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Understanding Trends, Activities, and Recommendations Regarding AI Integration in Higher Education in Southeast Asia

building on the 2024 Southeast Asia Regional High-Level Policy Dialogue in Jakarta

Content

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1.Introduction

The integration of Artificial Intelligence (AI) in education has revolutionised the landscape of higher education in Southeast Asia, especially the learning experiences. Southeast Asia is a region characterised by diverse cultures, languages, and educational needs, where AI can offer the potential to address various challenges and improve educational equity and quality. Given the rapid advancement of AI—particularly Generative AI (GenAI)—higher education institutions (HEIs) in the region are increasingly exploring its applications in teaching, research, and institutional management. However, AI integration in higher education also raises critical questions regarding policy frameworks, teacher training, ethical considerations, and cross-sector collaboration.

To facilitate the discussion of addressing these challenges and opportunities, the 2024 Southeast Asia Regional High-Level Policy Dialogue was convened on April 25, 2024, in Jakarta, Indonesia, co-organised by the International Centre for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI), Indonesia Cyber Education Institute (ICE-I), UNESCO Bangkok, UNESCO Jakarta, with the support from Southeast Asian Ministers of Education Organisation (SEAMEO) Secretariat and Association of Southeast Asian Nations (ASEAN) Secretariat. The dialogue was structured into three thematic sessions: 'Leadership Transformation and Policies at the National and Institutional Levels for GenAI,' 'Teaching and Learning in the Age of GenAI and Teachers' Professional Development,' and 'Partnerships for Supporting GenAI Integration in Higher Education.' These sessions facilitated in-depth discussions on responsible AI adoption in HEIs, overcoming challenges in AI implementation, leveraging IIOE micro-certification for teacher upskilling, forging strategic partnerships, and developing technical solutions to support AI-driven digital transformation in higher education in Southeast Asian context.

This report reviews the outcomes of the policy dialogue on GenAI integration in higher education in Southeast Asia. It begins with a concise overview of AI and GenAI as transformative technologies, highlighting their increasingly critical role in and impact on higher education. The report then reviews the

experience and initaitives from international organisations, before moving to the actions or country-specific developments in Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste, and Vietnam, examining national policies, institutional innovations, and implementation challenges. The report then presents a comprehensive discussion section, summarising key takeaways from the policy dialogue and identifying regional trends. Finally, the report concludes with future directions and recommendations for policymakers, educators, and stakeholders to advance AI integration in higher education in Southeast Asian countries.

1.1 AI and GenAI

The scope and extent of artificial intelligence (AI) applications in education are rapidly expanding. Generative AI (GenAI) technologies, such as ChatGPT, are increasingly being adopted across global educational sectors. However, educators need to carefully consider this trend because it has significant implications for the future of higher education.

There is no universally fixed definition of AI. However, there is a broad consensus that AI refers to the capacity of machines to imitate, or even surpass human cognitive capacities, such as perception, language interaction, reasoning, problem solving, and creativity [1]. More specifically, AI can be understood as the ability of a computer or robot to perform tasks commonly associated with intelligent beings, including memorisation, reasoning, discovering meaning, generalisation, and learning from experience [2]. Therefore, AI typically describes machines that are capable of executing tasks in ways we would consider “smart,” encompassing a wide range of applications, such as:

- Machine Learning (ML): Algorithms that allow computers to learn from and make predictions based on data.
- Natural Language Processing (NLP): Understanding and generating human language.
- Computer Vision: Interpreting and making decisions based on visual data.
- Robotics: Automating physical tasks.

AI systems are typically designed to perform specific tasks at the system level, such as recognising speech, playing chess, automatic registration system, or recommending products on e-commerce sites [3]. Since 2022, massive attention has been given to AI, especially GenAI and its use in education. However, AI and GenAI differ in their purposes and distinct capabilities. GenAI is a subset of AI that focuses on creating new content, such as text generation: creating human-like text based on prompts (e.g., ChatGPT); image generation: producing new images from scratch (e.g., DALL-E); or music/video, and art creation: composing music or creating artwork. GenAI is particularly powerful because it can produce novel outputs rather than just analysing existing data.[4] While traditional AI focuses on analysing data and making decisions, GenAI goes further by creating new content based on learned patterns. This makes GenAI a powerful tool for creative applications and innovation, especially in teaching and learning in higher education.

At the global level, UNESCO has published a series of publications regarding the implementation of GenAI in education, among others. Such as, *AI and Education: Guidance for Policymakers* (2021) [5]; *Recommendation on the Ethics of Artificial Intelligence* (2022) [6], *UNESCO Guidance for Generative AI in Education and Research* (2023) [7], *AI Competency Framework for Teachers* [8], *AI Competency Framework for Students* [9]. In June 2023, Stefania Giannini [10], Assistant Director-General for Education at UNESCO stated, "Generative AI opens new horizons and challenges for education. But we urgently need to take action to ensure that new AI technology is integrated into education on our terms". At the regional level, the introduction of AI and GenAI in education in Southeast Asia started around 2022.

1.2 AI in higher education

HEIs play a crucial role in developing specialised talent, advancing research, and guiding government decisions and policies on AI. According to an

UNESCO IESALC report in 2024, HEIs contribute to AI development in three key areas: Developing talent and workforce through AI education (94% of analysed countries), Driving research and innovation (91%), and contributing to ethical and regulatory frameworks for AI governance (48%) [11].

However, the rapid advancement of AI raises questions about the long-term relevance of traditional teaching models, prompting HEIs to re-evaluate their approaches to teaching, learning, research, engagement, and administration. A 2023 UNESCO global survey found that fewer than 10% of schools and universities have established institutional policies or guidelines on the use of GenAI [12]. This lack of guidance reflects both the challenges of keeping pace with AI advancements and the varied stages of AI adoption across different regions. For instance, a study of high-research-activity institutions in the United States reported that 63% encourage the use of GenAI, with 48% providing detailed guidance for its use in classrooms [13]. In Asia, universities typically focus their GenAI policies on text generation applications, student management, and academic integrity—emphasising the need to uphold traditional academic values while fostering informed adoption [14].

Despite these efforts, several challenges about AI and GenAI policies in HEIs remain. Such challenges includes the exclusion of non-academic staff from AI policy discussions, limited use of evidence-based practices in AI adoption, international misalignment in AI governance frameworks and strong adherence to traditional academic paradigm [14], addressing data privacy concerns and ensuring equitable access to GAI tools [15]. As HEIs continue to explore and integrate AI, addressing such challenges, along with enhancing stakeholder collaboration and ongoing evaluation to support effective GAI adoption, it will be essential for fostering a balanced, inclusive, and forward-thinking approach to AI in higher education.

For higher education to fully take advantage of AI, the implementation of AI must be preceded by the *government policy* on AI. The policy provides direction for regulation and strategic actions, including empowering AI actors in higher education, such as the leaders and administrators, the teaching

personnel, the support staff, and the students. At the implementation level, resources and support from the government are crucial.

