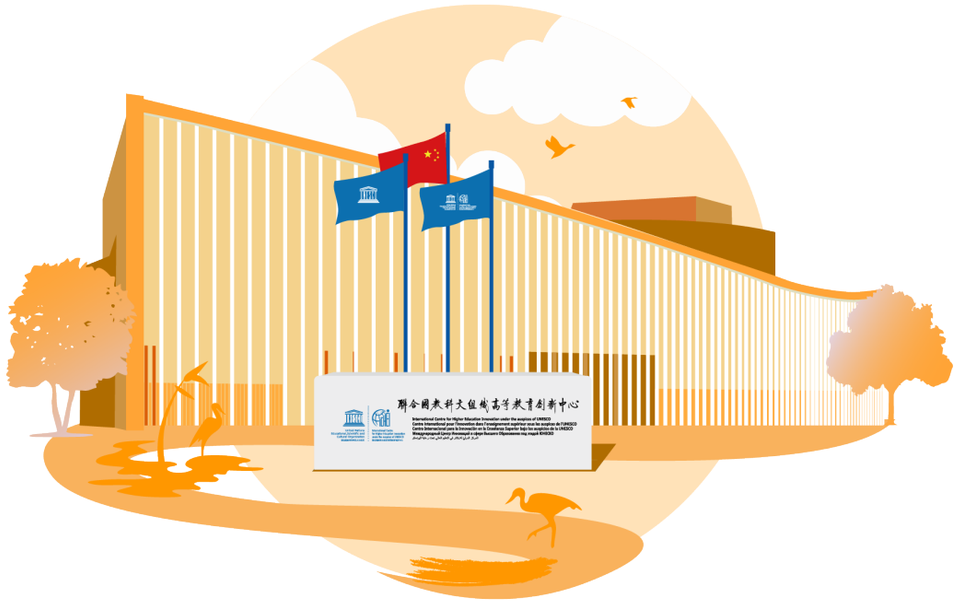
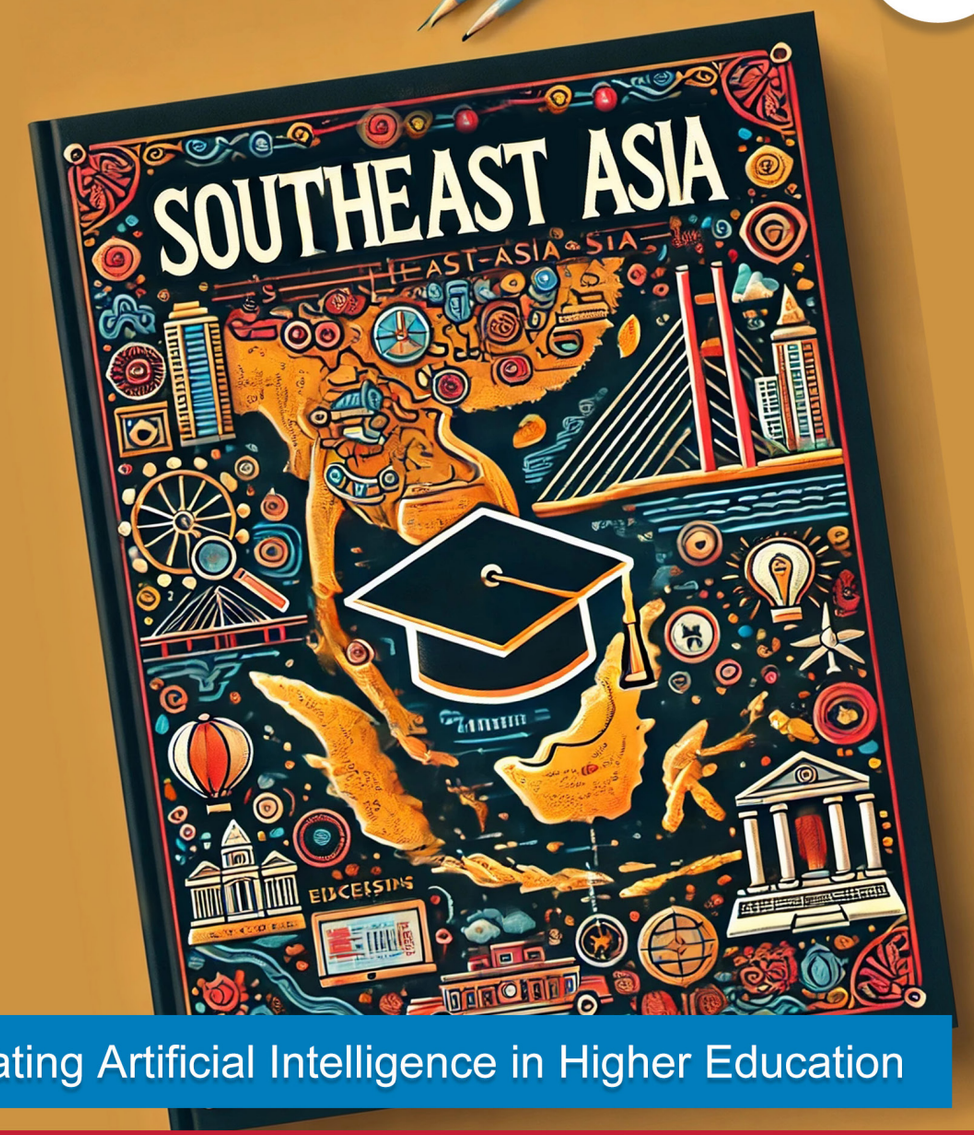


Published by the International Centre for Higher Education Innovation
under the auspices of UNESCO

CLOUD

Connecting Leaders Online for University Digital Transformation

Issue 09
2024.10



Integrating Artificial Intelligence in Higher Education

Zoom in on Southeast Asia Sub-region and Beyond

CLOUD - Connecting Leaders Online for University Digital Transformation

CLOUD is the quarterly publication launched by the International Centre for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI) in 2021. The name ***CLOUD*** symbolises a global network for knowledge sharing driven by Information and Communications Technology (ICT). ***CLOUD*** aims to build an exchange platform that connects professionals in the realm of global higher education by sharing knowledge, project updates, data and best practices related to the digital transformation of global higher education.

UNESCO-ICHEI Leader: LIANG Jiansheng, BI Xiaohan
Chief Cultural Advisor: SHEN Xiaoli
Contributors: SU Rui, ZHOU Jingyi, CAO Zian
Editor-in-Chief: SU Rui, ZHOU Jingyi

Content Assistants/ Interns: SHEN Yujia, DING Zisha, MAO Han, LI Yuhan
Translation: SHEN Yujia, MAO Han, LI Yuhan

Cover Image: Created by ChatGPT using the prompt 'higher education digital transformation in the era of Artificial Intelligence in Southeast Asia'
Design and Layout Coordination: SHI Ziai, YANG Jiahui, DONG Mingyue

UNESCO-ICHEI works with global partners in the knowledge production and communication of ***CLOUD*** without any commercial purpose. ***CLOUD*** is committed to building a global knowledge community and providing original knowledge production and possibilities for the digital transformation of global higher education. During the process of knowledge production, communication, and sharing, UNESCO-ICHEI hereby makes the following declarations regarding the contents of ***CLOUD***:
1. The intellectual property rights of this publication belong to UNESCO-ICHEI, and the source must be acknowledged if the content of this publication is cited.
2. The designations employed in this publication and the presentation of relevant materials (including maps) do not imply the expression of any opinion whatsoever on the part of UNESCO-ICHEI concerning the legal status of any country, territory, city or areas of its authorities, or concerning the delimitation of its frontiers or boundaries. The term 'country' as used in this publication also refers to, as appropriate, territories or areas.
3. Articles in this publication express the opinions and research outcomes of the authors and the editing team and do not represent the opinions of UNESCO-ICHEI. The editing team has made its best effort to ensure the accuracy of the data and assumes no liability or responsibility for any consequences of their use.

Languages:*CLOUD* is available in six official languages of UNESCO (Chinese, English, French, Arabic, Russian and Spanish).

Competent Authority: International Centre for Higher Education Innovation under the auspices of UNESCO (Shenzhen, China)
Organizer: Knowledge Production and Communications Centre, International Centre for Higher Education Innovation under the auspices of UNESCO (Shenzhen, China)

The International Centre for Higher Education Innovation under the auspices of UNESCO (Shenzhen, China) was established on June 8th, 2016, and is the tenth Education Sector UNESCO Category 2 centre in the world. On November 13th, 2015, the 38th General Conference of UNESCO approved the establishment of UNESCO-ICHEI in Shenzhen, China, which is the first Category 2 centre for higher education in China.

www.ichei.org
UNESCO-ICHEI
unescoichei
UNESCO-ICHEI

Tel.: 0755-88010925
E-mail: office@ichei.org
Address: No. 1088, Xueyuan Rd., Xili, Nanshan District, Shenzhen, Guangdong, China, 518055

CONTENT

unesco
International Centre
for Higher Education Innovatic
under the auspices of UNESCO
联合国教科文组织
高等教育创新中心

Dear Readers,

Welcome to this edition of the *CLOUD*, which covers the topic of integrating Artificial Intelligence (AI) into higher education. The integration of AI in education has significantly transformed the landscape of higher education in Southeast Asia, particularly regarding learning experiences. In a region marked by diverse cultures, languages, and educational needs, AI can address various challenges, substantially enhance educational equity and quality, and present new challenges to education leaders and the community.

To address the challenges posed by AI in Southeast Asia, the International Centre for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI), in collaboration with the Indonesia Cyber Education Institute (ICE-I, IIOE Indonesia National Center), UNESCO Regional Office in Bangkok (UNESCO Bangkok), UNESCO Regional Office in Jakarta (UNESCO Jakarta), the Southeast Asian Ministers of Education Organization (SEAMEO) Secretariat, and the Association of Southeast Asian Nations (ASEAN) Secretariat, organized the 2024 Southeast Asia Regional High-Level Policy Dialogue on April 25, 2024, in Jakarta, Indonesia. The WPS Software PTE. LTD. and the Asian Development Bank sponsored this event. The dialogue highlighted that while GenAI has impacted all aspects of human life, integrating AI into higher education in the region requires a holistic approach at institutional, national, and regional levels.

Several articles presented in this *CLOUD* issue have been a further development of the topics carried out in the Dialogue, including policies and regulation of AI applications, transformation of assessment of learning, responsible and ethical use of AI to facilitate learning, AI talent development, and capacity building of teaching personnel.

Countries with established policies and regulations, as discussed in this issue, have implemented AI in their higher education systems. They are leading the way in building AI-driven universities and streamlining student learning assessments with AI. The transformation in assessment practices due to AI has been profound. Educators have raised concerns, such as, “Who am I grading? A human student or a machine student using ChatGPT for their assignment?” This question will remain unresolved without new strategies and perspectives on learning assessment in the AI era.

For many, AI has unlocked numerous opportunities, leading to its widespread application. This *CLOUD* issue presents various institutional policy frameworks, strategies, and practical experiences to facilitate learning through AI technologies. Establishing clear guidelines and standards for the ethical and responsible use of AI tools is crucial. Regulations can effectively address concerns such as plagiarism detection, data privacy, and equitable access to AI tools. Additionally, they can serve as a foundation for educating students and educators on the ethical use of AI. Through regulations, policymakers can protect academic integrity and ensure that AI enhances the learning experience for all students.

The application of AI is not solely about making AI more intelligent, human-like, and personalized; it is also about enhancing users’ capacity to use AI more intelligently. AI is fundamentally user-and learner-driven. Supporting users and learners in their use of AI is critical to improving equity. It is no longer about learning about AI or learning with AI but about learning how to learn with AI. Therefore, empowering educators and the public is essential in building the AI ecosystem in higher education.

A comprehensive approach to AI integration, encompassing curriculum and assessment, capacity building of the higher education workforce, infrastructure and hardware, student learning support, organizational structure, policies and strategies, and internal and external partnerships, must be adopted at both institutional and national levels. The effort starts by recognizing the inevitability of AI’s presence, particularly in higher education. Countries are then motivated to assess their populations’ readiness to embrace AI, better equipping them to integrate AI and manage digital transformation effectively. As part of this assessment, professional development for higher education teaching personnel, focusing on digital transformation and AI integration, is being implemented at national and institutional levels. These initiatives reflect countries' commitment to empowering their citizens to prepare for AI’s presence through education. Additionally, the development of AI talent is equally crucial within this ecosystem. The region’s current shortage of AI human resources indicates an urgent need to educate the public about AI. As such, there should be a concerted effort to educate the country's human resources regarding AI.

This issue of *CLOUD* explores various topics related to the current state of AI implementation in higher education across Southeast Asia, highlighting key opportunities, challenges, and future directions. The aim is to foster collaboration among countries and higher education institutions in the region. We hope that *CLOUD* can serve as a collaborative platform for all of us, as in this era of AI, we cannot progress alone. We have come this far together and will continue advancing towards success together. Let us continue to collaborate to improve higher education in our region.

On behalf of UNESCO-ICHEI, allow me to thank colleagues who have contributed to and supported our work. I hope you find valuable insights and inspiration in this *CLOUD* issue.

Paulina Pannen

01

Foresight and Landscape

- Education Observation on the Latest trends and activities regarding AI integration in higher education in Southeast Asia
- "Leading Effective Integration of GenAI in Higher Education"
  The 2024 Southeast Asia Regional High-Level Policy Dialogue was held in Jakarta
- Opportunities, Challenges, and Multilateral Collaboration Blueprint for AI integration into higher education
- Recommendations for Policymaking Regarding AI in Higher Education

Education Observation on the Latest trends and activities regarding AI integration in higher education in Southeast Asia

About the authors

Paulina Pannen, M.L.S. has been working in higher education in Indonesia and at the regional level, including chairing several task forces on higher education quality development and improvement programs, among others the development of the Indonesian MOOCs and e-learning, distance education, educational technology, and curriculum development. She also writes in scholarly journals and speaks at various education forums. Currently, she works for Indonesia Cyber Education Institute, Universitas Terbuka, which offers flexilearning through the use of unbundled online courses from the ICE Institute Consortium, and also micro-credential program on the game developer in Indonesia. She is also a member of the Academic Senate and Board of Trustees of Universitas Terbuka.

Rahayu Dwi Riyanti is a senior lecturer at Universitas Terbuka. In 2000, she earned a Master of Arts in Linguistics from Michigan State University. She has served as the Director of the ICE Institute since 2023. Prior to her directorship, she was the Content Manager at ICE Institute from 2021 to 2023, overseeing the development and implementation of educational content. She is also actively involved in several projects under the Ministry of Research, Technology and Higher Education of Indonesia, including Revitalization for Teacher Professional Education Program, innovative digital learning and modules to facilitate digital transformation in higher education in Indonesia. She served as the Head of the Department of Language and Art at Universitas Terbuka from 2017 to 2019, where she played a crucial role in curriculum development and departmental management. She has also been involved in various educational initiatives, including the Open High School Program (2014–2016) and the Distance Education for Primary School Teacher Education Program (2006–2011).

Introduction

The integration of Artificial Intelligence (AI) in education has revolutionized the landscape of higher education in Southeast Asia, especially the learning experiences. Southeast Asia is a region characterized by diverse cultures, languages, and educational needs, where AI can offer the potential to address various challenges and improve educational equity and quality. This paper explores the current state of AI implementation in higher education across Southeast Asia, highlighting key opportunities, challenges, and future directions. By examining case studies and policy initiatives, this paper aims to provide a comprehensive overview of how AI is reshaping higher education in this diverse and dynamic region.

Framework of Mapping the Implementation of GenAI in SEA

The introduction of AI and GenAI in education in Southeast Asia started around 2022. Since then, massive attention has been given to AI, especially GenAI and its use in education. At the global level, UNESCO has published a series of publications regarding the implementation of GenAI in education, among others: *AI and Education: Guidance for Policymakers (2021)[1], Recommendation on the Ethics of Artificial Intelligence (2022) [2], UNESCO Guidance for Generative AI in Education and Research (2023)[3], AI Competency Framework for Teachers (2024) [4], AI Competency Framework for Students (2024)[5].* In Asia and the Pacific, UNESCO Bangkok, UNESCO-ICHEI, and UNESCO Regional Office, for example, in Indonesia, have made concerted efforts to introduce the use of AI in education. In 2023, UNESCO-ICHEI released the *White Paper on Higher Education in the Era of Artificial Intelligence* during the International Institute of Online Education (IIOE) Global Partners Summit. In 2024, UNESCO-ICHEI co-organized a series of regional high-level policy dialogues to further facilitate the integration of GenAI in higher education together with IIOE National centers and partners. SEAMEO Secretariat and its 21 regional centers in Southeast Asia have taken various actions to introduce AI to school teachers and students.

