITU (2022) and the Ministry of Posts and Telecommunications, Internet accessibility is improved and is reachable. However, there is a lack of accessible, affordable, and quality broadband, timely devices, and dependable electricity, especially in remote rural areas. In this case, the students start using the tools such ChatGPT or Grammarly. Holmes et al. (2019) stated that AI tools may serve as compensatory mechanisms to fill instructional voids. In Cambodia, learners cited inadequate English skills and insufficient writing assistance as the primary drivers of AI platform reliance. Dwivedi et al. (2023) observed that many students used AI tools as institutional support. Without an absence of clear academic policies, the students are left to set their own standards regarding the extent to which AI will be used. Cambodian universities and schools lack with the formal policies and strategic frameworks for the operationalization of artificial intelligence at academic level. Educational institutions use traditional essay detection systems (e.g., Turnitin) (Dwivedi et al., 2023).

In addition, the absence of educational governance frameworks compels individual educators and school administrators to weigh the ethical and pedagogical ramifications of AI without the pedagogical tools. Equipping learners with the ability of using AI in a constructive and ethical way is an

essential educational aim in the 21st century (Holmes et al., 2019). However, the curriculum continues to revolve memorization and standardized testing. As the use of AI becomes more common, these educational structures are at risk of being rendered irrelevant. The rapid digital transformation in education must be matched with a curriculum reform that embeds digital literacy, critical inquiry, and readiness for a digital workforce (UNESCO, 2022). Without these changes, Cambodian students, as illustrated in Table 1, will be skilled in using AI technologies, but will be unable to understand the social and economic ramifications or how to engage constructively in a digital economy.

Table 1. *The Cambodian Educational Context: Key Dimensions*

Dimension	Description
Curriculum Framework	Led by MoEYS, the national curriculum emphasizes rote learning and exam-based assessment. It lacks integration of 21st-century skills and modern digital pedagogy.
Digital Literacy Challenges	Urban–rural divides remain stark. Urban areas have better internet and device access, while rural areas face shortages. Most teachers are untrained in AI or digital pedagogy.
Student AI Use Patterns	University students in urban areas are using AI tools like ChatGPT for writing and translation. Usage is informal and often not understood or guided by faculty.
Institutional Readiness	There are no national or institutional policies governing AI use. Academic integrity codes remain outdated. Tools to detect AI-generated content are not in place.

Pros and Cons of Generative AI into Education Systems

The use of generative artificial intelligence (AI) significantly benefits the education systems, shaping the generative AI use in education. It, however, addresses the issues of engagement, access, skills provisioning, academy, and institutional capacity. Generative AI contributes to the improvement of student interaction through feedback. AI feedback can help students solve any problems and fill the gaps. Generative AI proves to be supportive of teachers, dealing with a workload, old materials, and scant opportunities (UNESCO, 2022). Drafting quizzes, creating lesson plans that align with learning goals, and providing basic feedback on the student assignments are examples of AI tools, with repetitive tasks. Holmes et al. (2019) said that the

use of AI is supervised and can be function as a teaching assistant, allowing relationship-based, interpretive, and mentoring teaching roles.

Generative AI also plays a role in the democratization of knowledge by eliminating language, cost, and accessibility barriers. ChatGPT and Google Bard, for example, help learners translate language, summarize text, and explain unfamiliar ideas. These tools help learners access the educational support and eliminate the need for expensive textbooks and private tutoring (UNESCO, 2021). AI's mobile compatibility makes accessible (ITU, 2022). In this case, generative AI potentially bridges the gap between formal education and self-directed, serving lifelong learning. The use of AI tools at the tertiary level is notable in terms of aiding research and writing. Generative AI aids the writing process by helping students develop research questions, identify patterns within a research area, summarize research papers, and construct bibliographies (Dwivedi et al., 2023). AI, used in a responsible manner, can play the role of a scaffold in the support of intellectual work rather than a substitute (Holmes et al., 2019).

The use of generative AI also develops a host of necessary 21st century skills such as digital literacy, prompt engineering, and ethical decision making. With the studies confirmed by Luckin et al. (2016), the integration of AI into learning systems fosters the creation of systems. AI integration meets the goals of developing a digital and knowledge-based economy (MoPT, 2021). Integration of AI into educational settings will be of the utmost importance to the development of country and its people. Nevertheless, the potential benefits of emerging technologies in educational settings are accompanied by numerous challenges. AI tools can facilitate undetectable ghost-writing because the authorship of AI-generated text is simply not attributable to the human user, even though the text is original. Plagiarism detection tools used by educational institutions are ineffective at recognizing instances of this practice. Students may lack understanding of ethical implications of utilizing AI and may unwittingly present AI-generated text as their own (Holmes et al., 2019).