The implementation of AI in education, based on the UNESCO AI Competency Framework for teachers [8], takes three major steps: *acquisition, deepening, and creation*. In the acquisition process, AI literacy is required, and ethical considerations are being highlighted. While at the deepening stage, users are already familiar with AI, have tried it out to some degree, and are making themselves more skillful in using it to meet their purpose. Human-centredness and ethical consideration become prominent in this stage, especially in using AI for pedagogical activities and professional learning. At the creating stage, users are innovatively using AI to create another new AI application or product for the desired transformation, especially in teaching and learning practices.

The coverage of AI use in higher education can be varied. Chan and Colloton emphasise the implementation of AI, especially ChatGPT, in curriculum design and assessment[16]. Nevertheless, curriculum design and assessment can still be detailed as follows:

Picture 1: Coverage of AI use in Teaching and Learning

Adaptive systems and personalisation include using AI in designing and developing courses, monitoring and guiding students' learning progress using

personal academic data, and supporting the representation of knowledge or content in various forms: narrative, picture, music, video, maps, etc.

- **Intelligent tutoring systems** include the use of AI to provide students with learning friends, teach courses digitally, curate learning materials based on students' needs, diagnose gaps in students' learning progress to provide automated/personalised feedback, and facilitate collaboration between or among learners (such as peer learning, group work, etc.).
- **Profiling and prediction** include using AI to assist teachers in making decisions about admission, course scheduling, drop-out, and retention, as well as developing student success models and academic achievement pathways using data analytics.
- **Assessment and evaluation** include using AI to develop various assessments representing students' understanding, engagement, and integrity, providing personalised feedback, evaluating teaching, and providing automated grading.

The coverage list is not yet exhaustive, especially due to the rapid development of AI technology, which enables new emerging practices and development. As such, exploring the implementation of AI in higher education must be a sustaining effort of all practitioners, researchers, administrators, and policymakers.

2. AI and GenAI in Southeast Asia: Actions from Higher Education Stakeholders

In Asia and the Pacific, UNESCO Regional Offices (e.g., UNESCO Bangkok and Jakarta), UNESCO-ICHEI, have made concerted efforts to introduce the use of AI in education.

At the Policy Dialogue, higher education stakeholders including relevant international organisations, enterprises and institutional representatitves have presented their advocacy and initiatives in AI integration in higher education, encompassing governance and policy, teaching and capacity building, and industry and regional collaboration.

2.1 Initiatives or Advocacy from Higher Education Stakeholders

Theme 1: Governance and Policy of AI in Higher Education

Prof. Libing WANG, Chief of Section for Educational Innovation and Skills Development (EISD), UNESCO Regional Office in Bangkok (at the time), highlighted the growing impact of AI AI in transforming the academic research landscape. From conducting a comprehensive literature review to uncovering hidden research gaps, AI - leveraging natural language processing and machine learning - has streamlined the research processes, enhanced data analysis, and improved research communication. However, he noticed that the integration of AI in academia has also presented some unique challenges that must be addressed, such as data bias, inconsistent outputs, and the need to maintain the integrity of research.

Given these concerns, Prof. WANG emphasised the importance of a collaborative and multifaceted approach to academic research. HEIs play a critical role as gatekeepers of knowledge creation and dissemination. They bear the responsibility of equipping researchers with the necessary skills and awareness to effectively leverage AI while upholding the highest standards of academic rigor and integrity.

Encouraging a thoughtful and ethical adoption of AI, Prof. WANG urged the academic community to embrace this new era of *human-AI collaboration* by developing a nuanced understanding of AI's capabilities and limitations, fostering critical thinking, and prioritising ethical considerations. By doing so,

HEIs and researchers can unlock unprecedented opportunities to advance research and expand knowledge frontiers.

Prof. Libing WANG delivered speech at the Policy Dialogue

Dr. Roger Y. CHAO Jr., Asst. Director/Head of Education, Youth and Sports division, Association of Southeast Asian Nations (ASEAN) Secretariat, emphasised the importance of strong partnerships in higher education and international collaboration. Highlighting the interconnectedness of education with societal, economic, and developmental frameworks, he stressed the need for collective action. Dr. Chao advocated for a human-centric approach to AI technology, aligning technological advancements with human needs and the UN's 2030 Sustainable Development Goals. He underscored the transformative potential of GenAI and emerging technologies, encouraging their use to enhance education quality, research, and community service. Addressing resistance to change, he emphasised the importance of raising awareness about these technologies and demonstrating their capacity to empower rather than dictate. He called for collaborative action in leveraging AI and GenAI for system management and educational advancement, urging stakeholders to actively engage and drive progress both regionally and globally.

Dr. Roger Y. CHAO Jr

Ms. BI Xiaohan, Deputy Director of UNESCO-ICHEI, elaborated UNESCO-ICHEI's initiatives on AI in higher education. In 2023, UNESCO-ICHEI released the *White Paper on Higher Education in the Era of Artificial Intelligence* during the IIOE Global Partners Summit. In 2024, UNESCO-ICHEI co-organised a series of regional high-level policy dialogues to further facilitate the integration of GenAI in higher education together with IIOE National Centres and partners. Southeast Asian Ministers of Education Organization (SEAMEO) Secretariat and its 21 regional centres in Southeast Asia have taken various actions to introduce AI to school teachers and students in schools and higher education.

Ms. BI Xiaohan delivered a speech at the policy dialogue

Mr. SIT Fung delivered a speech at the policy dialogue

Through initiatives like the IIOE Micro-Certification Project for Higher Education Workforce Digital Competency Building led by UNESCO-ICHEI, Southeast Asian HEIs are developing digital competencies for AI integration. This project provides competency frameworks, open online courses jointly developed with global partners, and policy guidelines to support localised implementation. Complementing this, Mr. SIT Fung of IIOE outlined concrete capacity-building tools including the '1+x' Course Series targeting AI literacy levels from foundational to advanced, with specialised modules on prompt engineering and AI co-design launching in 2024.

Prof. CHAWIN Chantha, Vice President of King Mongkut's University of Technology Thonburi in Thailand, shared the latest of their university initiatives on drafting a policy guideline for the responsible use of AI, which included several key notions such as the ethics of using AI in academic research, data privacy and teacher professional development (TPD) strategies.

Prof. CHAWIN Chantha

Theme 2: Teaching and Capacity Building

Ms. BI Xiaohan further introduced the **IIOE Micro-Certification Project for Higher Education Workforce Digital Competency Building**, a collaborative initiative aimed at equipping teachers, administrators, and leaders in Southeast Asian HEIs with the digital competencies needed to effectively utilise GenAI for teaching, management, and leadership. At the core of this initiative is a comprehensive competency framework for digital teaching and learning, which identifies the essential skills required for higher education faculty to teach in AI-related areas. In addition to the existing IIOE competency framework for educators, UNESCO-ICHEI plans to launch an expanded competency framework tailored specifically for management staff and institutional leaders. This framework serves as a roadmap for partner HEIs, guiding them in designing, planning, and refining their own programmes and initiatives.