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.

> For higher education to fully take advantage of AI, the implementation of AI must be preceded by the government policy on AI.

The framework for mapping 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 personalization, intelligent tutoring systems, profiling and prediction, and assessment and evaluation. The parameters mentioned above are used to illustrate the use of AI in higher education in Southeast Asian countries, comprising Cambodia, Indonesia, Laos, 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 (Kimtho, 2024) [6] 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. Although AI is not mentioned specifically, AI is perceived to be needed to enhance

TIESEA Website

the nation's effectiveness, quality, and productivity. The education transformation plan includes, among others, the provision of digital infrastructure, the establishment of new study programs 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 program, creation of opportunities for students engagement and innovation, focus on research and development on robotic, automation, machine learning, blockchain, Internet of Things (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 organizations 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[7]. This initiative, among many others in Cambodia, aims to improve personalized learning and provide better educational resources for teachers and students.

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 (Stranas KA)* (National Strategy on AI in Indonesia)[8], to cover the ethics and policy of AI, AI talent development, and ecosystem and infrastructure for AI development. 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 (Alhumami, 2024)[9].

The Ministry of Communication and Informatics has also issued *the Ministerial Circular Letter on Ethics of AI[10]*. 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)[11] on AI Readiness will be 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-centered approach to using AI.

Actions for empowering the higher education community in Indonesia have been numerous by different parties. The Government, through the Director General of Higher Education, held some seminars and workshops on the use of AI. Furthermore, the DGHE has established a Dikti AI Center to facilitate research and development and an AI talent pool. Six study programs on AI are also being offered in six universities, in addition to the national micro-credential on AI.

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. Universitas Terbuka, the Open University in Indonesia, 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[12]. Further, the use of AI has been perceived positively to support students' and teachers' activities in higher education.

Strategi Nasional Kecerdasan Artifisial Indonesia, Stranas KA

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 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 et al. (2021)[13], a significant share of workers in Lao PDR are employed in subsistence crop farming, where the immediate implementation of AI technologies is challenging given the country's current technology and human capital state. This reduces the threat of rising unemployment but casts doubt on the feasibility of leapfrogging the current development path using AI technologies in Lao PDR.

To better understand and utilize AI technology, the Government of Laos has collaborated with some universities in China to conduct research projects on the use of smart technology in agriculture, education enterprises, tourism, labor, public health, and the environment, among other areas[14].


©UNICEF Laos/2022/Verweij

Malaysia

Malaysia has started implementing GenAI in education, following a broader trend in the Asia-Pacific region. The integration of GenAI in Malaysian education focuses on enhancing personalized learning, improving accessibility, and fostering innovative teaching methods. Sharef (2024) [15] explains that leveraging ICT has been a priority in *Malaysia's Higher Education Blueprint (2013 – 2025)*. 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 priority for the country. 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.

Penggunaan Teknologi Kecerdasan Buatan Generatif dalam Pendidikan Tinggi

The implementation of AI in Malaysia strongly emphasizes 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[16]. 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[17] of AI implementation in Malaysia includes:

- **AI in Curriculum:**

Malaysian universities are incorporating AI into their degree programs 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 Programs:**

Some Malaysian universities are exploring the possibility of degree programs 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.

Myanmar

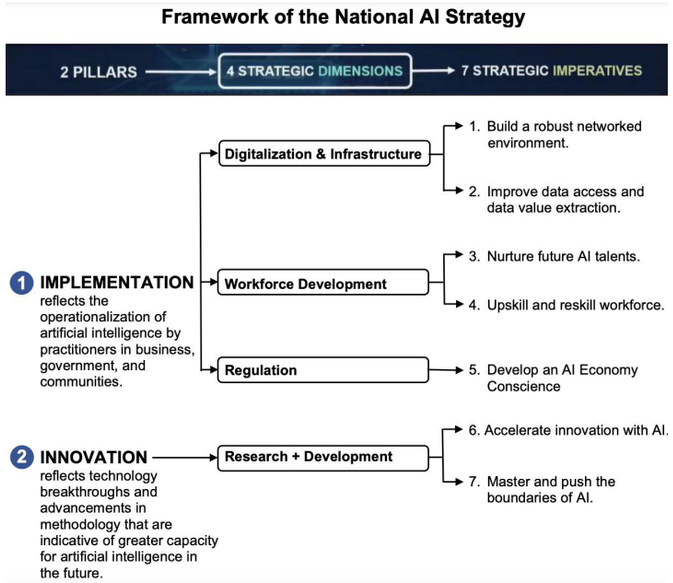
Myanmar is beginning to integrate AI into its higher education system. Several initiatives and discussions surround the use of AI to enhance educational outcomes. Sporadic exploration on the use of AI technologies to assist learning was observed, and courses are available to cover advanced topics such as deep learning algorithms and natural language processing[18].

These efforts are part of a broader movement to modernize and improve the quality of education in Myanmar, leveraging AI to provide personalized learning experiences and more efficient assessment tools.

> The implementation of AI in Malaysia strongly emphasizes 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.

Philippines

The Philippine government has recognized 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[19]. GenAI has been integrated into the Philippines education system. Educators and institutions are exploring various applications of GenAI to enhance teaching and learning experiences[20], among others.



Philippine National AI Roadmap

- **Course Design and Development:**

Professors use GenAI tools like ChatGPT to refine course designs, prepare new course outlines, and create lesson plans. These tools help craft assessments and introduce innovative ways of delivering material in the classroom.

- **Personalized Learning:**

GenAI is being used to provide personalized 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 contextualized hypothetical scenarios to enhance students' learning experiences.

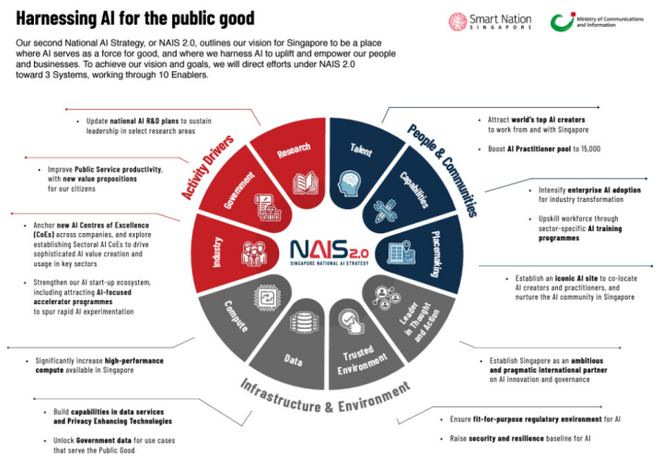
Higher education institutions also offer courses in AI, including the University of the Philippines Open University, which introduces students and the public to knowledge about AI, the first step in AI literacy. These efforts are part of a broader trend to leverage AI technologies to improve educational outcomes and make learning more accessible and effective.

UPOU Initiatives in the Use of AI in Teaching and Learning

Singapore

Singapore has been at the forefront of AI integration in education, with initiatives such as the National AI Strategy 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[21], their commitment extends beyond merely embracing technology; 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 the picture in the next page.

> Recognizing AI's potential in education, Singapore has integrated AI technologies to enhance its workforce, education system, and learning outcomes.



National AI Strategy of Singapore

The implementation of AI in higher education in Singapore aims for excellence: direct AI towards addressing the country's needs and challenges, advancing the field, and maximizing value creation; and for empowerment: raising individuals, businesses, and communities to use AI with confidence, discernment, and trust. Recognizing AI's potential in education, Singapore has integrated AI technologies to enhance its workforce, education system, and learning outcomes[22]. Access to emerging AI trends is facilitated through talent development initiatives such as the "AI for Everyone" and "AI Apprenticeship" programs. Additionally, Skills Future Singapore promotes the upskilling of citizens and students through various programs, 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 a Student Outreach Program to foster AI literacy and proficiency among students, with the Ministry of Education (MOE) support.

According to Lee, Koh, and Looi (2023)[23], 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, such as 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

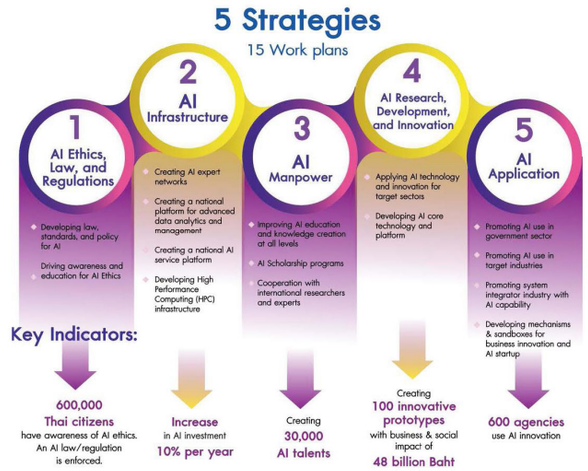
Thailand's Ministry of Education has launched several AI initiatives,including AI-powered language learning apps and intelligent tutoring systems. These efforts aim to enhance language proficiency and provide students with personalized learning experiences.

Thailand has issued AI Thailand[24] - *the National AI Strategy and Action Plan (2022 – 2027)*, approved by the Prime Minister's Cabinet Office on July 26, 2022. AI Thailand is a national program aiming to prepare essential infrastructure for artificial intelligence (AI) development in Thailand to promote economic growth and increase the country's competitiveness. The focus of AI Thailand[25] is the establishment of Thailand's readiness in social, ethical, law, and regulation for AI application, developing infrastructure for sustainable AI development, improving AI education, driving AI technology and innovation development, promoting the use of AI in public and private sectors.

AI Thailand - the National AI Strategy and Action Plan (2022 – 2027)

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 personalized learning experiences[26]. This includes adapting curriculums and offering intelligent tutoring systems that give real-time feedback.

Thailand strongly emphasizes 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[27].

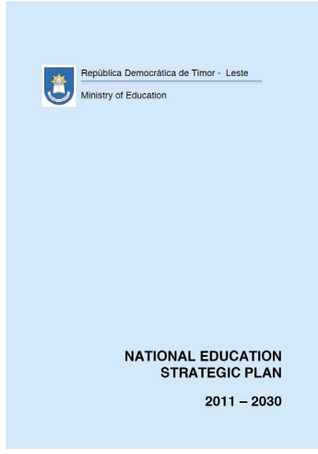


Thailand AI Strategies

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 centers and enhancing access to digital resources. We will promote innovative and alternative learning strategies utilizing digital technologies to enhance accessibility and quality of education.[28]"

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*[29]. 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 emphasize the equity of education, including access to technology, for disadvantaged groups or including them as part of the target beneficiaries[30].



East Timor National Education Strategic Plan 2011-2030

Furthermore, there is also a Smart University[31] program carried out in Timor-Leste to evaluate the country's readiness to embrace digital technologies and integrate them into higher education practices. 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 might take priority over integrating advanced technologies like GenAI.

Vietnam

Vietnamese higher education institutions realise the impact of digital transformation and AI on the education system, and have identified the need to emphasize the balancing act between high technology and Vietnamese cultural domains, various competitions, and open education. In addition, graduates from universities and colleges are needed to fully adapt to the dynamic labor markets arising due to the impact of digital

communication, remote work, and changes in various online work types[32]. **Vietnam is one of the most advanced countries in the region regarding AI in education**[33]. Responding to the development of AI technology and the need to reform the quality of higher education, the government has launched various programs 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 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[34], 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 and funded by the Aus4Innovation program.

PRIME MINISTER

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom – Happiness

No. 131/QD-TTg

Hanoi, January 25, 2022

DECISION

ON APPROVING SCHEME "STRENGTHENING APPLICATION OF INFORMATION TECHNOLOGY AND DIGITAL TRANSFORMATION IN EDUCATION AND TRAINING FOR THE PERIOD OF 2022-2025 WITH A VISION TOWARDS 2030"

THE PRIME MINISTER

Pursuant to the Law on Governmental Organization dated June 19, 2015; the Law on amendments to the Law on Governmental Organization and the Law on Local Government Organization dated November 22, 2019;

Pursuant to the Law on Education dated June 14, 2019;

Pursuant to the Law on Information Technology dated June 29, 2006;

Pursuant to Resolution No. 44/NQ-CP dated June 09, 2014 of the Government promulgating Action Program of the Government on implementing Resolution No. 29-NQ/TW dated November 04, 2013 of the 8th National Congress of the 11th Central Committee on renovating fundamentally and comprehensively education and training, meeting the requirements of industrialization and modernization in a socialist-oriented market economy and international integration;

Pursuant to Resolution No. 17/NQ-CP dated March 07, 2019 of the Government on major tasks and measures to develop electronic Government for the period of 2019-2020 towards 2025;

...

Strengthening the application of information technology and digital transformation in the Education and training domain in the period of 2022–2025, toward 2030

Remarks

While the implementation of AI technologies is still low in Southeast countries, basic AI technologies are already in use, and substantial potential for adopting more advanced AI technologies has been identified. Crompton & Burke (2023) mention that the five codes of use of AI in higher education worldwide, including Southeast Asian countries, are (1) Assessment/Evaluation, (2) Predicting, (3) AI Assistant, (4) Intelligent Tutoring System (ITS), and (5) Managing Student Learning[35]. These are to confirm the power of AI in transforming higher education, especially in Southeast Asian countries, and present opportunities for Southeast Asian higher education to take advantage of the technology in a responsible and ethical way.

There are challenges faced by Southeast Asian countries in implementing AI in higher education, especially as follows.

- **Digital Divide:** The disparity in access to technology and internet connectivity remains a significant barrier in many Southeast Asian countries. Ensuring equitable access to AI-driven educational tools is crucial for their effective implementation.
- **Ethical Considerations**: The use of AI in education raises ethical concerns, including data privacy, algorithmic bias, and the potential for misuse. Establishing robust ethical guidelines and policies is essential to address these issues.
- **Teacher Training:** Effective integration of AI in education requires teachers to be adequately trained in using these technologies. Professional development programs focusing on AI competencies must equip educators with the skills to leverage AI tools effectively.
- **The skills and access capabilities of IT:** Although teacher performance is the most important factor in the success of online learning and digital transformation, the skills and capability of students and the public at large to benefit from AI are also important.

AI implementation in Southeast Asian higher education will grow in the future. Some actions are necessary for AI technology to be implemented responsibly and ethically.

- **Policy Development:** Southeast Asian governments need to develop comprehensive AI policies that address ethical considerations, data privacy, and equitable access. Collaborative efforts between policymakers, educators, and technology providers are essential to create a supportive ecosystem for AI in education.
- **Research and Innovation:** Continued research and innovation in AI technologies are crucial for developing new educational tools and applications. Partnerships between academic institutions, industry, and government can drive advancements in AI and its implementation in education.
- **Capacity Building:** Investing in capacity building for educators and students is vital for successfully integrating AI into education. Training programs, workshops, and resources should be made available to enhance AI literacy and competencies.

References

[1] Fenchun, M. & Zhang, HI. (2021) AI and Education: Guidance for policy-makers. UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000376709

[2] UNESCO (2022) Recommendation on the Ethics of Artificial Intelligence. https://unesdoc.unesco.org/ark:/48223/pf0000381137

[3] Miao, F., Holmes, W., UNESCO Guidance for generative AI in education and research, 2023 https://www.unesco.org/en/articles/guidance-generative-ai-education-and-research

[4] UNESCO (2024) AI Competency Framework for Teachers. Unesco, 2024. UNESCO, https://www.unesco.org/en/weeks/digital-learning

[5] UNESCO (2024) AI Competency Framework for Students. Unesco, 2024. UNESCO, https://www.unesco.org/en/weeks/digital-learning

[6] Kimtho, P. (2024) Leading effective integration of GenAI in Higher Education: Case of Cambodia. Presented at the 2024 Southeast Asia Regional High Level Policy Dialogue. Jakarta, April 25, 2024.

[7] Taylor, A. (2024) TIESEA Findings and Results. Presented in TIESEA Capacity Building and Dissemination Workshop, Singapore, 23-25 July 2024.