Rewarding students for unexamined AI-generated responses is likely to create a culture and develop higher-order thinking skills (MoEYS, 2019). This poses intellectual resilience for success in higher education and the workforce. The incorporation of bias and misinformation as a challenge is notable (Bender et al., 2021). Due to a lack of digitized resources in the Khmer language, resources generated by AI will further push to the margin's local histories, cultural narratives, and social realities (UNESCO, 2022). Generative AI is typically portrayed as democratizing tools. If access is

unequal, the tools are democratizing in a negative sense. In Cambodia, there are no national policies, school-specific procedures, or frameworks concerning the training of teachers on the use of generative AI in education (CCHR, 2023). The absence of such policies creates ambiguity within the educational system. The risks associated with AI will outweigh the benefits unless there is adequate institutional capacity-building and reforms in the assessment systems, as highlighted in Table 2.

Table 2. *Opportunities and Challenges of Generative AI Integration in Cambodian Education*

Dimension	Key Opportunities	Major Challenges
Student Learning	Real-time feedback, enhanced engagement, personalized support	Reduced critical thinking, superficial learning
Teaching Practice	Lesson planning support, workload reduction, differentiated instruction	Lack of training, uncertainty in ethical guidance
Access and Equity	Low-cost academic support, mobile accessibility	Rural–urban digital divide, English-language dominance
Knowledge and Culture	Support for research and self-directed learning	Bias, misinformation, marginalization of local context
Governance	Potential to leapfrog infrastructure limitations	Policy vacuum, institutional unpreparedness

Generative-AI Use and Analysis in Education

Adoption of generative AI in Cambodian education is informal, decentralized, and unregulated. With the formal institutional strategies or national policy, it unregulated AI adoption is the result of individual experimentation by students and educators in terms to responding the specific pedagogical and academic challenges (Huot & Em, 2025). ChatGPT and other AI tools are used to draft essays, create paraphrased versions of sending documents, and translate content from other disciplines to English (Huot & Tep, 2025). The use of AI tools for writing essays, however, raises important questions of plagiarism and academic integrity (Huot & Loch, 2025). AI tools is defined as a form of academic dishonesty that is a response to the social and ethical norms of using writing aids. In this case, faculty members are bound to the absence of academic integrity frameworks and are left with the imposition of their own social and ethical norms.

However, AI-generated instructional materials help students advance their understanding. The pedagogical power of AI tools can promote fair and equitable access to educational technology, the development of situational instructional materials, and structured training (Luckin et al., 2016; UNESCO (2021). The use of AI in research and instruction of higher education, with guidelines for academic integrity and disclosure of AI-authored materials is also instituted in the pilot programs for (Vietnam MOET, 2022). Schools and policymakers are innovating in a policy vacuum (Huot & Hok, 2025; Huot & Tep, 2025). Otherwise, the integration of generative AI in education is likely to increase fragmentation and inequity.

Table 3. Case Examples and Key Analytical Insights

Case Context	Description	Core Issues Identified	Implications
Phnom Penh Universities	Students use ChatGPT for writing, paraphrasing, and translation	Blurred boundaries between assistance and misconduct; lack of integrity policies	Need for AI disclosure norms and assessment redesign
Rural High School	Teacher uses AI for quizzes and lesson preparation	Cultural mismatch, limited AI literacy, ethical uncertainty	Urgent need for teacher training and localized AI tools
ASEAN Comparison	Singapore and Vietnam implement structured AI policies	Cambodia lacks national AI education framework	Risk of regional marginalization without coordinated governance

IV. Conclusion

Generative AI was used for digitalizing the education system that brings with a host of new challenges, such as redefining learning, authorship, equity, and the governance of a rapidly digitizing society. AI tool was about the function of educational frameworks, pedagogical approaches, and socio-cultural environments. The ethics of AI and educational technologies are informed by notions, cultural, and infrastructural diversity. The adoption of AI systems is likely to elicit hegemonic systemic bias, disregard local epistemologies, and undermine relational equity in a bias. Generative AI

significantly influenced the students' learning outcomes, motivation, critical thinking, and academic identity, and at what educational level. The use of generative AI in education was about the reference to transform the education systems and reform. Incorporating generative AI was not only a matter of technological implementation, but also a matter of pedagogy, and ethics.

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