To support the implementation of Micro-Certification projects at national and institutional levels, the project provides a package of resources, including open online courses developed in collaboration with global partners, HEIs, enterprises, and experts, implementation guidelines, certifications guidelines and beyond. These courses, aligned with the competency framework, are designed to be adaptable—allowing partner HEIs to redesign, remix, and tailor content to meet local needs. With detailed guidelines, HEIs could find a clear route and guideline to adopt and recognise professional development.

In collaboration with UNESCO's Bangkok office, the project is also developing a policy guideline to help governments establish a supportive policy environment for the implementation of Micro-Certification in professional development. Additionally, a global expert pool is available to assist partner HEIs in designing and executing Micro-Certification programmes within their local contexts. At this stage, Micro-Certification serves as a complementary tool for HEIs, strengthening initiatives focused on upskilling and reskilling educators. To further localise and customise these efforts, the project aims to leverage the established IIOE National Centres as a mechanism for national-level coordination. The IIOE National Centres will facilitate network-building among higher education institutions, localise IIOE programmes, and conduct policy dialogues across countries to shape meaningful policy outcomes. Through these initiatives, UNESCO-ICHEI's IIOE Micro-Certification Project is actively working to empower HEIs in Southeast Asia, ensuring that educators and institutional leaders are well-prepared to integrate AI technologies effectively in higher education.

IIOE Certified Training: A Global Learner Overview

(From the CLOUD ISSUE 7)

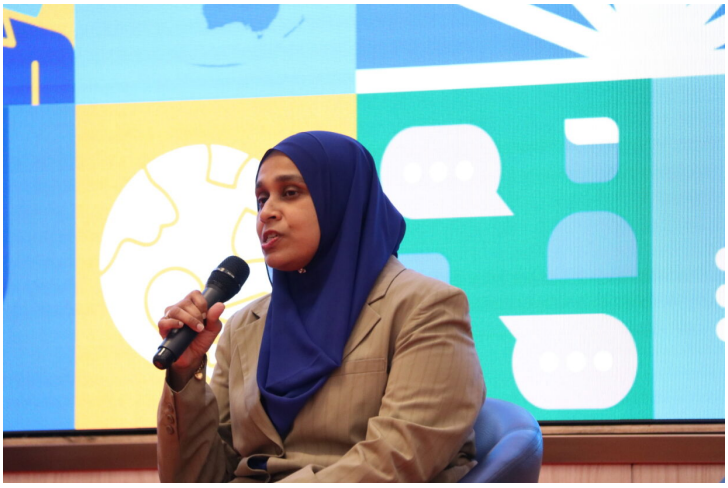
Dr. Supatida Prompayuck, Expert Committee, Commission on Higher Education Standards, Ministry of Higher Education Science Research and Innovation in Thailand, emphasised the importance of utilising AI technology to enhance both educational productivity and student competency. She highlighted the rapid advancements in technology and the need for continuous adaptation to new skills in an ever-evolving digital landscape.

Regarding AI's role in education, Dr. Supatida stressed the importance of motivating students and fostering engagement through technology. While integrating generative AI presents both challenges and opportunities, effectively upskilling students is crucial to ensuring they are prepared for the future.

She concluded by advocating for the creation of ecosystems that support student engagement, leveraging alternative AI tools for behavioral analysis, and promoting a lifelong learning mindset. Additionally, she underscored the necessity of optimising educational platforms to enhance student competencies and learning outcomes in an AI-driven era.

Dr. Supatida Prompayuck

Dr. Husaina Banu Kenayathulla, Associate Professor, Department of Educational Management, Planning and Policy, University of Malaya in Malaysia, shared the AI Literacy Programme for Everyone initiated by the Malaysian government and guidelines for students to use ChatGPT at the institutional level.



Dr. Husaina Banu Kenayathulla

Theme 3. Industry & Regional Collaboration

Prof. JIN Li, Director of UNESCO-ICHEI and Vice President of Southern University of Science and Technology(SUSTech) in China, highlighted the rapid expansion of AI applications in education, particularly the transformative impact of GenAI technologies. He emphasised that this marked a new era in pedagogy, administration, and governance within the education sector,

requiring educators and policymakers to understand and strategically integrate these advancements into higher education.

Prof. JIN underscored the need for proactive action to ensure that AI technologies are integrated in a way that balances efficiency with quality. He called for a thoughtful approach to leveraging GenAI, ensuring that while educational outcomes are enhanced, the highest standards of quality are maintained.

UNESCO-ICHEI has been at the forefront of promoting quality and equitable education opportunities, particularly through its flagship programme, the International Institute of Online Education (IIOE). This initiative equips higher education professionals with the skills necessary to navigate the challenges of upskilling and reskilling in the AI era.

Prof. Li JIN

Dr. Sungsup Ra, Visiting Professor, Korea Development Institute, Former Deputy Director General, Asian Development Bank (ADB), highlighted ADB's growing investment in higher education projects and its role in promoting R&D innovation within Indonesia's higher education system. He emphasised the importance of strategic decision-making in implementing AI applications, noting that local context must be considered when developing policies. Key areas of focus should include infrastructure development and capacity-building, ensuring that AI integration effectively supports HEIs and aligns with national priorities.

Dr. Sungsup Ra

Mr. WANG Jianing, Director of WPS Office Product Ecosystem Partnership, WPS Software PTE. LTD. stressed that the university-enterprise cooperation played a crucial role in the digital transformation of higher education. WPS provided exclusive courses and training for the IIOE platform, benefiting 724 students from 72 countries and regions.

Mr. WANG Jianing

2.2. Initiatives or Action Taken by Southeast Asian Countries

The mapping of AI implementation in Southeast Asian higher education is based on three key driving factors, i.e., availability of policy from the government, dissemination and empowerment, implementation guidelines, resources, and

support; the stage of progression from the acquisition to the deepening and creation stages, with the coverage to include adaptive systems and personalisation, intelligent tutoring systems, profiling and prediction, and assessment and evaluation. The parameters mentioned above are used to illustrate the adoption and integration of AI in higher education in Southeast Asian countries, comprising Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor Leste, and Vietnam.

Cambodia

The implementation of AI in Cambodia is in the early stages. The Government understands the potential and the constraints of the implementation of AI, and has devised a plan for the country's technology transformation [2] to achieve the country's vision of 2030 and 2050, among others, to produce talented and skilled graduates aligned with evolving needs of the job markets, and to develop applied research dedicated to fostering innovation, startup and technology transfer for the country's digital economy development. One strategy was devised, specifically mentioning using technology for education and data management to enhance visibility to the public. Although AI is not mentioned specifically, AI is perceived to be needed to enhance the nation's effectiveness, quality, and productivity. The education transformation plan includes, among others, the provision of digital infrastructure, the establishment of new study programmes on data science, AI, cyber security, etc., the establishment of Cambodia Cyber University Network, transformation in teaching and learning methods and assessment, provision of faculty training and professional development programme, creation of opportunities for students engagement and innovation, focus on research and development on robotic, automation, machine learning, blockchain, IoT, and partnership with public and private sectors for innovation.