[8] Regulasi AI di Indonesia belum cukup, perlu aturan yang lebih spesifik. The Conversation, https://theconversation.com/regulasi-ai-di-indonesia-belum-cukup-perlu-aturan-yang-lebih-spesifik-219827, Februari 11, 2024.

[9] Alhumami, A, (2024) Leadership transformation and policies at national and institutional level for GenAI. Presented at the Presented at the 2024 Southeast Asia Regional High Level Policy Dialogue. Jakarta, April 25, 2024.

[10] Surat Edaran Menteri Komunikasi Dan Informatika Nomor 9 Tahun 2023. Hukum Online, https://www.hukumonline.com/pusatdata/detail/lt65855ded55dc2/surat-edaran-menteri-komunikasi-dan-informatika-nomor-9-tahun-2023/

[11] UNESCO (2024) Readiness Assessment Methodology. https://www.unesco.org/ethics-ai/en/ram

[12] Pannen, P. et. al. (2023) Building effective mechanisms for continuing professional development of higher education & TVET teaching personnel: Mapping the potential of micro-credentials in Asia-Pacific – Indonesia. A country report submitted to UNESCO Bangkok.

[13] Carbonero, F. & Fossen, F. & Sorgner, A. & Samaan, D. & Davies, J. & Ernst, E. (2021). The Impact of Artificial Intelligence on Labor Markets in Developing Countries: A New Method with an Illustration for Lao PDR and Vietnam. Discussion Paper Series, IZA DP No. 14944. Researchgate, https://www.researchgate.net/publication/355104712_The_Impact_of_Artificial_Intelligence_on_Labor_Markets_in_Developing_Countries_A_New_Method_with_an_Illustration_for_Lao_PDR_and_Vietnam

[14] Meadley, J. (2023). Laos And China Sign MoU to Research Development of Artificial Intelligence. The Laotian Times, March 1, 2023

[15] Sharef, N.M. (2024). Leading Effective Integration of GenAI in Higher Education. Presented at the 2024 Southeast Asia Regional High Level Policy Dialogue. Jakarta, April 25, 2024.

[16] UNESCO (2023) How generative AI is reshaping education in Asia-Pacific. UNESCO, https://www.unesco.org/en/articles/how-generative-ai-reshaping-education-asia-pacific

[17] Evangeline, J. (Ed.) (2024) How Malaysia is Implementing AI in its Higher Education. Higher Education Review, https://www.thehighereducationreview.com/editors-column/how-malaysia-is-implementing-ai-in-its-higher-education-nid-4784.html

[18] Datamites Team (2022). Artificial Intelligence and Data Science Demand in Myanmar. Datamites, https://datamites.com/blog/artificial-intelligence-and-data-science-demand-in-myanmar/

[19] Estrellado, C.J.P., Miranda, J.C. (2023). Artificial Intelligence in the Philippine Educational Context: Circumspection and Future Inquiries; International Journal of Scientific and Research Publications (IJSRP) 13(05) (ISSN: 2250-3153), DOI: http://dx.doi.org/10.29322/IJSRP.13.05.2023.p13704 https://www.ijsrp.org/research-paper-0523.php?rp=P13712836

[20] Bandalaria, M.P. (2024). Teaching and Learning in the Age of GenAI and Teacher Professional Development. Presented at the 2024 Southeast Asia Regional High Level Policy Dialogue. Jakarta, April 25, 2024.

[21] National AI Strategy. Smart Nation Singapore, https://www.smartnation.gov.sg/nais/

[22] [23] Lee, A. & Koh, E. & Looi, CK. (2023). AI in Education and Learning Analytics in Singapore: An Overview of Key Projects and Initiatives. Information and Technology in Education and Learning. Available from: https://www.researchgate.net/publication/375137743_AI_in_Education_and_Learning_Analytics_in_Singapore_An_Overview_of_Key_Projects_and_Initiatives [accessed Sep 29 2024].

[24] [25] AI Thailand: National AI Strategy and Action Plan (2022 – 2027). AI Thailand, https://ai.in.th/en/about-ai-thailand/

[26] [27] UNESCO (2023) How generative AI is reshaping education in Asia-Pacific. UNESCO, https://www.unesco.org/en/articles/how-generative-ai-reshaping-education-asia-pacific

[28] UNESCO(2022).Youth Declaration consultation process. UNESCO, https://transformingeducationsummit.sdg4education2030.org/TimorLesteNationalStatement

[29] Timor Leste's Ministry of Education(2011). National Education Strategic Plan 2011-2030, Available online, https://docslib.org/doc/1854253/national-education-strategic-plan-2011-2030

[30] UNESCO (2023) Technology in education: a case study on Timor-Leste Background paper prepared for the 2023 Global Education Monitoring Report: technology and education, Southeast Asia. https://unesdoc.unesco.org/ark:/48223/pf0000387828

[31] Soares, R.P., Gonçalves, R., Briga-Sá, A., Martins, J., Branco, F. (2024). Bridging the Digital Divide: A Study on the Feasibility of Smart University Integration in Timor-Leste. In: Rocha, Á., Adeli, H., Dzemyda, G., Moreira, F., Poniszewska-Marańda, A. (eds) Good Practices and New Perspectives in Information Systems and Technologies. WorldCIST 2024. Lecture Notes in Networks and Systems, vol 987. Springer, Cham. Springer, https://doi.org/10.1007/978-3-031-60221-4_29

[32] Duong, V.T., Ashwill, M., Tuan, H.A. (2024). Redefining Higher Education in Vietnam in the Digital Age. In: Thanh, D.V., Ashwill, M., Tuan, H.A. (eds) Vietnamese Higher Education at a Crossroads. Digital Education and Learning. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-031-61838-3_1

[33] UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific (2023) Empowering minds: a round table on Generative AI and Education in Asia-Pacific. UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000388367

[34] Decision No. 131/QD-TTg. Strengthening the Application of Information Technology and Digital Transformation in Education in the Period of 2022–2025, with Orientation to 2030. Available online: https://datafiles.chinhphu.vn/cpp/files/vbpq/2022/01/131-qd-signed.pdf

[35] Crompton, H., Burke, D. Artificial intelligence in higher education: the state of the field. International Journal of Educational Technology in Higher Education,20, 22 (2023). https://doi.org/10.1186/s41239-023-00392-8

"Leading Effective Integration of GenAI in Higher Education" **The 2024 Southeast Asia Regional High-Level Policy Dialogue** was held in Jakarta

On April 25, 2024, the Indonesia National Policy Dialogue themed "Leading Effective Integration of GenAI in Higher Education" 2024 Southeast Asia Regional High-Level Policy Dialogue was successfully held in Jakarta, Indonesia.

Guided by the Directorate-General of Higher Education, Ministry of Education, Culture, Research and Technology (Indonesia), the Policy Dialogue was co-organized by Indonesia Cyber Education Institute (ICE-I, IIOE Indonesia National Center), International Centre for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI), UNESCO Regional Office in Bangkok (UNESCO Bangkok), and UNESCO Regional Office in Jakarta (UNESCO Jakarta), with the support from Southeast Asian Ministers of Education Organization (SEAMEO) Secretariat and Association of Southeast Asian

Group Photo at the Opening Remarks. From left to right: Prof. WANG Libing (UNESCO Bangkok Office), Ms. Rahayu Dwi Riyanti (Indonesia Cyber Education Institute), Prof. Dr. rer.nat. Abdul Haris (Director General of Higher Education MOECRT Indonesia), Prof. JIN LI, (UNESCO-ICHEI), and Dr. Roger Y. Chao (ASEAN Secretariat).

Nations (ASEAN) Secretariat. The event was sponsored by Asian Development Bank (ADB) and WPS Software PTE. LTD. The Policy Dialogue brought together more than 217 crucial higher education stakeholders from China, Indonesia, Malaysia, Philippines, Thailand, Cambodia, Myanmar, and Viet Nam, with participants joining both online and offline.

The dialogue aimed to establish a policy dialogue and exchange mechanism for multi-stakeholders in Southeast Asia to discuss issues of integration of GenAI in higher education and provide reference and promising cases for higher education policymakers, management, and teaching personnel by the contexts in Southeast Asia countries. The outcome of this dialogue presented a collaborative action plan by stakeholders and partner HEIs for leadership and teachers' professional development.

Opening Remark

Prof. Dr. rer.nat. Abdul Haris

Director General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology, Indonesia

In his opening remarks, **Prof. Dr. rer. nat. Abdul Haris**, Director General of Higher Education, Research, and Technology at the Ministry of Education, Culture, Research, and Technology of Indonesia, underscored the rapid proliferation of generative AI (GenAI), exemplified by ChatGPT, within the global education sector. In the midst of the increasingly widespread use of GenAI in higher education, certain 'fences' need to be put in place to prevent negative practices, such as plagiarism. Therefore, the development of appropriate policies, regulations and guidelines was a priority for the good governance of technology. He emphasized the imperative of integrating GenAI into higher education in an appropriate and beneficial manner for all stakeholders.

Prof. Abdul Haris reaffirmed the Ministry's unwavering support for this initiative, aligning with UNESCO-ICHEI's commitment to driving digital transformation in higher education institutions (HEIs). Expressing optimism about GenAI's potential to revolutionize higher education in Southeast Asia, he posited that through close collaboration among countries and institutions, we can effectively navigate the challenges and seize the opportunities presented by this transformative technology.

Prof. WANG Libing

Chief of Section of Education, UNESCO Bangkok Office

© UNESCO

As **Prof. WANG Libing**, Chief of the Section of Education, UNESCO Bangkok Office, highlighted that the integration of AI in teaching and research presented several challenges that require careful consideration. This intelligent agent utilises natural language processing and machine learning to streamline processes, enhance data analysis, and improve research communication. The successful implementation of AI in education demanded a commitment to iterative research and a collaborative approach. Furthermore, critical thinking and meticulous evaluation of AI's predecessors were crucial to distinguish its unique contributions and potential limitations.

Dr. Roger Y. CHAO Jr.

Asst. Director, Head of Education, Youth and Sports division, Association of Southeast Asian Nations (ASEAN) Secretariat

The transformative potential of AI and generative AI, as underscored by **Dr. Roger Y. CHAO Jr.** Asst. Director, Head of Education, Youth and Sports division, Association of Southeast Asian Nations (ASEAN) Secretariat, necessitated a strategic approach to their integration into higher education institutions. Engaging in rigorous dialogue and exploring innovative methodologies for humanizing technology was imperative to maximize its benefits and mitigate potential risks. Prioritizing the development of generative AI and AI, in general, was crucial to ensure that their capabilities can align with our educational objectives and ethical principles.

Prof. JIN Li

Director of UNESCO-ICHEI, Vice President, Southern University of Science and Technology, China

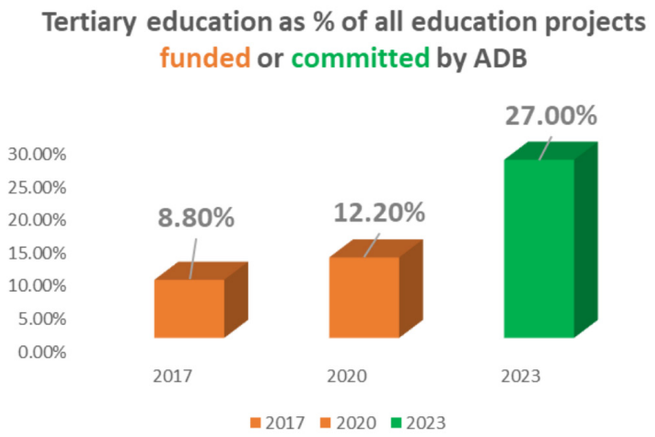
The rapid expansion of AI, as noted by **Prof. JIN Li**, Director of UNESCO-ICHEI, Vice President of the Southern University of Science and Technology, China, presented both opportunities and challenges for the future of education. Educators and policymakers must consider leveraging AI to improve educational outcomes while maintaining high standards. UNESCO-ICHEI has initiated the IIOE Micro-Certification Project for Higher Education Workforce Digital Competency Building to equip educators with the requisite skills to navigate the demands of upskilling and reskilling in the AI era. In the future, with the support of IIOE National Centres, the IIOE Micro-Certification Project will be customized and implemented locally according to the needs of different institutions. The Policy Dialogue attempted to address the complexities and opportunities of integrating GenAI into higher education, tailored to the unique contexts of Southeast Asian nations.

© Universitas Indonesia

Keynote Speech

Prof. CHAN T. Basaruddin

Member of Executive Board, National Accreditation Agency for Higher Education, Indonesia



Tertiary accounted for the following % of all education projects invested in by ADB from 2017 through 2023. Source: ADB

Prof. CHAN T. Basaruddin, Member of the Executive Board of the National Accreditation Agency for Higher Education, Indonesia, highlighted the diverse and innovative applications of generative AI in revolutionizing learning processes and reshaping the educational landscape. He emphasized the potential of AI to make teaching and learning more effective and personalized. However, the integration of AI into Indonesian higher education faces multiple challenges.

Regarding student learning, Professor CHAN observed that Indonesian students often lack the necessary learning abilities and may require tailored learning approaches. Traditional teacher-centred methods hinder the development of students' independent learning skills. Additionally, teachers' technological literacy still needs to be improved, with many perceiving technologies as a threat rather than an opportunity. Infrastructure disparities also pose significant challenges, as widespread access to technological tools is essential for AI implementation.

Furthermore, Professor CHAN emphasized the critical need for comprehensive regulations governing AI in higher education. While some Indonesian HEIs have established internal guidelines, national-level regulations are essential to prevent academic misconduct such as cheating and plagiarism.

Dr. RA Sungsup

Visiting Professor, Korean Development Institute; Former Deputy Director General, Asian Development Bank (ADB)

Dr. RA Sungsup, Visiting Professor at the Korean Development Institute and former Deputy Director General of the Asian Development Bank (ADB), emphasized the Asian Development Bank's (ADB) growing commitment to investing in tertiary education projects and fostering research and development (R&D) innovation within the Indonesian higher education system. Strategic decision-making is imperative to ensure the successful integration of AI into the local educational landscape. This necessitates a comprehensive assessment of the regional context, including infrastructure development, access to technology, and the availability of skilled human capital. Additionally, capacity-building initiatives are essential to equip educators and students with the necessary knowledge and skills to utilize AI tools and applications effectively.

Mr. WANG Jianing

Director of WPS Office Product Ecosystem Partnership, WPS Software PTE. LTD

Mr. WANG Jianing, Director of WPS Office Product Ecosystem Partnership, WPS Software PTE. LTD. emphasized that university-enterprise collaborations are instrumental in driving the digital transformation of higher education. WPS, a prominent technology company, has significantly contributed by providing exclusive courses and training programs tailored to the IIOE platform. This initiative has directly benefited 724 students from a diverse range of 72 countries and regions, underscoring such partnerships' global reach and impact. By leveraging the expertise and resources of WPS, the IIOE platform has offered cutting-edge educational opportunities to students worldwide, fostering innovation and driving digital literacy.

Dr. Said Mirza Pahlevi

Head of Center for Research and Development, Research and Human Resource Development Unit, Ministry of Communication and Information Technology, Indonesia

Dr. Said Mirza Pahlevi, Head of Center for Research and Development, Research and Human Resource Development Unit, Ministry of Communication and Information Technology, reported that based on data from the National Labor Force Survey (Sakernas) conducted by the Indonesia Central Statistics Agency (BPS) in August 2023, the unemployment rate among university graduates increased from 4.8% in 2022 to 5.18% in 2023. A significant disparity was observed between the supply of IT graduates and the demand for skilled talent within emerging companies. Anticipating a future job market dominated by big data analytics, cybersecurity, AI, and e-commerce, industries in Indonesia have faced challenges in acquiring AI talent, highlighting a labor paradox.

To address this imbalance, the Ministry of Communications and Informatics (MCI) has played a pivotal role in bridging the gap between the supply of digital talent and the evolving needs of industries. MCI has standardized ICT skills through the Indonesian National Competency Standards (SKKNI), ensuring alignment with industry trends, including AI. Moreover, MCI has undertaken initiatives such as updating the National ICT Occupation Map, tailoring training programs for lecturers and HEI leaders, and collaborating on research and development related to Indonesia's digital society index.