At the implementation level, Cambodia has been considerably proactive, with several pilot projects and collaborations with international organisations to incorporate GenAI in classrooms, including the TIESEA Project by the Asian Development Bank. The TIESEA - Technology-Enabled Innovation in Education in Southeast Asia, is one of the projects set in Cambodia, especially in Kaoh Khsach Tonlea island, to teach teachers and students to

use educational technology, from simple ones to sophisticated AI technology.[2] This initiative, among many others in Cambodia, aims to improve personalised learning and provide better educational resources for teachers and students.

As elaborated by Dr. Po Kimtho, Director General of the Institute of Technology of Cambodia (ITC), AI has proven to be a valuable tool in generating content and assisting with teaching tasks. However, when it comes to communicating in languages other than English, such as Cambodian, AI's capabilities are still in their nascent stages, highlighting a current limitation of AI technology. In order to realise Cambodia's Vision 2030 & 2050, the Institute of Technology of Cambodia has developed corresponding strategies to produce 17,000 talented and skilled graduates aligned with evolving needs of the job markets, as well as to develop 170 applied research to foster innovation, start-up and tech transfer.

Dr. Po Kimtho

Indonesia

The Government of Indonesia is fully aware of the extent of the impact of AI on every aspect of human life. As such, as early as 2020, Indonesia issued the *Strategi Nasional Kecerdasan Artifisial Indonesia (StranasKA)* (National Strategy on AI in Indonesia) [3], to cover the ethics and policy of AI, AI talent development, and ecosystem and infrastructure for AI development. [4] The Government of Indonesia believes that various AI-driven applications have the

potential to transform teaching, research, talent management, and institutional management, while facilitating high-quality, equitable higher education and inclusivity. For that vision to take place, ethics, and policy development standards are required, supported by AI talent development and rigorous research for AI innovation in the AI industry.

As emphasised during the policy dialogue, Prof. Abdul Haris, Director General of Higher Education (DGHE), highlighted that Indonesia's AI strategy prioritises preserving core academic values while leveraging its transformative potential. This dual focus aligns closely with the national vision articulated by the Ministry of National Development Planning, with the emphasis on the need for curriculum reforms to embed AI competencies demanded by industries.

Prof. rer. nat. Abdul Haris

However, as highlighted by Prof. CHAN T. Basaruddin during the policy dialogue, systemic barriers remain, including resistance from educators who perceive AI as a threat to traditional teaching roles, disparities in digital infrastructure across different regions, and the pressing need for national-level academic integrity frameworks to complement existing institutional regulations.

Prof. CHAN T. Basaruddin

The national policy has been translated into many regulations under different ministries. In addition, the former Ministry of Communication and Informatics (now KOMDIGI) has also issued the Ministerial Circular Letter on Ethics of AI.[5] Furthermore, in collaboration with the Ministry of Communication and Informatics, UNESCO Jakarta is conducting a national survey on AI readiness to various parties – ministries, industries, universities, schools, teaching personnel, etc. The Readiness Assessment Methodology (RAM)[6] on AI Readiness was completed by the end of 2024. The Ministry of Education, Culture, Research and Technology is devising a guideline for using AI in teaching and learning in higher education. It covers the various uses of AI in teaching and learning, students' and teachers' competency, and ethical considerations while focusing on the human-centred approach to using AI.

Actions for empowering the higher education community in Indonesia have been numerous by different parties. The Government, through the DGHE, held some seminars and workshops on the use of AI. Furthermore, the DGHE has established a Dikti AI Center(https://www.ai-dikti.id/) to facilitate research and development and an AI talent pool. Private parties such as Google, Microsoft, and Amazon Web Services (AWS) also provide dissemination sessions on the use of AI. Six study programmes on AI are also being offered in six universities, in addition to the national micro-credential on AI. Furthermore, developing robots and games has become a popular student activity in various universities.[7] Each HEI can devise its own guidelines for the academic use of AI. University of Indonesia (Universitas Indonesia) was

among the first to devise its guidelines for using and regulating AI in teaching and learning.

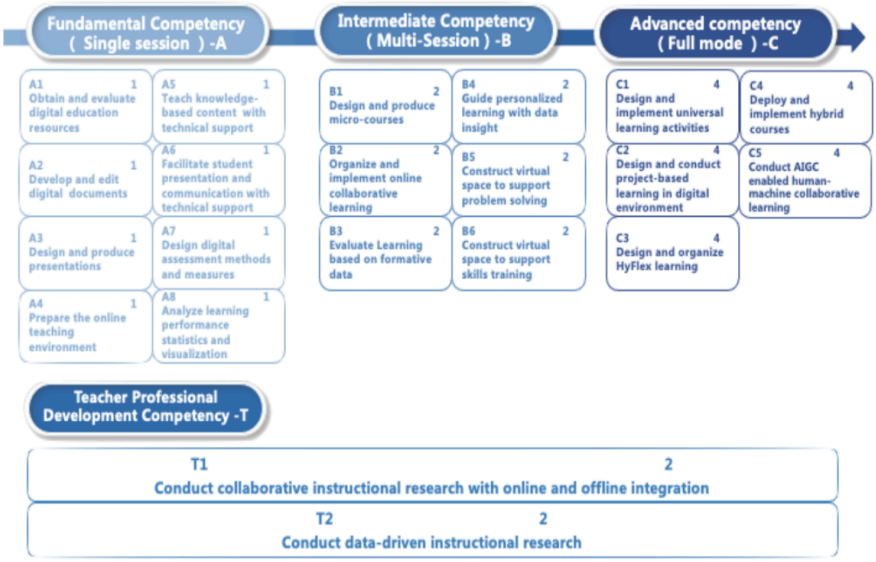
In Indonesian higher education, AI is used to develop adaptive learning platforms and digital classrooms. The government's focus on digital transformation in education drives the adoption of AI technologies to improve learning outcomes and accessibility. The Open University in Indonesia (Universitas Terbuka), deploys a *Teman Belajar* (Learning Friend) to accompany its 650,000 students across the globe, who are learning at a distance. In general, teaching personnel use AI sporadically in their teaching and learning. A recent study indicated that their knowledge of AI is minimal, and they would like to know more and become more skillful in using AI for their teaching and learning [9]. Alhumami indicates that ChatGPT and Grammarly are quite popular GenAI tools in Indonesia. Meanwhile, the dominant use of GenAI has been for information search. Further, the use of AI has been perceived positively to support students' and teachers' activities in higher education. Alhumami further mentions that there have been concerns about the possibility of academic dishonesty when using GenAI tools in higher education. According to Alhumami, it is critical to promote the ethical and practical integration of GenAI tools [10].

Furthermore, addressing the 'labor paradox' highlighted by Dr. Said Mirza Pahlevi, Head of Center for Research and Development of ICT Application and Information & Public Communication, Ministry of Communication and Informatics (MCI), Indonesia, where 5.18% graduate unemployment coexists with industry AI talent shortages, the government is implementing SKKNI competency standards and gender-inclusive programmes like 'Enhancing Women's Digital Talents'. Mr. Uuf Brajawidagda's vocational education case studies further demonstrated how university-industry partnerships are bridging this gap.

Mr. Uuf Brajawidagda

Mr. Teguh Prasand, the lecturer of Information Systems, Bina Nusantara University, introduced that the action plan for building digital competencies of Indonesian higher education teaching personnel was based on the IIOE Digital Competency Reference Framework for Higher Education Workforce in collaboration with UNESCO Bangkok and UNESCO-ICHEI. This action plan would kick-start more activities, facilitating the upskilling of the higher education workforce.

Mr. Teguh Prasand



IIOE Digital Competency Reference Framework for Higher Education Workforce

Lao PDR

Lao PDR is in the early stages of integrating GenAI into its educational framework. Efforts primarily focus on capacity building and exploring how AI can enhance educational quality and accessibility. Most occupations in the Lao PDR are considered human terrain (as opposed to machine terrain), which is impacted by the digital transformation at a minimal level. Thus, AI technology is evolving in the country but has not had a major or radical impact yet. According to Carbonero and colleagues' study in 2021, a significant share of workers in the Lao PDR are employed in subsistence crop farming [16]. Given the country's current technology and human capital state, the immediate implementation of AI technologies is challenging. While this reduces the threat of rising unemployment, it also raises doubts on the feasibility of leapfrogging the current development path of using AI technologies in the Lao PDR.

To better understand and utilise AI technology in various fields, the Government of Lao PDR has collaborated with some universities in China to conduct research projects on the use of smart technology in agriculture, education enterprises, tourism, labour, public health, and the environment, among other areas [17].

Malaysia

Malaysia has started implementing AI in education, following a broader trend in the Asia-Pacific region. The integration of AI in Malaysian education focuses on enhancing personalised learning, improving accessibility, and fostering innovative teaching methods. Sharef explains that leveraging ICT has been a priority in Malaysia's Higher Education Blueprint (2013 – 2025) [18]. As such, the Malaysian Government has identified AI's potential risks and benefits, including economic, societal, values, performance, and security, and concludes that AI is a high-risk, and a priority for the country. The Government has issued AI policies in various sectors and implemented AI in various areas for STEM development. The policy on the implementation of AI in higher education has been advised and facilitated by Malaysian Qualification Framework (Advisory Note No. 2/2023) *Penggunaan Teknologi Kecerdasan Buatan Generatif* (Generative Artificial Intelligence*) dalam Pendidikan Tinggi*.

The implementation of AI in Malaysia strongly emphasises the responsible use of AI or ethical AI, ensuring that both teaching personnel and students are aware of the potential risks and benefits of AI in education [19]. Furthermore, implementing AI in Malaysia is the government's effort in a larger strategy to align with global educational goals and ensure that Malaysia remains competitive in the digital age. Key initiatives of AI implementation in Malaysia include [20]:

- **AI in Curriculum**: Malaysian universities are incorporating AI into their degree programmes to equip students with the necessary skills for the future job market. This includes using AI tools to write code, resolve accessibility issues, generate content, and detect plagiarism.
- **AI Faculty**: Malaysia launched its first Faculty of Artificial Intelligence at Universiti Teknologi Malaysia (UTM) in May 2024. This faculty aims to provide high-quality education and research opportunities in AI, aligning with the National Artificial Intelligence Roadmap 2021-2025.
- **AI for Administrative Efficiency**: Universities are leveraging AI to streamline administrative processes such as student record systems, scheduling, and budgeting. AI tools are also used to predict student

performance and retention, allowing staff to address potential issues proactively.

- **AI-Taught Degree Programmes**: Some Malaysian universities are exploring the possibility of degree programmes taught and assessed entirely by AI, which includes innovative methods like scanning students' brain signals to enhance learning outcomes.

The initiatives reflect Malaysia's commitment to staying current with technological trends and enhancing the quality of its higher education through AI.

During the Policy Dialogue, Dr. Nurfadhlina Mohd Sharef, Associate Professor at Universiti Putra Malaysia (UPM), stated that UPM had leveraged various solutions for advancing AI integration in higher education, including the AI Change Management for UPM Framework aimed at enhancing teachers' AI literacy, as well as institutional governance through the establishment of policies, guidelines, and responsible AI implementation practices. At the institutional level, the AI Change Management Strategies are categorised into governance, which covers guidelines for managing AI, and innovation, which funds research proposals in Malaysia, especially those on adaptive learning interventions. Besides, Dr. Nurfadhlina Mohd Sharef also emphasised that, it is pivotal to consider institutional readiness, educational impact, and the paradigm impact under governance of the Change management. These should be supported by digital transformation strategies, encompassing not just infrastructure and software but also the evolution of human integration with AI in the greater context.

Dr. Nurfadhlina Mohd Sharef

Myanmar

Myanmar is beginning to integrate AI into its higher education system. Several initiatives and discussions surround the use of AI to enhance educational outcomes. Sporadic exploration on the use of AI technologies to assist learning was observed; however, not enough public information was shared. For instance, GenAI like ChatGPT is being explored for the potential to revolutionise teaching and learning, and assessment methods. Additionally, AI-related courses that cover advanced topics such as deep learning algorithms and natural language processing are available to teaching personnel and students.[21] These efforts are part of a broader movement to modernise and improve the quality of education in Myanmar, leveraging AI to provide personalised learning experiences and more efficient assessment tools. At the Policy Dialogue, Dr. Nu Nu Yi, Pro-Rector of Yangon University of Distance Education in Myanmar, introduced the pivotal role of university leaders in shaping higher education during the AI era, emphasising the need for clear visions, strategic resource allocation, and collaborative partnerships within institutions.

Dr. Nu Nu Yi

Philippines

The Philippine government has recognised AI's potential in various industries, including education. In 2021, the Department of Trade and Industry (DTI) launched the National AI Roadmap, which aims to identify the opportunities and challenges that AI presents to the country [22]. It involves four important dimensions to determine the Philippines' readiness for AI, which include (1) digitalisation and infrastructure, (2) research and development, (3) Workforce Development, and (4) occupation. Additionally, to facilitate research and development efforts, the Government established a National Center for AI Research (N-CAIR) to encourage the development of new technologies and support the private sector.

GenAI has been integrated into the Philippines' education system. Educators and institutions are exploring various applications of GenAI to enhance teaching and learning experiences, among others [23].