Recognizing the importance of gender equality in the digital age, MCI has planned to launch a women empowerment training program focused on 'Enhancing Women's Digital Talents: Mastering Generative Artificial Intelligence.' This initiative aims to foster a deeper understanding of and proficiency in GenAI among Indonesian women, empowering them to contribute meaningfully to the country's digital transformation.

Moving Forward

The 2024 High-Level Policy Dialogue in Southeast Asia successfully brought together key stakeholders to address the challenges and opportunities presented by integrating generative AI (GenAI) in higher education. The dialogue fostered a collaborative environment for policy exchange and the development of a shared action plan. Participants emphasized the importance of strategic decision-making, capacity-building, and addressing infrastructure gaps to ensure AI's effective and ethical implementation in education.

Key Takeaways

- AI Integration in Higher Education: Recognizing the

Enhancing Women's Digital Talents Workshop

transformative potential of GenAI to enhance teaching and learning.

- Challenges and Opportunities: Addressing infrastructure development, capacity-building, and ethical considerations in AI integration.
- Collaborative Approach: Emphasizing the importance of collaboration among countries, institutions, and stakeholders for successful AI implementation.
- Policy Development: Highlighting the need for robust policy frameworks to guide AI integration and mitigate potential risks.
- Teachers' Professional Development: Acknowledging the critical role of training educators to use AI tools effectively.
- Infrastructure Development: Stressing the importance of investing in technology and broadband connectivity.
- Ethical Considerations: Discussing the need to address privacy, bias, and transparency issues related to AI.
- Capacity-Building: Highlighting initiatives to equip students and educators with necessary AI skills and knowledge.
- University-Enterprise Collaboration: Valuing partnerships between universities and industry to drive innovation and AI adoption.
- Gender Equality: Recognizing the importance of empowering women in AI-related fields.

The dialogue provided valuable insights and recommendations for Southeast Asian policymakers, educators, and stakeholders. By addressing challenges and seizing opportunities, higher education institutions can transform teaching and learning, equip students with future workforce skills, and contribute to the region's digital transformation.

Recommendations

The recommendations for the successful integration of generative AI (GenAI) in higher education can be categorized as follows:

Policy and Governance

- Develop comprehensive national strategies: Establish clear guidelines and regulations to govern the use of AI in education, addressing ethical concerns, data privacy, and accountability.
- Foster collaboration among stakeholders: Promote collaboration between governments, educational institutions, industry, and international organizations to facilitate knowledge sharing and best practices.
- Invest in research and development: Support research to understand AI's impact on learning outcomes and develop innovative AI applications tailored to educational needs.

Education and Training

- Equip educators with AI skills: Provide professional development opportunities for educators to acquire the knowledge and skills necessary to integrate AI into their teaching practices effectively.
- Develop AI-specific curricula: Incorporate AI concepts and applications into existing curricula to prepare students for the future workforce.
- Promote digital literacy: Foster digital literacy among students to ensure they can use AI tools and technologies responsibly and effectively.

Infrastructure and Technology

- Invest in digital infrastructure: Ensure equitable access to broadband internet and technology infrastructure to support AI implementation in educational institutions.
- Develop open-source AI tools: Promote the development and adoption of open-source AI tools to make AI accessible and affordable for educational institutions.
- Address the digital divide: Implement policies and initiatives to bridge the digital divide and ensure that all students have equal opportunities to benefit from AI-powered education.

Ethical Considerations

- Establish ethical guidelines: Develop ethical guidelines for using AI in education, addressing issues such as privacy, bias, and transparency.
- Promote responsible AI development: Encourage the development of AI systems that are fair, equitable, and inclusive.
- Educate students on AI ethics: Integrate ethical considerations into AI education programs to prepare students to use AI responsibly.

International Cooperation

- Strengthen regional collaboration: Foster collaboration among Southeast Asian countries to share best practices, resources, and expertise in AI education.
- Engage with international organizations: Collaborate with international organizations like UNESCO, ADB, and ASEAN to promote AI integration in education and support capacity-building initiatives.

Opportunities, Challenges, and Multilateral Collaboration Blueprint for AI integration into higher education

Contributors: SU Rui, ZHOU Jingyi, YANG Ruoyi
Organisation: Knowledge Production and Communications Centre (KPCC), UNESCO-ICHEI

On April 25, the Southeast Asia Regional High-Level Policy Dialogue themed “Leading Effective Integration of GenAI in Higher Education” was successfully held in Jakarta, Indonesia. The event brought together key stakeholders from the higher education sector in Southeast Asia, including senior officials from ministries of education, leadership of higher education institutions (HEIs), and representatives from enterprises and international organisations. The Policy Dialogue aims to gather the strength of all parties to explore the innovative path of higher education in the era of Artificial Intelligence (AI).

From the regional perspective, this article reviews insights and practices shared by representatives from governments, higher education institutions (HEIs), and international organisations at the Policy Dialogue. It also analyses the opportunities and challenges brought by AI to higher education and presents the trends of AI integration in Indonesia, the Philippines, Cambodia and the whole region. More importantly, this article showcases policies and initiatives at the national and institutional levels to address local needs and common concerns of Southeast Asian countries. Moreover, this article analyses the collective actions of multi-stakeholders to build a cooperative platform to empower institutions and teachers, connect industry development with talent cultivation programmes, integrate AI technology into curriculum design and teachers' professional development (TPD), and promote the digital transformation of higher education in Southeast Asia.

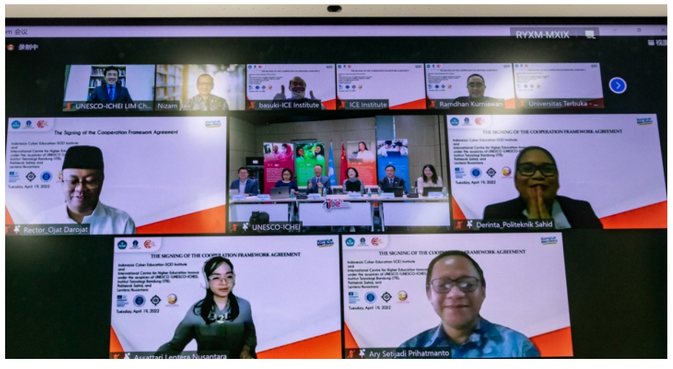
Ms. BI Xiaohan
Deputy Director, UNESCO-ICHEI

Upskilling and reskilling higher education workforce through IIOE micro-certification

In the AI era, many HEIs in developing countries face multiple challenges to reskill and upskill their workforce, including a lack of funding, limited course availability, and insufficient faculty expertise. Therefore, it is crucial to leverage external partnerships to share resources and enhance capacity building. Based on the common concerns and needs of institutions in developing countries, UNESCO-ICHEI launched and implemented the IIOE Micro-Certification Project for Higher Education Workforce Digital Competency Building (IIOE Micro-Certification Project) to equip teachers, administrators, and leaders with digital competencies to effectively utilise GenAI for enhancing teaching, management, and leadership in higher education. As Open Education Resources (OERs), IIOE micro-certification is committed to upskilling and reskilling the higher education workforce, and many institutions and government agencies have expressed their willingness to incorporate IIOE micro-certification into professional development mechanisms at the national and institutional levels.

On the other hand, the IIOE National Centre represents a mechanism for localisation and customisation. Specifically, 12 IIOE National Centres play a significant role in establishing a national network of HEIs, enhancing localisation of IIOE programmes at the national level, conducting policy dialogue and formulating policy outcomes within and across countries. As the IIOE Indonesia National Centre, ICE-I has co-constructed IIOE micro-certification courses and plans to gradually develop six competency courses by the end of 2024, improving online and blended teaching competency of teaching personnel in Indonesian HEIs.

In April 2022, UNESCO-ICHEI signed an agreement with the Directorate General of Higher Education, MoECRT and ICE-I to jointly build the IIOE Indonesia National Centre.

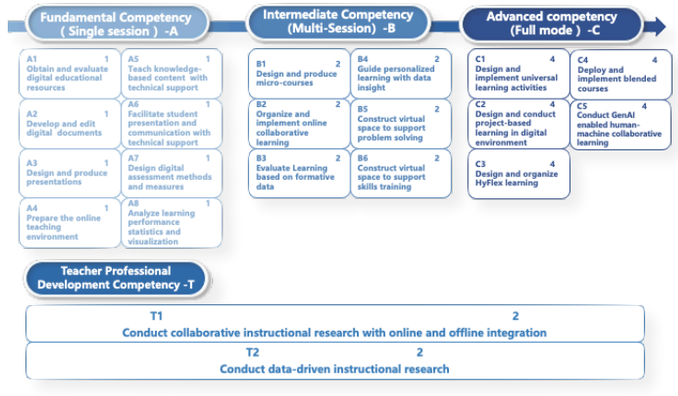


Mr. Teguh Prasandy
Lecturer of Information Systems,
Bina Nusantara University

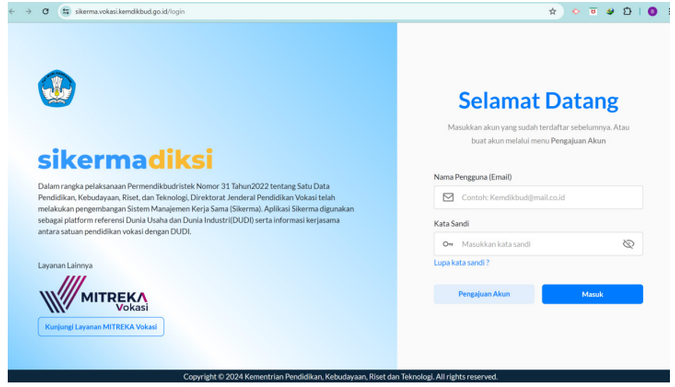
Advancing Teachers' Professional Development Based on Local Needs in Collaboration with Indonesian HEIs

In the digital era, ongoing and flexible professional learning opportunities are critical to lecturers, especially the digital competence and skills. Indonesia Cyber Education Institute (ICE-I, IIOE Indonesia National Centre) collaborates with UNESCO-ICHEI and UNESCO Bangkok to implement an action plan for building digital competencies of Indonesian higher education teaching personnel. The IIOE Higher Education Teaching Personnel Digital Competency Reference Framework guides content planning for digital competency building. ICE-I works with UNESCO-ICHEI to develop "IIOE Micro-certification for Higher Education Teaching Personnel Project" (IIOE Micro-certification) programmes and courses that are open, accessible and evaluable to the higher education workforce, as well as provide measuring criteria and toolkits that assist teaching personnel and institutions in adopting micro-certifications.

Moreover, ICE-I conducted a survey with more than 500 teachers from nine HEIs and found that the primary needs of teachers were to design and prepare materials for teaching through digital tools, and to assess students' learning outcomes; higher-level needs included the enhancement of teaching and research through advanced technologies, such as the Internet of Things (IoT) and Artificial Intelligence (AI). Under the circumstances, nine HEIs in Indonesia developed courses based on the framework's intermediate competency requirements to advance teachers' professional development.



IIOE Higher Education Teaching Personnel Digital Competency Reference Framework



The Ministry of Education, Culture, Research and Technology of Indonesia developed an online platform for university-enterprise cooperation

Mr. Uuf Brajawidagda
Act. Director of Partnership and Alignment of Vocational Education with Business and Industry, Ministry of Education, Culture, Research and Technology of Indonesia

HEIs and enterprises partnerships for talent cultivation and industrial development

The momentum for vocational education to take part in regional economic development was strengthened by Indonesian Presidential Regulation (Presidential Decree) Number 68 of 2022 concerning the revitalisation of vocational education and training. Creating synergistic partnerships between vocational education institutions and stakeholders is crucial for aligning with national or regional development agendas. The Partnership Ecosystem Strengthening for Regional Potential-Based Innovation Development Programme is organised by the Director General of Vocational Education, Ministry of Education, Culture, Research and Technology, with funding from the Education Fund Management Institution/Lembaga Pengelola Dana Pendidikan (LPDP). This programme is a grand design for development research in regions/territories, referring to the potential and advantages in the region as well as the regional development priority agenda. Research outcomes encompass workforce supply and demand, critical occupations, types of skills, and the preparation of comprehensive future skills for vocational education graduates.

The programme aims to synergise partnerships and alignment between vocational education units and regional stakeholders to produce a policy brief containing workforce planning and innovation planning to produce innovation clusters based on regional potential or needs, then produce innovative models and products needed

for the development of regional priority sectors. In addition, the Ministry of Education, Culture, Research and Technology developed online platforms to facilitate sharing of information and resources between enterprises and institutions to provide vocational training opportunities. Enterprise engagement is an indispensable part of partnership building, and HEIs and enterprise partnerships can foster a sustainable cooperative ecosystem. Talent cultivation programmes in universities and vocational education institutions should integrate the development of cutting-edge technologies, such as AI, in order to meet the needs of industry and enhance regional innovation competency.

Dr. Andri N.R. Mardiah

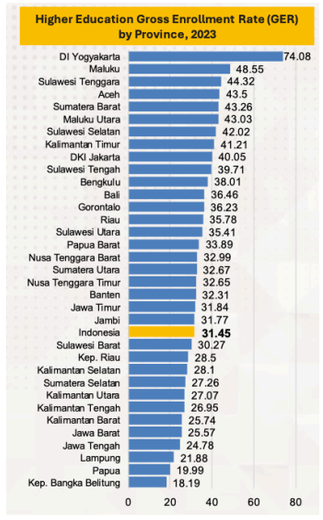
Director of Higher Education and Science and Technology, Ministry of National Development Planning, Indonesia

Indonesian HEIs Should Improve AI Strategy Formulation

According to the Central Statistics Agency (BPS), the higher education gross participation rate in Indonesia rose from 13.10% in 2005 to 31.45% in 2023. However, this still reveals the limited access to high-quality higher education. Notably, the integration of AI with higher education is also undergoing unprecedented opportunities. Big Data Analytics Technology, Internet of Things, Digital Security, AI, and Digital Platforms are the technologies most likely to drive over 50% of industrial transformation and job creation potential. Various AI-driven applications theoretically have the potential to transform teaching, research, talent management, and institutional management. It also can achieve high-quality, equitable higher education and accelerate the realisation of educational inclusivity.

Therefore, the curriculum and learning objectives in educational units must be modified in response to these developments to reflect the skills—including the usage of GenAI—that employers are looking for. To address the impact of technological change, businesses and governments must move promptly and enhance human resource development strategies. Indonesian HEIs should improve AI strategy formulation in three aspects: making standards for ethics and policy development, enhancing AI talent development, and conducting research and innovation in the AI industry. The development of ethical norms and regulations is conducive to preventing academic integrity abuses.

Higher Education Gross Enrollment Rate (Source: BPS)



Dr. Po Kimtho

Director General of the Institute of Technology of Cambodia (ITC)

Key challenges of higher education transformation in Cambodia

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 (ITC) 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.

In order to promote educational transformation and innovation in the age of AI, the core needs and strategies of Cambodian institutions are reflected in digital infrastructure (network and human resources), new programs on data sciences, AI, cybersecurity, the establishment of Cambodia Cyber University Network, faculty training and professional development programmes, R&D on robotics, automation, machine learning, blockchain, IoT, and partnership with public and private sectors for innovation.

© ITC

Dr. Melinda dela Pena Bandalaria

Chancellor of the University of the Philippines Open University

UPOU developed Guidelines to Avoid Ethical Risks of AI

The University of the Philippines Open University (UPOU) pioneered in online teaching and learning and continues to play a leading role in the study and practice of open learning and distance education in the Philippines. With the development of AI technologies, UPOU is facing new challenges 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. Students should properly apply AI to search for information, identify data sources, and eliminate plagiarism and other academic misconduct. In addition, UPOU will provide training for teachers and enhance their ability to apply AI technology through Open Education Resources (OERs).

Romyen Kosaikanont

Director, SEAMEO Regional Centre for Higher Education and Development

Enhancing the co-creation of AI and higher education ecosystems through regional partnerships

Some studies have found that the biggest barrier to the integration of AI and education is the lack of relevant strategies. As a regional international organisation encompassing 26 centres, the Southeast Asian Ministers of Education Organization (SEAMEO) is committed to regularly conducting policy dialogues on AI in multiple fields such as education, science, and culture. SEAMEO also attempts to support countries in developing their AI policies and strategies. For example, the SEAMEO Centre for STEM Education (SEAMEO STEM-ED) has established an AI working group to collaboratively discuss emerging policy dynamics and guideline issues in the integration of AI with education. Similarly, the SEAMEO Regional Centre for Higher Education and Development (SEAMEO RIHED) has organised several research symposiums

themed around transforming higher education towards sustainable development.