- Course Design and Development: GenAI tools like ChatGPT are used by teaching personnels to refine course designs, prepare new course outlines, and create lesson plans. These tools may help craft assessments and introduce innovative ways of delivering material in the classroom.
- Personalised Learning: GenAI is being used to provide personalised tutoring and support to students. This includes automated essay scoring,

language translation, report generation, and teaching assistants.

- Administrative Assistance: GenAI assists in administrative tasks such as writing emails, proofreading, and generating contextualised hypothetical scenarios to enhance students' learning experiences.

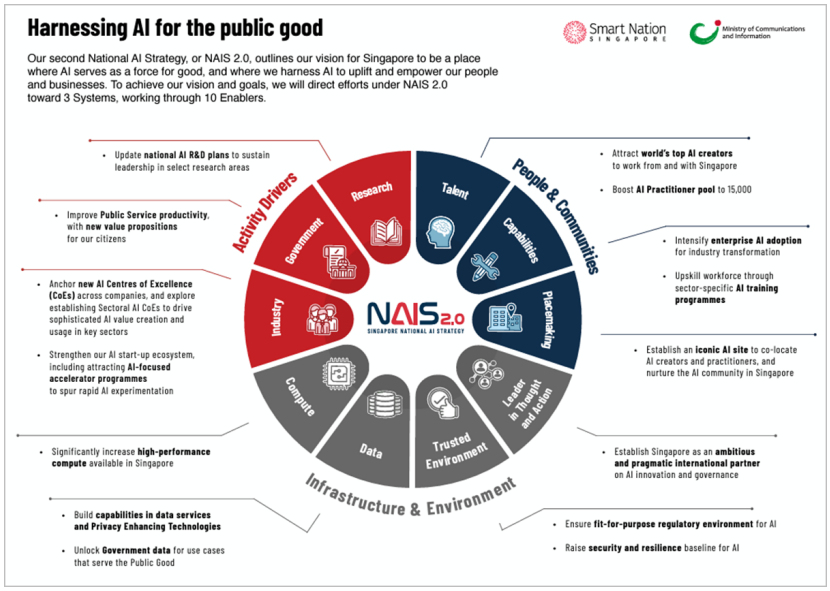
HEIs also offer courses in AI. For example, University of the Philippines Open University (UPOU) introduces students and the public to knowledge about AI, the first step in AI literacy. These efforts are part of a broader trend to leverage AI technologies to improve educational outcomes and make learning more accessible and effective.

Dr. Melinda dela Pena Bandalaria, Chancellor of University of the Philippines Open University, presented a proactive approach of the university to utilise AI to enhance teaching and learning outcomes, along with redesigning assessments to suit the utilisation of AI tools. She also highlighted a new challenge faced by UPOU in terms of teaching quality, academic integrity, and ethical risks, and is attempting to redesign its teaching and learning activities and assessment methods to adapt to the impact of AI on education. Therefore, UPOU developed *Guidelines on the Use of AI in Teaching and Learning* to regulate the ethical use of AI. Teachers should pay attention to improving the effectiveness and quality of teaching when applying AI technology, meeting the diverse learning needs of students, and cultivating students' lifelong learning and critical thinking skills. And students should properly apply AI to search for information, identify data sources, and eliminate plagiarism and other academic misconduct. In addition to the guidelines, UPOU will provide training for teachers and enhance their ability to apply AI technology through Open Education Resources (OERs).

Dr. Melinda dela Pena Bandalaria

Singapore

Singapore has been at the forefront of AI integration in education, with initiatives such as the National AI Strategy (NAIS) and the AI in Education Roadmap. NAIS 2.0, launched in 2023, aims for AI for the Public Good, Singapore, and the World. Singapore claims that as a Smart Nation, their commitment extends beyond merely embracing technology [24]; they aspire to be at the forefront, set the pace, and drive global innovation and tech conversations, including AI. Singapore's AI policy indicates the strong Government's commitment to developing its country through the mastery of AI, as depicted in Picture 2.



Picture 2: National AI Strategy - Singapore

The implementation of AI in higher education in Singapore aims *for excellence*, which is to direct AI towards addressing the country's needs and challenges, advancing the field, and maximising value creation; and *for empowerment, which is* raising individuals, businesses, and communities to use AI with confidence, discernment, and trust. AI is an equaliser that equips people and businesses with the capabilities and resources to thrive in an AI-enabled future.

Recognising AI's potential in education, Singapore has integrated AI technologies to enhance its workforce, education system, and learning outcomes [25]. Access to emerging AI trends is facilitated through talent development initiatives such as the "AI for Everyone (AI4E)" and "AI Apprenticeship Programme" (AIAP). Additionally, "SkillsFuture Singapore" promotes the upskilling of citizens and students through various programmes, including work-study opportunities that allow individuals to deepen their expertise across multiple fields. AI and data analytics are prominent training streams. AI Singapore (AISG), a national initiative, has also launched an AI Student Outreach Programme to foster AI literacy and proficiency among students, with the support from the Ministry of Education (MOE).

For schools and teachers, the Singapore Student Learning Space (SLS), MOE's core platform for teaching and learning, has also transformed how Singapore students learn with a national-level learning management system that allows various applications to be integrated [26]. For example, teachers can utilise an AI-enabled adaptive learning system and an automated marking and e-assessment system to provide feedback to students. As such, Singapore confirms to have established the AI ecosystem in its higher education and beyond.

Thailand

Thailand's Ministry of Education has launched several AI initiatives, including AI-powered language learning apps and intelligent tutoring systems. These efforts aim to enhance language proficiency and provide students with personalised learning experiences.

Thailand has issued AI Thailand - the National AI Strategy and Action Plan (2022 – 2027), approved by the Prime Minister's Cabinet Office on July 26, 2022[27]. AI Thailand is a national programme aiming to prepare essential infrastructure for AI development in Thailand to promote economic growth and increase the country's competitiveness. The strategic aim of Thailand is to have an effective ecosystem for developing and applying AI to enhance the economy and improve our quality of life by 2027. The focus of AI Thailand is the establishment of Thailand's readiness in social, ethical, law, and regulation for AI application, developing infrastructure for sustainable AI development, increasing human capability and improving AI education, driving AI technology and innovation development, and promoting the use of AI in public and private sectors [27].

The implementation of AI in higher education in Thailand is under the 3(rd) strategy of human capacity and technology for improved education. The most notable initiative has been the establishment of Thai Cyber University, which conducts research, develops and disseminates, and implements new technologies for higher education in Thailand. Furthermore, each university tries to integrate AI into various aspects of the teaching and learning process. For example, Chulalongkorn University explored the use of GenAI in academic and professional writing. Most students showed positive attitudes but also expressed concerns about its adoption. Chiang Mai University introduced the use of GenAI for its startups. King Mongkut University of Technology uses AI in their teaching and learning, creating AI technology as part of their education coverage. Generally, GenAI is used to tailor educational content to individual students' needs, providing personalised learning experiences [28]. This includes adapting curricula and offering intelligent tutoring systems that give real-time feedback.

At the policy dialogue, Dr. Supatida Prompayuck, from Thailand’s Commission on Higher Education Standards, underscored the need to leverage AI to enhance student engagement, foster motivation, and promote lifelong learning. She emphasised the rapid pace of technological change, stressing the importance of upskilling students and optimising educational platforms for competency development. Additionally, she highlighted the

potential of alternative AI tools for behavioural analysis to support student learning ecosystems.

Dr. Supatida Prompayuck

Thailand strongly emphasises AI's responsible and ethical use in higher education. Working collaboratively with UNESCO Bangkok, Thailand, highlights the importance of equipping educators and students with essential AI skills for ethical and responsible use, and also promoting equitable access to AI technology [28].

Timor Leste

Timor Leste has stated its commitment to educational reform and the use of technology in the National Commitment Statement: "We commit to ensuring that we harness the potential of digital technologies for education by expanding digital infrastructure in schools and training centres and enhancing access to digital resources. We will promote innovative and alternative learning strategies utilising digital technologies to enhance accessibility and quality of education"[29].

The commitment serves as general guidance for the implementation of technology in education, as stated in the East Timor National Education Strategic Plan 2011-2030[30]. The plan is intended to help Timor Leste's education meet national and international standards, positioning the country at the forefront of educational innovation. The plan outlines a comprehensive

and forward-looking approach to higher education, specifically focusing on leveraging education technology to enhance access, equity, inclusion, and quality. Within the plan, e-learning is introduced to provide flexible distance learning to students, to promote equality of opportunity in higher education, and to emphasise the equity of education, including access to technology, for disadvantaged groups or including them as part of the target beneficiaries [31].

Furthermore, there is also a Smart University programme carried out in Timor-Leste to evaluate the country's readiness to embrace digital technologies and integrate them into higher education practices [32]. Nevertheless, Timor-Leste has not yet widely implemented GenAI in its education system. The country faces several educational challenges, such as aging facilities, high repetition and dropout rates, language diversity, and limited resources in rural areas. These issues may take priority over integrating AI technology into education.

Vietnam

Vietnam is one of the more advanced countries in the region regarding AI in education [33]. Vietnamese HEIs realises the impact of digital transformation and AI on the education system, and has identified the need to emphasise the balancing act between advanced technology and Vietnamese cultural domains, various competitions, and open education. In addition, graduates from universities and colleges have to fully adapt to the dynamic labour markets arising due to the impact of digital communication, remote work, and changes in various online work types [34]. Responding to the development of AI technology and the need to reform the quality of higher education, the government has launched various programmes to integrate AI into the curriculum, focusing on both K-12 and higher education. Vietnam is also investing in teacher training to use AI tools effectively.

The Vietnamese government has made efforts in various projects that support digital transformation in education and training. For example, the Ministry of Education and Training (MOET) has developed the Project “Strengthening the application of information technology and digital transformation in the

Education and training domain in the period of 2022–2025, toward 2030" and submitted it to the Prime Minister for approval in Decision No. 131/QD-TTg on 25 January 2022[35], with the goals set specifically for 2025 as follows:

- Give teaching and learning in the digital environment an important, daily educational activity for every teacher and every learner. Ensure that a minimum of 50% of qualified students and teachers (in terms of media, transmission lines, and software) effectively participate in online teaching and learning activities.
- Guarantee 100% of the educational institutions apply the school administration system based on data and digital technology in which 100% of the learners and teachers are managed via digital records with uniform identification nationwide. Ensure that at least 80% of the facilities, equipment, and other resources for education, training, and research are managed via digital records.

In 2022, Vietnam released an AI ranking of universities under the project "Develop the ranking of published capacity in the field of ICT and AI of research and higher education institutions in Vietnam," led by the Ministry of Science and Technology (MoST) and funded by the Aus4Innovation programme.

3. Discussion: Contextualisation of AI in higher education in Southeast Asia

While the implementation of AI technologies is relatively low in Southeast Asian countries, basic AI technologies are already in use, and substantial potential for adopting and integrating more advanced AI technologies in higher education has been identified. Crompton and Burke (2023) reviewed articles about AI in higher education (HE) from 2016 to 2022 and identified the five aspects of using AI in HE worldwide, including Southeast Asian countries. These aspects refer to (1) Assessment/Evaluation, (2) Predicting, (3) AI Assistant, 4) Intelligent Tutoring System (ITS), and (5) Managing Student Learning [36]. Their review reports the potential of AI in transforming higher education, especially in Southeast Asian countries, and also opportunities for Southeast Asian HEIs to take advantage of the technology in a responsible and ethical way. However, there are still challenges faced by Southeast Asian countries in implementing AI in higher education, especially as follows.

- **Digital Divide**: The disparity in access to internet connectivity and technology remains a significant barrier in many Southeast Asian countries. Ensuring equitable access to AI-empowered educational tools is crucial for their effective implementation and to prevent further widening of inequalities in education.
- **Ethical Considerations**: The use of AI in education raises critical ethical concerns, including data privacy, algorithmic bias, and potential misuse. Establishing robust ethical guidelines and policies is essential to mitigate risks and ensure AI technologies are used responsibly in higher education in Southeast Asia.
- **Capacity Building of higher education workforce**: The effective integration of AI in higher education depends on adequate capacity building. Continuous professional development programmes focusing on AI competencies must equip teachers and staff in HEIs with the necessary skills to effectively incorporate AI tools into teaching and learning, administration and management practice.
- **IT Skills and Accessibility**: While capacity building is a key factor in the success of online learning and digital transformation in HEIs, the skills and technological access of students and the general public are equally important. Efforts must be made to ensure that AI benefits learners with different needs and backgrounds, fostering digital literacy and inclusive access to AI-

empowered education.

When AI in Southeast Asian higher education grows, contextualisation of AI governance and policy making, capacity building of the education workforce, and industry collaboration are pivotal when integrating and implementing AI in higher education in a responsible and ethical approach.

3.1 Governance and Policy Development of AI for Higher Education in Southeast Asia

Southeast Asian countries must develop comprehensive AI policies tailored to the needs of HEIs. These policies should address cultural and ethical considerations such as academic data privacy, algorithmic bias in admissions and assessments, and equitable access to AI tools. Given the digital divide—where urban universities have cutting-edge technology while rural institutions face connectivity issues—governments must implement policies that promote AI-driven education without exacerbating inequalities. Regional initiatives such as ASEAN's digital education initiatives and country-specific policies, such as Singapore's Model AI Governance Framework for Generative AI ("GenAI Framework") and Indonesia's AI National Strategy (Stranas KA), can facilitate the establishment of ethical AI integration in higher education. During the policy dialogue, Prof. Andri N.R. Mardiah from Indonesia highlighted the urgency of aligning curriculum reforms with industry demands while strengthening AI ethics, talent development, and innovation to enhance inclusivity and high-quality education. Prof. Abdul Haris further emphasised the need for AI policies that safeguard academic integrity while fostering personalised and engaging learning experiences.