Generally, policy-making should consider the diversity of the Southeast Asian region. Countries in the SEAMEO Region are different, so there is no one-size-fits-all policy. However, some core principles can be shared, such as human-centric AI, maximising learning outcomes, AI for equity and accessibility, and ensuring data security and personal privacy. From a more practical perspective, teachers' capacity building is equally important to ensure that both teachers and students can use AI in a safe, efficient, and ethical environment. It is necessary to adopt a regional approach to support GenAI integration and enhance the co-creation of AI ecosystems. Southeast Asian countries should cooperate in relevant research, share updates on AI and its implications, and exchange practices in policy formulation in order to collectively address the challenges of integrating AI into education.

26 centres of SEAMEO in Southeast Asia

Conclusion

Considering different development levels of AI technology across regions, stakeholders need to pay attention to the diverse challenges of the region and create an appropriate policymaking environment and effective policy dialogue mechanisms in the local context. This article introduces the cases of government agencies, institutions, and international organisations in Indonesia, the Philippines, and Cambodia and analyses the common concerns and practical needs of HEIs in Southeast Asia.

Overall, stakeholders are deeply aware of the new opportunities that AI brings to higher education, emphasising the significant role of technology in teaching, research and institutional management. More importantly, the rapid development of the AI industry offers new possibilities for talent cultivation programmes and curriculum design. However, policy and strategy development at the institutional level is still at an early stage in many Southeast Asian countries. National-level policy formulation on AI and education is a top priority so as to circumvent the ethical risks of AI and promote responsible application of technology.

In addition, the common concerns of Southeast Asian institutions include educational infrastructure and investment, industry-academia collaboration, talent cultivation, and innovation in teaching and research methods, which reflect important directions for future policy and strategy development. Based on common concerns and local needs, the Policy Dialogue builds a multilateral cooperation platform for higher education stakeholders in Southeast Asian countries, prompting all stakeholders to share international resources and local innovation experiences, and to build a new cooperation ecosystem for the integration of AI into higher education.

SEAMEO RIHED Symposiums

Recommendations for Policymaking Regarding AI in Higher Education

About the author

Professor LIM, Cher Ping
Chief Expert of IIOE, UNESCO-ICHEI
Chair Professor of Learning Technologies and Innovation at the Education University of Hong Kong, China.

Professor Lim Cher Ping was a Professor of Education and was the Director of the Asia-Pacific Centre of Excellence for Teacher Education and Innovations and Director of International Partnerships at the School of Education in Edith Cowan University (Australia). His research and development focus has been on supporting the sustainability and scalability of innovations in schools and teacher education institutions. Professor Lim has also provided technical consultancy services on information and communication technology in education to UNESCO, Inter-American Development Bank, World Bank, World Links, Microsoft, universities, schools and the Government of Barbados, Indonesia and Oman. He serves as Editor-in-Chief of The Internet and Higher Education.

Based on the rich insights from the 2024 Southeast Asia Regional High-Level Policy Dialogue, Professor LIM Cher Ping and colleagues from the Institute of Cyber Education, Indonesia (ICE-I), UNESCO-ICHEI, and UNESCO Regional Offices in Bangkok and Jakarta, made an attempt to provide the following findings as recommendations for policymaking regarding AI in higher education.

Overall, the Policy Dialogue provided key recommendations for integrating GenAI into higher education. It highlighted the need for comprehensive strategies at institutional and national levels, and a focus on building user capacity to interact intelligently with AI. The Policy Dialogue emphasized supporting equity by teaching students how to effectively learn with AI. Additionally, clear policies and regulations are crucial to ensure ethical use, protect academic integrity, and address issues like plagiarism and data privacy in the use of GenAI tools.

- Generative AI (GenAI) has affected the way we live, work, play and learn. Hence, in order to examine how GenAI could be integrated into higher education, we have to adopt an inter-sectoral perspective.
- A holistic approach towards GenAI integration has to be adopted at the institutional and national

© Freepik

level that includes curriculum and assessment, capacity building of the higher education workforce, infrastructure and hardware, student learning support, organization structure, policies and strategies, and internal and external partnerships.

- GenAI is not just about making AI more intelligent, more human-liked, and more personalized but it is also about building the capacity of users to use AI more intelligently; after all, GenAI is user and learner-driven.

- To improve equity, support of users and learners as they are using GenAI is critical. It is no longer about learning about AI, or learning with AI, but learning how to learn with AI.

- Policy and regulation are essential for maintaining academic honesty and integrity in the utilization of Gen AI within higher education. It is imperative to establish clear guidelines and standards to guarantee the ethical and responsible use of Gen AI tools. Regulation can effectively 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 utilization of AI. Through the implementation of regulations, policymakers can protect academic integrity and ensure that Gen AI enhances the learning experience for every student.

> “The Policy Dialogue highlighted the need for comprehensive strategies at institutional and national levels, and a focus on building user capacity to interact intelligently with AI.”

© https://www.hello-ksu.com/

Deep Dive

02

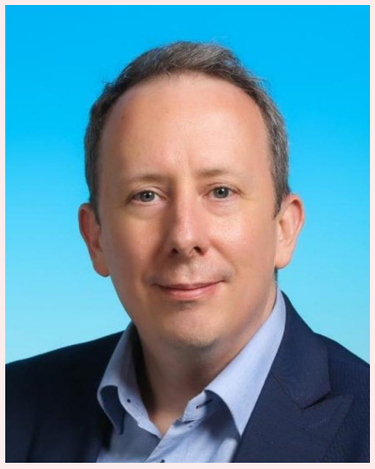
- AI Readiness in Higher Education: A Case Study on Professional Development at HKUST
- Artificial Intelligence in an Online Higher Education Institution: The Case of the University of the Philippines Open University
- Building Malaysia’s AI Future: From Higher Education to National Impact
- Defining an AI University: The Chulalongkorn University Perspective

AI Readiness in Higher Education: **A Case Study on Professional Development at HKUST**

Abstract

This article examines how professional development plays a crucial role in helping educators navigate the integration of AI, drawing on case studies from HKUST to showcase practical strategies for fostering AI readiness in both teaching and assessment. By focusing on the challenges educators encounter in this rapidly changing landscape, the article offers insights into how institutions can support the development of resilient and innovative approaches that uphold the integrity of educational practices in an AI-driven context.

About the author



Dr. Sean McMinn is the Director of the Center for Education Innovation at The Hong Kong University of Science and Technology (HKUST). Previously, he served as Associate Professor and Director of the English Language Centre at The Hong Kong Polytechnic University (2020-2022) and held various academic roles at HKUST, including Associate Professor of Language Education and Co-Academic Director of the MA in International Language Education program. Dr. McMinn has been recognized with the 2016 SHSS Teaching Excellence Award and the 2007 Teaching Innovation Award for his work with podcasts and education. As an early adopter of educational technologies, he has led initiatives in AI in education, blended learning, and fully online teaching modes. He currently serves on several international committees, including the AI and Education International Panel, Digital Education Council, Cyber-Physical Learning Alliance, and EduTech Asia organizing committee.

Introduction

Generative Artificial Intelligence (GenAI) has quickly become central to education since the release of ChatGPT-3 in November 2022. This technology presents both opportunities and challenges for higher education, prompting faculty members to explore how to harness AI effectively while minimizing risks. At the Hong Kong University of Science and Technology (HKUST), the rise of GenAI demands a proactive approach: how can faculty members leverage AI to enhance learning without compromising the essential human aspects of teaching?

True AI readiness extends beyond foundational literacy, such as understanding AI fundamentals and mastering tools. It requires deeper engagement with ethical considerations, pedagogical practices, and human-AI collaboration dynamics. As Luckin et al. (2022) stated, “A key element of the concept of AI readiness is for people to understand the complexity of the intricate, sophisticated, and subjective nature of human intelligence.”

Faculty members’ AI competencies are crucial for navigating an AI-enhanced landscape. Long and Magerko (2020) identified key competencies like understanding AI fundamentals and recognizing its strengths, weaknesses, and societal impacts. Ng et al. (2021) grouped these into four domains: know and understand, use and apply, evaluate and create, and ethical issues. However, as Luckin (2024) noted, changes in faculty education are often slow, making continuous professional development vital.

Frameworks by Ng et al. (2023) and Miao and Mutlu (2024) guide faculty and administrators in developing AI readiness (Figure 1 and Figure 2). These frameworks emphasize a holistic, human-centered approach to AI literacy, promoting lifelong learning and form the foundation of HKUST’s AI readiness strategy. By emphasizing continuous professional development and strategic AI integration, HKUST is committed to creating an AI-ready educational environment that balances technological advancement with the irreplaceable contributions of human insight.

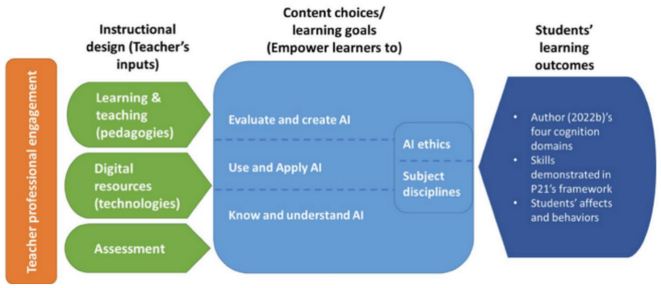


Figure 1: Instructional design framework for AI literacy/competence education

Aspects	Progression		
	Acquire	Deepen	Create
1. Human-centred mindset	Human agency	Human accountability	Social responsibility
2. Ethics of AI	Ethical principles	Safe and responsible use	Co-creating ethical rules
3. AI foundations and applications	Basic AI techniques and applications	Application skills	Creating with AI
4. AI pedagogy	AI-assisted teaching	AI–pedagogy integration	AI-enhanced pedagogical transformation
5. AI for professional development	AI enabling lifelong professional learning	AI to enhance organizational learning	AI to support professional transformation

Figure 2: The AI competency framework high-level structure: aspects and progression levels

Pathways to a Future-Ready AI-Enhanced Education System

HKUST provides multiple areas of institutional support for AI readiness, including fiscal resources, policy frameworks, and professional development initiatives. These efforts encompass project funding, policy guidelines for ethical AI integration, and extensive training opportunities such as workshops and self-paced courses. These initiatives provide faculty members with the necessary resources to navigate AI-enhanced educational environments effectively.

HKUST’s Education and GenAI funding (EDGE-AI)

In response to GenAI’s impact on education, HKUST’s Center For Education Innovation (CEI) began managing the Education and Generative AI (EDGE-AI) fund in Spring 2023. The HK$ 10M fund provided by the Provost’s Office is aimed at supporting instructors teaching undergraduate (UG) courses in integrating GenAI tools into their teaching and developing best practices. Of these funded projects, 6 adopt generative AI to enhance their course design, 3 explore the use of generative AI in assessment, and 1 utilize

generative AI as virtual teaching assistants. The outcomes of these projects are aimed at identifying best practices for generative AI in teaching and learning. To date, there are 22 EDGE-AI projects for a total funding of over HK$ 7M. Eighteen are teaching and learning development projects, while four are educational research projects.

One project, *Are AI Users Cutting-Edge Innovators or Incompetent Slackers?*, explores how students perceive the use of GenAI, particularly in grading. The project aims to foster a better understanding of AI's educational value without devaluing the human effort associated with teaching and learning. Early results indicate that AI-generated feedback is perceived as less "warm" compared to human feedback, although involving a human in the review process slightly improves perceptions. The project is now experimenting with classroom interventions to increase the perceived warmth of AI feedback and enhance its acceptance.

Another project, *Developing a T&L Module for AI-Assisted Design Thinking*, aims to create a teaching and learning module that incorporates Generative AI into the design thinking process. The module includes both structured and unstructured activities to give students hands-on experience with the possibilities and limitations of AI. Feedback from students has been largely positive, with many appreciating the opportunity to engage with new technologies. Over the next year, the module will be refined based on feedback, with plans to publish a book chapter on the project's findings.

CEI further facilitated insights on AI integration by hosting an EDGE-AI roundtable in April 2024, where faculty members shared their experiences. Discussions highlighted both the benefits and challenges of AI, including its efficiency in brainstorming and drafting, but also the risk of diminishing critical thinking and creativity if over-relied upon. Faculty emphasized that AI's effectiveness depends on contextual and purposeful use. Without a clear educational goal, students might not see the value in AI tools. Key themes from the discussion included the need for adaptation, learning, and fostering student autonomy through flexible AI usage policies. CEI concluded that strategic AI integration, balanced with human interaction, is essential for enriching learning experiences without compromising the critical human elements of education.

> "Strategic AI integration, balanced with human interaction, is essential for enriching learning experiences without compromising the critical human elements of education."

Empowering Educators Through Self-Paced Learning and Workshops

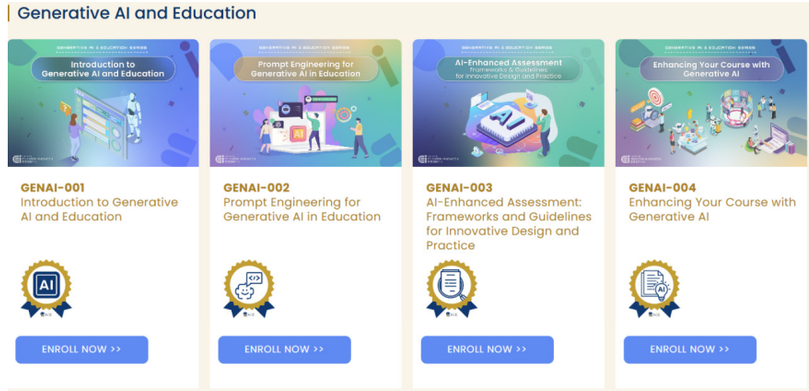


Figure 3: CEI Self-Paced Learning Courses.

Figure 4: An example of a lecture video.

To further promote AI readiness among faculty, HKUST has developed a series of self-paced courses and workshops, enabling educators to build essential AI competencies at their own pace (Figures 3 & 4). Each course is designed to be completed in approximately 2-3 hours, consisting of several self-paced modules that include lecture videos, readings, and interactive activities. Throughout the course, in-video quizzes and end-of-module assessments ensure comprehension of the material. Upon successfully completing the course, faculty members receive a digital badge issued by the Academy of Education Excellence (AEE) at HKUST, marking their achievement and readiness to integrate AI into their teaching practices.

The self-paced courses cover a wide range of topics that align with HKUST's commitment to fostering AI readiness for faculty:

- **Introduction to Generative AI and Education (GENAI-001)**

This course provides a foundational understanding of Generative AI, including its applications in education and the challenges and opportunities AI presents in the current educational landscape.

- **Prompt Engineering for Generative AI in Education (GENAI-002)**

This course equips educators with skills to create effective prompts for AI tools, exploring basic and advanced techniques for engaging with generative models like ChatGPT.

- **AI-Enhanced Assessment: Frameworks and Guidelines for Innovative Design and Practice (GENAI-003)**

Focusing on assessment design, this course provides strategies for integrating AI into both formative and summative assessments, while maintaining academic integrity and fostering dialogic learning experiences. For example, the course offers strategies for teachers to choose how they adapt assessments (Figure 5).

- **Enhancing Your Course with Generative AI (GENAI-004)**

Designed to help educators optimize their course content with AI, this course emphasizes enhancing engagement, improving content development, and integrating AI-driven assessments to support active learning.

These courses have been designed with flexibility and practicality in mind, offering educators the tools they need to not only understand AI but to apply it meaningfully in their classrooms. By completing these courses, faculty members are empowered to embrace AI technologies in ways that enhance both teaching and learning.

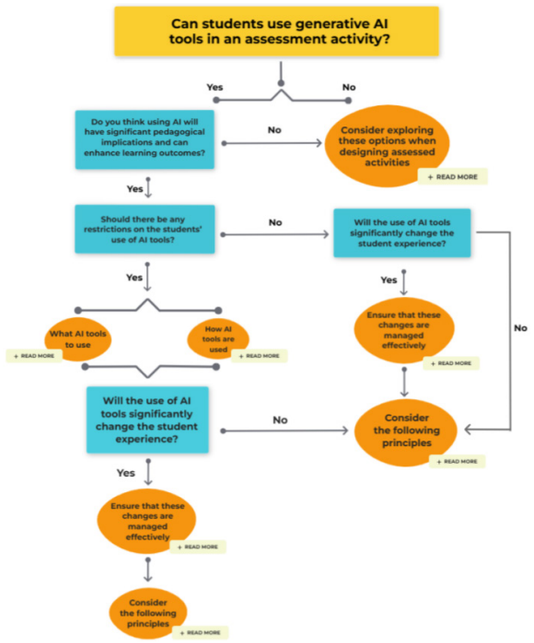


Figure 5: An interactive flowchart used to guide teachers for making informed decision in assessment design.

Guidelines and Policies

HKUST allows faculty members the flexibility to set their own course-level policies based on four options (Table 1) and are required to communicate the chosen policy option to students in writing for courses offered in Fall 2023-24. This policy was formulated in consultation with faculty members and students from both undergraduate and postgraduate courses. Our aim is to provide a student-friendly, adaptable framework considering the rapidly evolving AI technologies.

Table 1: A summary table of the four policy options for GenAI in Assessments at HKUST

Post-survey on Programme Implementation
1. Restrict all use of generative AI for assessment
2. Restrict types of generative AI tools for assessment
3. Restrict ways of using generative AI tools for assessment
4. No restrictions on use of generative AI for an assessment task
Academic Integrity & Honor Code apply to all options

Conclusion

By prioritizing human-AI collaboration and ensuring that educators understand both the strengths and limitations of AI, HKUST aims to maintain the integrity of educational practices while promoting innovation. The institution's commitment to continuous professional development, contextualized use of AI, and the preservation of human intelligence in teaching underscores its leadership in adapting to this rapidly evolving field. As AI technologies continue to develop, the key to success will be ongoing adaptation and learning, ensuring that both educators and students can fully leverage AI's potential to enhance teaching, learning, and academic integrity. Through this readiness, HKUST is paving the way for a future-ready, AI-enhanced education system that balances technological advancement with the irreplaceable value of human insight.

> "Through AI readiness, HKUST is paving the way for a future-ready, AI-enhanced education system that balances technological advancement with the irreplaceable value of human insight."

References

Long, D., & Magerko, B. (2020, April). What is AI literacy? Competencies and design considerations. In Proceedings of the 2020 CHI conference on human factors in computing systems (pp. 1-16).

Luckin, R., Cukurova, M., Kent, C., & Du Boulay, B. (2022). Empowering educators to be AI-ready. Computers and Education: Artificial Intelligence, 3, 100076.

Luckin, R., Rudolph, J., Grünert, M., & Tan, S. (2024). Exploring the future of learning and the relationship between human intelligence and AI. An interview with Professor Rose Luckin. Journal of Applied Learning and Teaching, 7(1).

Luckin, R. (2024). Nurturing human intelligence in the age of AI: rethinking education for the future. Development and Learning in Organizations: An International Journal.
Miao, F. & Mutlu, C. (2024). AI competency framework for teachers. UNESCO. https://doi.org/10.54675/ZJTE2084

Ng, D. T. K., Leung, J. K. L., Chu, K. W. S., & Qiao, M. S. (2021). AI literacy: Definition, teaching, evaluation and ethical issues. Proceedings of the Association for Information Science and Technology, 58(1), 504-509.

Ng, D. T. K., Leung, J. K. L., Su, J., Ng, R. C. W., & Chu, S. K. W. (2023). Teachers' AI digital competencies and twenty-first century skills in the post-pandemic world. Educational technology research and development, 71(1), 137-161.

Artificial Intelligence in an Online Higher Education Institution: **The Case of the University of the Philippines Open University**

A Brief Introduction About the University

The University of the Philippines Open University (UPOU) was established in 1995 as one of the Constituent Units of the only National University in the country, the University of the Philippines with the mandate to democratize access to quality education through distance education. UPOU started integrating online component into its teaching and learning ecosystem in 2001 and became fully online in 2007. Capitaling on its experience in offering quality online courses, the university started offering Massive Open Online Courses (MOOCs) in 2013. In 2014, Republic Act 10650, Open Distance Learning Law, was passed which mandates UPOU to provide technical expertise to other Higher Education Institutions in the Philippines who are planning and or offering distance e-learning programs and courses (https://legacy.senate.gov.ph/republic_acts/ra%2010650.pdf). To date, UPOU offers 37 degree programs at the undergrad and post baccalaureate levels; non-degree courses and programs about a hundred MOOCs, and a number of courses under the microcredentialing framework.

About the author

Dr. Melinda dela Peña Bandalaria
Chancellor and Professor
University of the Philippines Open University

Dr. Melinda dela Peña Bandalaria serves as a professor at the University of the Philippines Open University and has held the position of Chancellor since 2016. Additionally, she served as the President of the Asian Association of Open Universities from 2017 to 2019 and currently chairs the Asian MOOCs Steering Committee. With over two decades of experience, Dr. Bandalaria has actively contributed to the development of course modules for open online courses and has been engaged in teaching through this mode of instruction. Her extensive research focuses on open online courses and the integration of Universal Design for Learning into Open Educational Resources (OERs) and online courses. Dr. Bandalaria has authored/co-authored numerous journal articles and book chapters in the field, and she is frequently invited to deliver keynote addresses at national and international conferences. Recognized as a dedicated advocate of open education, she played a pivotal role in pioneering the development and implementation of Massive Open Online Courses (MOOCs) in the Philippines.

GenAI: A Disruption Worse than the COVID-19 Pandemic?

When Generative AI was made public in November 2022, it was considered as worse than the COVID-19 pandemic in terms of the overall disruptions in the teaching and learning ecosystem. The immediate thoughts mirrored the apprehensions when the University became fully online in 2007. As a fully online university, thoughts like "How can I be sure that the person completing the learning activities is really the student enrolled in the course?"; "What if my student just copied from the internet for the assignments submitted?"; and similar concerns existed. With GenAI, the following concerns of the teachers were noted:

"How do any of you handle students you catch submitting AI-generated content and presenting it as his/her own work?"

"What if I mistakenly judged my student that he/she used AI in his/her course learning activity submissions?"

One teacher expressed it as follows:

"For me, an AI-generated proposal is a travesty of knowledge. When I find one, I feel betrayed because I take pains in handholding each and every member of the class to learn the ropes of the research process. But the feeling of betrayal should not get the best of me. I would ask the student to resubmit (or possibly retake the course) for their own learning, it is what is good for the student and that is the raison d'être of a university."

Taking a Stand on the use of AI

With the full understanding of the possible impact of GenAI in the quality of education being delivered

in the online mode of learning, UPOU conducted a series of Round Table Discussions (RTDs) to come up with the consensus of what will be the stand of the University regarding the use of AI on its teaching and learning considering the initial framing that GenAI is a challenge to academic integrity.

In an article published by EDUCAUSE on 12 February 2024, it was emphasized that *"AI should be embraced as an emerging technology and should have a place in coursework with focus on implementation, adoption, research, utilization, and ethical and legal considerations." [1]*

Taking a similar stand about the use of GenAI, UPOU implemented the University Policies on the use of AI for teaching in Learning in 2023 [2].

How do the Teachers Use AI?

In the continuing discussion about AI, the following uses of AI by the teachers were surfaced:

- AI-enabled Teaching Assistants to mark students' submissions like assignments, reports and providing immediate feedback to these submissions, as well as answer queries about the lessons
- Drafting communications like emails, letters, reports, proposals
- Improving drafts of documents e.g. reports, proposals
- Preliminary research on topics like checking what the internet already has on some topics of interest, which can be the focus of further research
- Look for suggestions on terms or words/phrased that can be used for specific activities, programs, etc
- Seek background information about organizations or entities of interest (e.g. research collaboration, etc)

Use of AI at the University Level

At the University level, there are already chatbots to answer emails and general inquiries as in the case of Openg which was launched in 2023 (Figure 1).

As described:

"Openg" has been expertly designed to facilitate various aspects of navigating the MODeL(Massive Open Distance eLearning) platform, such as assisting with account setup, course registration, and guiding users through the intricacies of the platform itself. Users can easily pose their inquiries through either Facebook Messenger or the MODeL website, and Openg will promptly provide the answers and support they require.[3]

Figure 1: OPENG UPOU's MOOC CHATBOT

How do the Students Feel about the Teachers Using AI?

In a simple experiment conducted by the author during the AY2023-2024, the students were asked the question "how would they feel if their teacher is using an AI-enabled teaching assistant?".

The following were some of the answers given:

- *"Educators can utilize AI in terms of **personalized learning** through AI-driven analytics that provide valuable insights into student performance and learning trends. Through this, **teachers can strategize the learning methods for various students.**"*
- *"AI may also help in **increasing the productivity of the teachers** who handle teaching loads and clerical duties. There are **AI tools that can help automate or streamline these tasks so teachers can spend more time with the students.**"*
- *"Another aspect wherein AI can help teachers is in **creating and supplementing learning materials.** Through AI-powered platforms, teachers can **collate a range of educational resources that are more engaging and contemporary for students' appreciation.**"*

- *"As a student with a disability, I would **welcome the introduction of an AI-Teaching Assistant. AI-Teaching Assistants can provide several benefits, such as 24/7 availability, personalized learning experiences, and immediate feedback.** "*
- *"AI-Teaching Assistants can be programmed to **cater to individual learning needs and preferences.**"*
- *"AI may help in **correcting and checking outputs of students,** especially those with simple responses and fixed answers."*

These responses indicate two things: the readiness of the students to accept the integration of AI in teaching and learning; and their recognition of the opportunities that AI can provide if and when integrated into the teaching and learning environment.

The AI's Promises and Risks

Much had been said about the good things that AI can bring when integrated into the education ecosystem, whether online or in the conventional mode, which include a 4.8% increase in graduation rate in three years after implementing an AI solution [4]. Much more had been presented about the risks like ethics, plagiarism, privacy and security, and the loss of fundamental skills like creativity and critical thinking. It is therefore important that necessary steps be taken by academic institutions to realize the AI's promises and mitigate the risks. Educating the different groups of users is one such essential step as well as collaboration within and among institutions for AI to really benefit the education sector.

> It is therefore important that necessary steps be taken by academic institutions to realize the AI's promises and mitigate the risks.

References

[1] [4] EDUCAUSE. (2024). The future of AI in higher education. EDUCAUSE Review. Available at: https://www.educause.edu/ecar/research-publications/2024/2024-educause-ai-landscape-study/the-future-of-ai-in-higher-education

[2] UPOU.(2024). UPOU releases guidelines on AI use for teaching and learning. University of the Philippines Open University. Available at: https://www.upou.edu.ph/news/upou-releases-guidelines-on-ai-use-for-teaching-and-learning/

[3] UPOU.(2024). UPOU marks 10 years of MODEL with launch of new MOOC chatbot. University of the Philippines Open University. Available at: https://www.upou.edu.ph/news/upou-marks-10-years-of-model-with-launch-of-new-mooc-chatbot/

Building Malaysia’s AI Future: **From Higher Education to National Impact**

About the author

Professor Dr. Nurfadhlina Mohd Sharef
Faculty of Computer Science and Information Technology, Universiti Putra Malaysia
International Institute of Online Education National Centre, Malaysia

Nurfadhlina Mohd Sharef is a professor at the Universiti Putra Malaysia (UPM), Malaysia in the field of artificial intelligence and data science. She currently serves as the Deputy Director of ICT and Digitalization Policy, and acting Chief Digital Officer of UPM. She is a former Deputy Director of Innovation in Teaching and Learning, and a member of National Council of eLearning Coordinators in Public Universities. Among her latest works are AI for personalized learning, an ecology simulator for precision biodiversity, and agriculture digital twin. This article is prepared based on her experience and observation as one of the national AI and blockchain task force members. She was awarded the Best Trendsetter in 2023 by the Department of Higher Education, Malaysia for her contributions in advocating artificial intelligence adoption in Malaysia. She is also the Chairperson of Young Scientist Network-Academy of Sciences Malaysia, an expert group under the Ministry of Science, Technology and Innovation which is a member of Global Young Academy and International Science Council.

Introduction

Artificial Intelligence (AI) is revolutionizing industries and education across the globe, and Malaysia is no exception. Malaysia's AI strategy emphasizes the integration of AI across multiple sectors, and higher education is a critical focus area. As a key driver of digital transformation, AI is reshaping how higher education institutions operate, how students learn, and how research is conducted.

In Malaysia, education is considered as one of the sectors supporting socio-economic needs. Resources will be focused on building technological capabilities in 5 foundational 4IR (Fourth Industrial Revolution) technologies which are AI, Internet of Things, blockchain, cloud computing, and advanced materials and technologies, which are able to support the deployment and optimisation of other 4IR technologies.

The public and freely available generative AI (GenAI) applications have democratized AI on a magnificent scale. These applications have also enriched people's understanding of AI and its potential, beyond the typically available image recognition (such as Snapchat) and voice recognition (such as Siri) applications available in their mobile devices. As people become more educated in assessing and deciding usage of AI in Malaysia, the stakeholders in the change management ecosystem encompassing governance, infrastructure and education have also become active in many domains including higher education.

These collective initiatives are shaped by the beliefs that although AI and analytics are revolutionizing higher education, it requires educators to adopt specific strategies to harness their full potential. Furthermore, many still lack the necessary skills and data proficiency to effectively utilize these tools for personalized interventions. Integration into the daily routine to improve productivity and effectiveness of educational related activities are also in motion. This document provides an overview of governance and capacity building of AI in Malaysia's higher education context.

AI Governance

Malaysia's AI governance and ethics guidelines ensure that AI applications in higher education adhere to ethical standards, with a particular focus on data privacy and the responsible use of GenAI tools in student assessments. Various governance mechanisms are available as shown in the list of policies related to AI in education in Table 1. Therefore, Malaysia has been for a while adopting AI for various academic related tasks such as writing (for example using Ginger and Grammarly). The release of GenAI has further amplified the significant strides for teaching and learning, and relevant guidelines are also shown in Table 1.

Table 1: Guidelines related to Artificial Intelligence in Higher Education in Malaysia

No.	Document	Provider	Publishing year
1	National Artificial Intelligence Roadmap 2021-2025	Ministry of Science, Technology and Innovation	2021
2	4th Industrial Revolution National Fourth Industrial Revolution (4ir) Policy	Economic Planning Unit, Prime Minister Department	2021
3	Public Sector Strategic Digitalisation Plan 2021-2025	Malaysian Administrative Modernisation and Management Planning Unit	2021
4	MQA Advisory Notes 2/2023 Use of Generative Artificial Intelligence Technology in Higher Education	Malaysia Qualification Agency	2023
5	Guidelines for Generative Artificial Intelligence Technology in Higher Education Teaching and Learning	Ministry of Higher Education	2023
6	Malaysia Guideline on AI Governance and Ethics	Ministry of Science, Technology and Innovation	2024
7	A New Horizon for Science, Technology and Innovation – A Strategy for Malaysia	Ministry of Higher Education	2024

The rise of large language models has sparked an appetite for innovation, encouraging more people to venture into business by leveraging AI's potential for automation, customer engagement, and personalized services. GenAI has encouraged multi-disciplinary adventure leveraging this model while exploring the technology stack's appeal offered by many AI infrastructure companies venturing new markets in Malaysia such as Nvidia, Amazon and Microsoft. Many new opportunities emerged which are hopeful to catalyze deeper integration of AI across business processes, such as the dedicated strategic research funds on AI by Ministry of Science, Technology and Innovation (MOSTI) Malaysia for:

- Decision Support System with Artificial Intelligence (AI) for Key Government Agencies
- Adaptive Learning Interventions based on Artificial Intelligence (AI) to Support Personalized and Flexible Education

To ensure production of expected talents, in October 2023, the Prime Minister of Malaysia announced the formation of the first Faculty of AI in the country to be managed by the Universiti Teknologi Malaysia, followed by the launch of a nationwide course on AI for Citizen (AI Untuk Rakyat) organized by the Malaysia Centre4IR in January 2024. In April 2024, the KL20 Action Plan was unveiled through KL20 Summit to foster the startup ecosystem. More coordinated and impactful transformation of AI into various businesses and public sectors is expected to be seen through the recently formed ministry to focus on digitalisation, which also houses departments such as National Department of Digital, and the forthcoming National Office of AI, besides various AI related consortiums being formed.