3.2 Research and Innovation in AI for Higher Education

AI research and innovation in higher education must focus on developing localised solutions that cater to Southeast Asia's linguistic, cultural, and

infrastructural diversity. AI-empowered adaptive learning systems, automated grading tools, and intelligent tutoring systems can enhance personalised teaching and learning in higher education. Countries like Malaysia and Vietnam are advancing AI-driven EdTech research to improve digital learning environments, while Singapore's universities (e.g., Nanyang Technological University) are leading AI research in smart campus management and automated student support services. However, ethical concerns such as data ownership in AI-related research, transparency in AI-based grading and assessment, and data bias in AI-empowered student admissions must be paid attention to prevent AI from reinforcing existing educational disparities in higher education in Southeast Asian countries.

3.3 Capacity Building of the Higher Education Workforce for AI in Higher Education

Many university educators in Southeast Asia lack formal and continued training in AI applications, making PD programmes critical. Countries like Thailand and the Philippines are introducing AI-focused faculty development workshops, while Indonesia and Malaysia are embedding AI courses into university curricula. Beyond faculty, students and the general public must also build AI competencies to leverage AI-empowered learning tools effectively. Apart from the mainstream or structured (online or onsite) PD programmes, just-in-time (JIT) learning that incorporate micro-learning and on-demand learning formats, may become a more flexible approach that cater for educators' needs about AI and GenAI tools. JIT learning can be promoted through a diversed and co-constructed approach by designers and learners within or across HEIs, so as to enable the continuous and rapid development of educators' competencies. International organisations such as UNESCO-ICHEI's IIOE micro-certification project supports educators and students for lifelong learning via IIOE platform. Such micro-certification courses raise the importance of recognition of time and effort educators spent in PD. For example, Ms. BI Xiaohan at the Policy dialogue introduced the UNESCO-ICHEI IIOE Micro-Certification Project, which provides digital competency frameworks, policy guidelines, and open educational resources to support AI-empowered teaching and leadership development. The IIOE National Centre

further localises these programmes, ensuring AI-focused teacher training aligns with national and institutional needs.

3.4 Industry & Regional Collaboration in AI for Higher Education

Collaboration between international organisations, governments, industries, and HEIs is key to driving AI adoption in governance, research, and capacity building of universities across Southeast Asia. Many tech companies, such as Grab, Gojek, and Bukalapak, are investing in AI research and student upskilling programmes, helping HEIs develop AI curricula aligned with the needs of industries and the future workforce. Public-private partnerships, such as Singapore's AI Apprenticeship Programme (AIAP) and Malaysia's MyDigital initiative, demonstrate how industries can support AI education through research funding, AI-powered university platforms, and internship opportunities. At the regional level, ASEAN-led initiatives like the ASEAN Digital Masterplan 2025 foster cross-border collaboration in AI governance, research, and talent development, ensuring that HEIs in the region remain competitive in the global AI landscape.

4. Conclusion

AI and GenAI have affected how humans live, work, play, and learn. GenAI is not just about making AI more intelligent, more human-like, and more personalised, but it is also user and learner-driven, requiring building the capacity of users to use AI more intelligently and ethically. It is not only about

learning about AI, or learning with AI, but also learning how to learn with AI. Therefore, support of users and learners as they are using AI and GenAI is critical to improve quality and equity of higher education in Southeast Asia.

However, the adoption and integration of AI and GenAI in higher education in Southeast Asia presents both transformative opportunities and critical challenges. While national strategies across the region reflect a strong commitment to AI adoption and integration in higher education, disparities in infrastructure, policy frameworks, and digital literacy remain key barriers. The 2024 high-level policy dialogue on AI in higher education in Southeast Asia highlighted the need for **ethical AI governance and police making, capacity building, research and innovation, and industry collaboration in the region** to ensure responsible and effective AI implementation.

Policy making and governance are essential for maintaining academic honesty and integrity in integrating AI and Gen AI in higher education. Establishing clear guidelines and standards is imperative to guarantee the ethical and responsible use of Gen AI tools. Regulation can address concerns such as plagiarism detection, data privacy, and equitable access to AI tools. Moreover, it can serve as a foundation for educating students and educators on the ethical utilisation of AI and GenAI. Through the implementation of regulations, policymakers can protect academic integrity and ensure that Gen AI enhances the learning experience for every student.

Capacity building of the higher education workforce then becomes critical. HEIs must sustainably invest in professional development (PD) of faculty and staff and student AI literacy programmes to ensure successful AI integration. Besides, by leveraging industry and regional collaboration, contextualised JIT learning not only recognises educators' time and effort spent on PD, but also ensure that PD is timely, relevant, and aligned with local needs and context of HEI education workforce. What's more, international organisations, governments, HEIs and industries can collaborate on affordable AI literacy programmes, open-access AI learning platforms, and/or AI boot camps to equip students with future-ready skills.

Research and innovation in the integration of AI within higher education form the foundation for ensuring long-term quality education. While global experiences provide valuable insights, it is crucial to develop localised research and innovation initiatives tailored to the cultural, linguistic, and infrastructural diversity of Southeast Asia, as well as the region's varying stages of economic development.

Industry and regional collaboration must be built on mutual trust and robust public–private partnerships, supported by a comprehensive understanding of current trends, strategies, and the evolving roles of industry and enterprises in applying AI in higher education [37]. Such collaboration not only enhances communication between research and industry, but also stimulates practical and innovative approaches to AI integration in education. Moreover, it fosters the cross-border exchange of good practices across the region, contributing to more equitable and effective use of AI in higher education.

Therefore, based on the promising practices and lesson learned from various Southeast Asian countries and HEIs that presented at the Policy dialogues, two approaches towards AI integration in higher education are put forward. At the institutional level, a **holistic approach** towards AI and GenAI integration in higher education is essential. Such an approach should include curriculum and assessment, capacity building of the higher education workforce, infrastructure and hardware, student learning support, organisation structure, policies and strategies, and internal and external partnerships. At national or regional level, a **coordinated approach**—involving governments, HEIs, and international organisations—will be essential to bridging digital gaps and fostering AI-driven research and innovation. Strengthening policy alignment, expanding educator training initiatives, and enhancing cross-sector partnerships can help Southeast Asian institutions fully leverage AI to drive inclusive and quality higher education.

Based on the fruitful discussions at the Policy Dialogue, UNESCO-ICHEI is committed to play a pivotal role in contributing and advancing AI integration in higher education in Southeast Asia. This includes providing policy guidance and recommendations, promoting the adoption of teaching competency

frameworks, fostering international and multilateral collaboration, and supporting organic and effective implementation of AI-related projects across diverse Southeast Asian higher education contexts.

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