The 2025 budget presented by the Prime Minister of Malaysia marks a substantial boost for AI-related education and innovation. Allocations to research universities have more than doubled to 50 million ringgit from the previous 20 million, signifying the government's growing commitment to AI development. Each university is set to focus on specific AI domains critical to national and global challenges.

For example, Universiti Malaya (UM) will channel its resources into AI applications in medical technology to combat diseases like cancer. Universiti Putra Malaysia (UPM), in partnership with the National Cyber Security Agency (NACSA), is set to establish a Malaysian Cryptology Technology and Management Center to delve into quantum computing AI, preparing the nation for the increasingly complex landscape of cybersecurity threats. Universiti Sains Malaysia (USM), leveraging Malaysia's status as a semiconductor hub, is exploring semiconductor AI with partnerships from global giants like Intel and Infineon. Universiti Kebangsaan Malaysia (UKM) is tasked with pioneering AI language translation systems to elevate Malay as a language of science, contributing to linguistic and cultural advancements.

The 2025 budget also prioritizes strengthening the nation's R&D capabilities. The increased R&D funding of 600 million ringgit, alongside the Malaysia Science Endowment (MSE) group's 170 million ringgit, reflects the government's strategy to enhance public-private research collaborations. Additionally, the Malaysia Techlympics initiative will continue, aiming to produce a new generation of experts in AI and robotics, with an allocation of 10 million ringgit. UiTM, receiving an additional 20 million ringgit, will focus on developing more Bumiputera engineers in the critical electronics and electrical (E&E) sector, particularly within the fast-growing semiconductor industry.

With a focus on strengthening internet access in public institutions, the Communication and Multimedia Commission has allocated 120 million ringgit for improved connectivity across universities, schools, and military camps. This digital infrastructure improvement is crucial for supporting AI education growth and innovation. Furthermore, tax incentives will be offered to private higher education institutions that develop new courses in cutting-edge fields like AI, robotics, IoT, and FinTech, which are essential for creating high-income jobs and fostering talent for a digital economy.

KL20 Action Plan

Capacity Building and Community of Practitioners Supporting AI Adoption

Malaysia is committed to building AI capacity within the university and across the higher education sector by developing the skills, knowledge, and infrastructure necessary to leverage AI effectively.

In February 2023, Universiti Putra Malaysia became the first university in Malaysia that has conducted an open webinar session on GenAI, which has garnered local

and international audiences. That session has unearthed various concerns and issues regarding GenAI usage, especially on student's critical thinking ability, impact in assessment and worries on plagiarism vs genuinity of student's attainment. A guide was also released in that event, which has set up a positive direction for GenAI embracement in Malaysia. This session has created a ripple effect for other institutions in Malaysia and some neighboring countries, which have bloomed into forums, strategies, tips and best practices.

There is a shift in the focus on the competency development programs conducted in Universiti Putra Malaysia, and generally at other higher education institutes as time goes by. In 2023, mirroring the content of the GenAI applications available, many of the activities focused on introducing GenAI applications for brainstorming, cross-checking understanding and preparation of materials including assessments. Example titles of the sessions conducted in 2023 by various higher education institutions are as follows:

- ChatGPT in Teaching and learning: Friend or Foe
- Teaching with ChatGPT: Practical Tips and Strategies
- Enhancing Academic Productivity Using Generative AI: Tips and Strategies Regenerating learning experience with AI
- Regenerating Instructional Design with AI for Immersive Learning Experience
- Regenerating Learning Experience with AI: Harnessing Technology for Educational Transformation

Until today, the top three popular applications are ChatGPT, Gemini and Copilot, as these are easily accessible through the search engines used in Malaysia although more variants are picking up attention such as Claude and Perplexity, as well as more specialized applications such as MagicSchool, and the upgraded commonly used apps by educators in Malaysia including Padlet, Quizizz and Canva.

> Compared to earlier cohorts, recent participants demonstrate higher enthusiasm and clearer goals, driven largely by the growing global influence of AI and data science.

Throughout these capacity-building initiatives, a significant shift in demand, readiness, and motivation among participants can be observed. Compared to earlier cohorts, recent participants demonstrate higher enthusiasm and clearer goals, driven largely by the growing global influence of AI and data science. Participants increasingly understand that these skills are essential not only for their personal growth but also for innovating their teaching approaches and enhancing their understanding of students' evolving needs. As educators become more familiar with GenAI, they are also developing new prompting and insight-refining skills, enabling them to unlock the full potential of these tools. At Universiti Putra Malaysia, training sessions diverged into more variations of digital tasks as well as more complex prompting skills, such as as follows:

- AI as Learner Mentor for Scaffolding and Formative Assessment of Essay-based Assignments
- Impress, Inspire and Interact with AI-Driven Presentations
- Analyse, Visualize and Interpret Your Data with AI
- Improve ChatGPT Response with Award-Winning Prompt Crafting Strategy
- Performance Analysis and Tailored Feedback for Individual Learners Made Easier with AI in Personalised Learning
- Note Retrieval and Transcription of Meetings Using AI

Comprehensive AI and Data Science Literacy Development

Many institutions have released their own guideline for GenAI usage in teaching and learning such as Universiti Putra Malaysia, Universiti Teknologi Malaysia and Universiti Malaysia Pahang. Some have also conducted studies on AI acceptance among instructors and students. The results are generally positive with a highlight on a call for the integration of AI topics across disciplines, offering specialized courses, hands-on learning experiences, and interdisciplinary collaboration to equip students with essential AI skills. Initiatives like seminars, conferences, and online resources can raise awareness about AI's potential and societal impact, while promoting diversity and inclusion in AI education. Moreover, embedding discussions on AI ethics and responsible development into curricula are expected to ensure students are prepared to address the ethical challenges of AI technology. These strategies will help prepare a diverse, well-rounded workforce capable of navigating the AI-driven future.

UPM Logo
© https://en.wikipedia.org/wiki/University_of_Putra_Malaysia

Universiti Putra Malaysia has developed an AI and data science literacy framework for educators (called AIDL4Edu) since early 2022. The AIDL4Edu is loaded with contents that will inspire educators to innovate their pedagogical approaches, effectively integrate AI technologies into their teaching practices, and ultimately enhance students' learning experiences. AIDL4Edu focuses on three core competencies: (1) AI concepts and techniques in education; (2) data science concepts and techniques in education; and (3) applying AI in teaching and learning, which also encompasses machine learning and GenAI principles, learning analytics and ethical considerations in educational settings. Four levels of competencies are covered through the framework: foundational, intermediate, proficient and expert. Case studies and practical projects were used to provide a rich learning experience. Best practice guidelines were also shared, empowering educators to responsibly and effectively use AI technology in educational settings.

AIDL4Edu's effectiveness has been demonstrated through a capacity-building programme via micro-credentials offered to participants from Malaysia, China and Pakistan. Based on the testimonies received through our currently offered modules including the ones provided through International Institute of Online Education National Centre, Malaysia activities, many participants have expressed that they received valuable support towards developing competencies related to AI and data literacy in teaching and learning. Universiti Putra Malaysia is currently pushing for AIDL4Edu to be leveraged as a national level competency reference through a series of engagements with institutions and governmental agencies. This will be able to complement the nationwide free course on AI for Citizen (AI untuk Rakyat) that offers two badges namely AI Aware and AI Appreciate. The course is built in collaboration with Microsoft.

AI untuk Rakyat
© https://aiur.ai.gov.my/#/home

AI for everyone

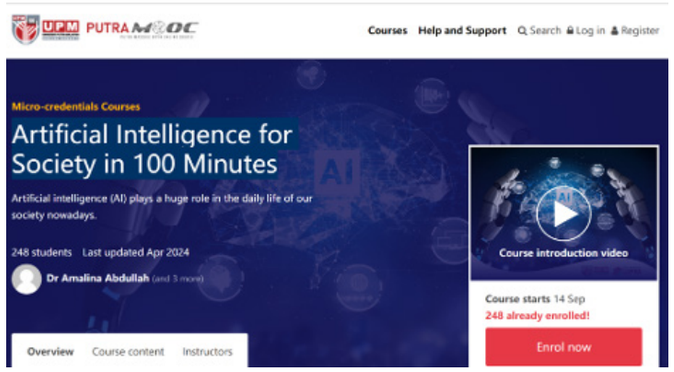
By promoting AI in education, Universiti Putra Malaysia and other institutions are laying the groundwork for a more resilient and adaptive education system in Malaysia - one that can respond to the diverse needs of students in an increasingly digital world. Indeed, AI education has been expanding in Universiti Putra Malaysia for a while. Other programs that target to provide graduates with artificial intelligence competencies are offered at the Faculty of Computer Science and Information Technology. In recent years, Universiti Putra Malaysia has made significant strides that ensure students from various disciplines are equipped with foundational AI knowledge through open elective courses. This is crucial for preparing the next generation of professionals who can apply AI to solve real-world problems in their respective fields.

Additionally, Universiti Putra Malaysia offers specialized AI courses and modules tailored to specific industries, including agriculture, biodiversity, and education. For example, in agriculture, Universiti Putra Malaysia has developed AI-driven solutions for precision farming, optimizing crop yields, and managing resources efficiently. The developed AI solutions are also used in teaching and learning activities, through courses such as Artificial Intelligence in Agriculture. These initiatives are part of Universiti Putra Malaysia's broader vision of driving AI-powered innovation in fields that are vital to Malaysia's economy and society.

The ingredients to achieve the AI for everyone spirit depends on

various factors including literacy and competency of all position levels in organizations towards the adoption of AI powered innovations across disciplines that could integrate and adapt to the users needs accompanied by human in the loop AI mechanism to ensure humanity-based customisation. Partnership to bridge the digital divide is also vital, besides sustainable funding to support the enabling ecosystem.

GUIDELINES for using GenAI technology at Universiti Malaysia Pahang
© https://caic.umpsa.edu.my/media/attachments/2024/05/21/ai-bi-garis-panduan-kecerdasan-buatan-generatif_translation-bi.pdf



UPM Artificial Intelligence for Society in 100 Minutes
Link: https://putramooc.upm.edu.my/enrol/index.php?id=239

Closing

In summary, Malaysia's commitment to AI integration, especially in higher education, is setting the stage for significant advancements in education, industry, and society. The widespread adoption of GenAI has not only expanded public awareness but also sparked new avenues for innovation, from precision agriculture to personalized learning. Institutions like Universiti Putra Malaysia are leading the change, developing comprehensive AI literacy frameworks, specialized programs, and capacity-building initiatives that equip educators and students with the skills necessary for a rapidly evolving digital landscape.

Through collaborative efforts between government, industry, and academia, Malaysia is cultivating an ecosystem where AI-driven solutions are tailored to meet national socio-economic goals, addressing critical needs across diverse sectors. As AI continues to redefine the future of education and industry, the emphasis on ethical governance, skill development, and adaptive learning will ensure that Malaysia remains at the forefront of AI innovation, fostering a resilient, forward-looking society prepared to harness the full potential of this transformative technology.

Through collaborative efforts between government, industry, and academia, Malaysia is cultivating an ecosystem where AI-driven solutions are tailored to meet national socio-economic goals, addressing critical needs across diverse sectors.

Defining an AI University: **The Chulalongkorn University Perspective**

About the author

Proadpran Punyabukkana, Associate Professor of Computer Engineering at Chulalongkorn University since 1993, received a Fulbright Scholarship for her Ph.D. at Claremont Graduate University, completed in 2003, specializing in programming language theory. Her research expanded to speech technology, particularly Thai speech synthesis and recognition. She co-founded the Spoken Language Systems Research Group in 2004 and the Assistive Technology Research Group in 2006, focusing on solutions for individuals with disabilities.

In 2010, she received both the Outstanding Government Officer Award and the Outstanding Person in the Area of Disabilities Award. She served as Assistant Dean (2004-2008) and Associate Dean (2008-2013) of the Faculty of Engineering. As a Fulbright Visiting Scholar, she was a Visiting Professor at MIT and Stanford in 2013 and 2014.

As Chief Learning Innovation Officer since 2022, she has integrated advanced technologies into education. In 2023, she led Chulalongkorn University's strategic direction for generative AI. In 2024, she gathered AI experts to form Chula AI team, focusing on defining the concept of an "AI University" and addressing challenges at both the university level and beyond, using AI to impact education, industries, and the community at the national level.

Situated in the heart of Bangkok, Chulalongkorn University has brought together 20 dedicated faculty members from diverse disciplines—including computer science and engineering, medicine, linguistics, law, and more—to form the Chula AI team. This collaborative initiative is focused on defining the concept of an "AI University" by addressing the specific challenges of the Thai education system. The team is committed to developing AI-driven solutions that are thoughtfully crafted to meet genuine educational needs and enhance learning outcomes. Drawing on their extensive experience in creating impactful AI applications across various, the team seeks to broaden its impact by extending its expertise to additional fields. Furthermore, they intend to foster business engagement through the

provision of strategic guidance, advisory support, and tailored executive education, thereby enabling industries to adapt to the transformative potential of AI. Grounded in a strong commitment to ethical practices, Chula AI aspires to set a standard for transparency, fairness, and responsible AI deployment. By collaborating with national and international partners, the team seeks to leverage collective expertise to address complex societal issues, fostering the meaningful integration of AI across academia, industry, and beyond.

Mission and Vision

Chula AI is committed to six core missions that guide its strategic direction:

- **Providing comprehensive AI knowledge and skills to learners at all levels.**

Chula AI aims to democratize AI education by offering diverse learning opportunities for university students, educators, and professionals. These literacy efforts bridge the gap between AI literate and non-literate individuals, ensuring equitable access to AI knowledge.

- **Propelling advanced AI research and innovation through partnerships.**

Chula AI collaborates with academic institutions and industry partners in Thailand and globally to advance AI research. These partnerships provide access to cutting-edge technology and foster collaborative research initiatives, driving discoveries that impact society.

- **Creating effective AI solutions for educational and operational needs.**

The team develops AI-driven solutions that enhance teaching, such as personalized learning systems and automated assessment tools, while optimizing administrative processes like scheduling and resource management.

- **Acting as a resource for industrial and business sectors.**

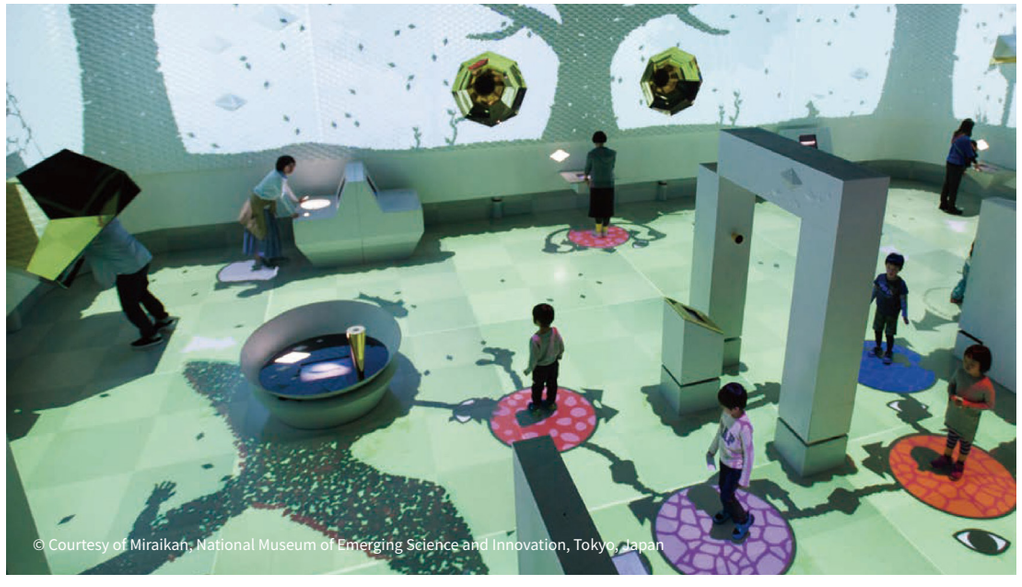
The team's experience in AI applications across healthcare, mental health, law, and banking is expanding to agriculture, climate change, and more. Chula AI provides tailored AI solutions and expert advice, helping organizations leverage AI to enhance competitiveness.

- **Ensuring ethical governance of AI.**

Chula AI is developing a comprehensive AI Governance Framework aligned with international standards. This framework promotes ethical and transparent AI usage across all levels and will oversee AI projects, fostering responsible innovation.

- **Building a sustainable AI ecosystem.**

Chula AI aims to create an ecosystem that integrates AI into education, research, and industry, fostering innovation and ethical responsibility to benefit all members of society.



© Courtesy of Miraikan, National Museum of Emerging Science and Innovation, Tokyo, Japan

Key Components of the AI University

Chula AI has defined the essential components of an "AI University" across five principal domains as shown in Figure 1:

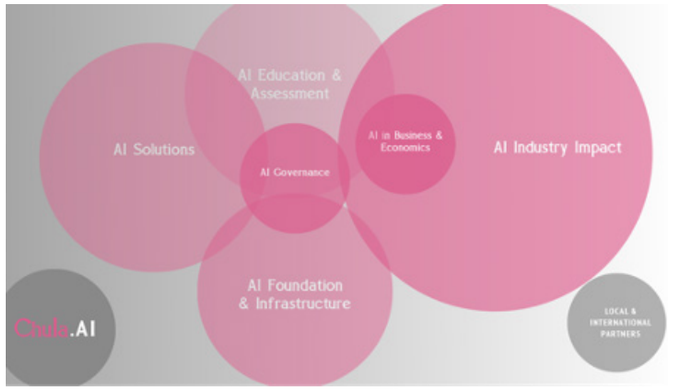


Figure 1: Chula AI components

- **AI Education and Assessment**

Chula AI is focused on providing comprehensive education and skills in digital literacy, AI, and generative AI. This initiative aims to equip youth, university students, school educators, academic faculty, working professionals, executives, and senior communities with essential skills and an understanding of ethical AI use. Chula AI also plays a role in evaluating AI proficiency through AI-driven certification, credit accumulation, credit transfer, and degree programs, fostering lifelong learning in collaboration with AI experts both locally and globally.

- **AI Solutions**

Chula AI is developing AI solutions in two key areas: teaching and learning, and university operations. These solutions are intended to improve pedagogical methods and the efficiency of university processes, serving as a model for how AI can enhance educational institutions.

- **AI Foundations and Infrastructure**

Chula AI is working to develop sustainable AI models and infrastructure by partnering with universities and industry experts. This involves creating national AI models and building the necessary infrastructure to support responsible AI research and application.

- **AI Industry Impact**

Chula AI leverages its experience in addressing industry needs by developing AI models that include data collection, model development, and continuous improvement. By collaborating with industry experts, Chula AI aims to provide businesses with scalable and effective AI solutions, ensuring that organizations are well-equipped to adopt and benefit from AI technologies.

- **AI Governance**

Chula AI is dedicated to maintaining high standards for AI use, including transparency, privacy, and security. Regular audits and ongoing ethics training are part of Chula AI's commitment to responsible AI use, ensuring that these technologies are beneficial to society while adhering to global standards.

Building a Sustainable AI Ecosystem

The Chula AI team is committed to building a sustainable AI ecosystem that benefits society and promotes lifelong learning. By integrating AI into various aspects of education, research, and industry, Chula AI is not only advancing technological capabilities but also fostering a culture of innovation and ethical responsibility. This holistic approach aims to ensure that AI technologies are developed and used in a way that is inclusive, equitable, and beneficial to all members of society.

Through its comprehensive missions and key components, Chula AI is setting a new standard for what an AI university can achieve. By bringing together a diverse team of experts and forming strong partnerships, Chula AI aims to contribute to the development of education and sustainable growth through the thoughtful application of AI.

AI Contributions and Future Strategies

Chulalongkorn University has a long-standing commitment to advancing AI education and applications. Chulalongkorn University has undertaken several notable initiatives related to AI, reflecting its dedication to enhancing education and societal well-being even before the formation of the Chula AI team.

In the realm of AI education, the university has developed **Chula MOOC** (https://mooc.chula.ac.th/), which has attracted over 2,000,000 registrations across a diverse range of courses, including **Python for Data Science**, the **Machine Learning Series**, and **Tricks for Statistics**. The introduction of **Chula MOOC Flexi** https://cuneuron.chula.ac.th/cumooc-flexi further emphasizes the university's commitment to digital literacy, offering courses that not only equip learners with essential skills but also allow for credit accumulation and transfer to other universities. This initiative is accessible to the general public, underscoring the belief that a solid foundation in digital literacy is crucial before pursuing deeper AI knowledge.

Additionally, **Chula MOOC Snap** (https://www.mycourseville.com/?q=onlinecourse/store/24) evolved from the successful **Chula Lunch Talk** series, which features discussions on trending AI topics presented bi-monthly. These informative sessions are recorded and made available on the Chula MOOC Snap platform, providing learners with flexible access to content and the opportunity to earn certificates upon completion.

Beyond education, Chulalongkorn University has also engaged in advanced research and development projects that have the potential to create significant societal impacts. For instance, **DeepGI** is an innovative device for rapid gastrointestinal cancer detection that aims to improve preventive medicine for gastrointestinal malignancies. **DMind** is another important development, an AI-powered tool that screens for depression by analyzing facial expressions, speech, and text to assess severity levels. Furthermore, **Gowajee** is a Thai speech-recognition AI that accurately understands and executes commands in the Thai language, enhancing user interaction with technology. Additionally, **ReadMe** is an OCR (Optical Character Recognition) program designed to scan texts in both Thai and English from documents, images, or video files and convert them into a digital script.

Looking ahead, Chula AI plans to expand its industry engagement across critical sectors, including **Energy, Environment, Sustainability, Aging, Medical, Wellness, Food, Agriculture,** *and* **Climate Change.** The initiative aims to develop AI solutions that address pressing challenges within these fields.

In advancing these initiatives, Chulalongkorn University has partnered with various national organizations such as **Thaimooc** and **Degree Plus**, as well as international partners like **NVIDIA, AWS**, and **XuetangX**. Looking ahead, the university seeks to connect with more partners to further enhance its AI capabilities.

Moreover, Chula AI intends to enhance its educational offerings by creating more executive education programs, hosting conferences, and establishing journals dedicated to AI in education.

A crucial aspect of the future vision is the construction of infrastructure, which includes developing large language models (LLMs) tailored for tasks related to the team's interest in addressing challenges in higher education through AI. By focusing on these areas, Chula AI hopes to contribute meaningfully to the advancement of AI technologies, fostering innovation and supporting improvements in both education and industry.

> The team recognizes the importance of fostering a sustainable AI ecosystem, promoting innovation, and supporting lifelong learning as essential aspects of its mission.

Conclusion

Chula AI seeks to contribute meaningfully to the evolving landscape of artificial intelligence in education and industry. By bringing together a diverse team of experts and building on existing initiatives, the team aims to address challenges within the Thai education system while exploring broader applications of AI technologies. With a commitment to ethical practices, collaboration, and community engagement, Chula AI aspires to ensure its advancements have a positive impact on society. The team recognizes the importance of fostering a sustainable AI ecosystem, promoting innovation, and supporting lifelong learning as essential aspects of its mission. As Chula AI continues its work, it will focus on enhancing educational experiences and improving operational efficiencies, contributing to a more inclusive and technologically adept future for all.

Contributors

Proadpran Punyabukkana[1],Atiwong Suchato[1], Ekapol Chuangsuwanich[1],Natawut Nupairoj[1], Peerapon Vateekul[1],Veera Muangsin[1], Thanarat Chalidabhongse[1]

Dittaya Wanvarie[2],Nagul Cooharojananone[2],Thiparat Chotibut[2],Naruemon Ploy Pratanwanich[2]

Solaphat Hemrungrojn[3],Sira Sriswasdi[3]

Puripant Ruchikachorn[4],Suronapee Phoomvuthisarn[4]

Attapol Thamrongrattanarit[5]

Peerapat Chokesuwattanaskul[6]

Voraprapa Nakavachara[7]

Watsayut Kongchan[8]

Pinnaree Tea-makorn[9]

(1) Faculty of Engineering, Chulalongkorn University

(2) Faculty of Science, Chulalongkorn University

(3) Faculty of Medicine, Chulalongkorn University

(4) Faculty of Commerce and Accountancy, Chulalongkorn University

(5) Faculty of Arts, Chulalongkorn University

(6) Faculty of Law, Chulalongkorn University

(7) Faculty of Economics, Chulalongkorn University

(8) Faculty of Communication Arts, Chulalongkorn University

(9) Sasin School of Management

03

Digits and Tales

- Expert Insights: 2024 Southeast Asia Regional High-Level Policy Dialogue
- AI Literacy Education: Innovations and Practices in Asia-Pacific

Expert Insights: **2024 Southeast Asia Regional High-Level Policy Dialogue**

Prof. Dr. rer.nat. Abdul Haris
Director General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology, Indonesia

"The objective of the policy dialogue is to create a platform for regional stakeholders in higher education across Southeast Asian countries to discuss and find solutions for the responsible and efficient utilisation of AI in higher education."

Prof. WANG Libing
Chief of the Section of Education, UNESCO Bangkok Office

"Higher Education Institutions (HEIs) play an important role in equipping teaching personnel with AI skills while upholding academic integrity and ethical standards. Multilateral collaboration is essential for unlocking opportunities in research and education."

Prof. JIN Li
Director of UNESCO-ICHEI, Vice President of Southern University of Science and Technology, China

"This policy dialogue aims to establish a robust policy dialogue and exchange mechanism for multi-stakeholders in Southeast Asia. UNESCO-ICHEI plans to leverage IIOE micro-certification to enhance teaching personnel's digital competency and support HEIs in achieving their innovation strategies for higher education at the institutional and national levels in the GenAI era."

Dr. Roger Y. CHAO Jr.
Asst. Director/Head of Education, Youth and Sports division, Association of Southeast Asian Nations (ASEAN) Secretariat

"Integrating AI into education requires a holistic approach, considering its broader implications for society and economy. Educational policies and strategies should align with national and regional development plans, including SDGs."

Dr. Sungsup RA
Visiting Professor at Korean Development Institute, Former Deputy Director General of Asian Development Bank (ADB)

"In recent years, ADB has increasingly invested in tertiary education projects and promoted R&D innovation in the Indonesian higher education system. Strategic decisions must be made regarding the local context of AI applications, focusing on areas such as infrastructure and capacity-building."

Prof. CHAN T. Basaruddin
Member of Executive Board, National Accreditation Agency for Higher Education, Indonesia

"It is crucial to ensure faculty readiness for GenAI through mindset development, competency enhancement, and pedagogical changes, alongside establishing robust regulatory frameworks."

Ms. BI Xiaohan
Deputy Director of UNESCO-ICHEI

"The "IIOE Micro-certification for Higher Education Teaching Personnel Project" initiative aims to equip teachers, administrators, and leaders with digital competencies to effectively utilise GenAI for enhancing teaching, management, and leadership in higher education."

Mr. WANG Jianing
Director of WPS Office Product Ecosystem Partnership, WPS Software PTE. LTD.

"The university-enterprise cooperation plays a crucial role in the digital transformation of higher education. WPS provides exclusive courses and training for the IIOE platform, benefiting 724 students from 72 countries and regions."

Dr. Nurfadhlina Mohd Sharef
Associate Professor at Universiti Putra Malaysia (UPM)

"UPM has 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."

Dr. Nu Nu Yi
Pro-Rector of Yangon University of Distance Education, Myanmar

"University leadership plays a pivotal role in shaping higher education during the AI era, emphasising the need for clear visions, strategic resource allocation, and collaborative partnerships within institutions."

Dr. Rahayu Dwi Riyanti
Director of Indonesia Cyber Education Institute (ICE-I)

"The Southeast Asia Regional High-Level Policy Dialogue brings together diverse stakeholders, fostering a spirit of collaboration and commitment toward harnessing the potential of GenAI in HEIs. Together, let us continue to explore and try new pathways that unlock the full potential of Artificial Intelligence."

Mr. Mak Ngoy
Director General of Higher Education, Ministry of Education, Youth and Sport, Cambodia

"GenAI plays a crucial role in Teachers' Professional Development (TPD) and infrastructural construction. Cambodia has been implementing a strategic plan for using AI technology for economic growth, job creation, improving the governance system, and enhancing equity and sustainability."

Dr. CHAWIN Chantharasenawong
Vice President of King Mongkut's University of Technology Thonburi, Thailand

"The University is drafting a policy guideline for the responsible use of AI, which includes several key notions, such as the ethics of AI in academic research, data privacy and TPD strategies."

Dr. Carl Michael F. Odulio
Vice-Chancellor of the University of the Philippines, Diliman

"Currently, the use of AI is still in its early stages, and teaching personnel are ambivalent about utilising AI. Thus, HEIs should provide training and promote information sharing to enhance teachers' AI literacy."

Prof. Cecilia CHAN
Director of the Teaching and Learning Innovation Centre, Hong Kong University (HKU), China

"AI literacy encompasses understanding AI principles, applications, ethical implications, and human impacts to responsibly engage with AI technologies in daily life. HKU has made practical efforts to provide a range of policies, guidelines and technical support to enhance AI literacy and professional development of teaching personnel in the AI era."

Mr. SIT Fung
Chief of International Institute of Online Education (IIOE), UNESCO-ICHEI

"IIOE has launched an overall strategy and initiatives to accelerate the integration between AI and education, including IIOE 1+X GenAI Literacy Programme, IIOE V3.0 – iTA, Smart Classroom Project, and IIOE AI Lab."

Mr. Joe ZHOU
Southeast Asia Director of MAXHUB/Seewo

"Seewo concentrates on the development of digital terminals, primarily Interactive Blackboards, which aim at data collection, advancing GenAI, and enhancing public accessibility."

Dr. Romyen Kosaikanont
Director of Southeast Asian Ministers of Education Organization (SEAMEO) Regional Centre for Higher Education and Development

"SEAMEO has established a Working Group on AI to support 11 Southeast Asian countries in developing policies and capacity building for AI integration in education and strengthened partnerships for the co-creation of the AI ecosystem."

Ms. Ivy SHI
CEO of Learnmonade

"It's important to enhance the quality of education in developing nations and narrow the technology divide. Learnmonade aims to empower teachers, including female educators, to utilise AI technology effectively, thereby alleviating apprehensions about AI and fostering creativity."

Ms. WANG Jing
Deputy Director of Learning Mall, Xi'an Jiaotong-Liverpool University (XJTLU)

"XJTLU has implemented a wide range of projects, including an initiative to embrace AI, EdTech provision for the university community, the innovation of Learning Mall, and the collaboration with IIOE to develop AI Literacy Micro-Certification."

Mr. Teguh Prasand
Lecturer of Information Systems, Bina Nusantara University

"The action plan for building digital competencies of Indonesian higher education teaching personnel is based on the work from the IIOE Higher Education Teaching Personnel Digital Competency Reference Framework in collaboration with UNESCO Bangkok and UNESCO-ICHEI. This plan will kick-start more activities, facilitating the upskilling of the higher education workforce."

Mr. Zakki Gunawan
Programme Officer at UNESCO Jakarta Office

"The UNESCO initiative, "Indonesian Digital Transformation Multi-Stakeholders Partnership", focuses on youth empowerment in the digital ecosystem and lays emphasis on partnerships for digital skills, safety, culture, ethics, and the economy."

Prof. LIM Cher Ping
Chief Expert of International Institute of Online Education (IIOE), UNESCO-ICHEI
Chair Professor of Learning Technologies and Innovation at the Education University of Hong Kong, China

"It is crucial to adopt a holistic approach to the integration of AI in higher education, including curriculum reform, capacity building, and advocated learning to learn with AI. Shared best practices and relevant output from the policy dialogue will be included in the regional recommendations for upskilling the higher education workforce."

AI Literacy Education: Innovations and Practices in Asia-Pacific

Contributors: SHEN Yujia, DING Zisha, SU Rui, ZHOU Jingyi
Organisation: Knowledge Production and Communications Centre (KPCC), UNESCO-ICHEI

The iterative evolution of Artificial Intelligence(AI) large models triggers a self-awakening of systemic change in education. Higher education institutions (HEIs) across the globe have undergone an attitude shift of "Precaution - Exploration - Proactive Adaptation - Seeking Transformation". To integrate emerging technologies into the higher education system, while proactively adapting to technological change, HEIs uphold human-centred values and seek to achieve the educational goal of human development by being able to adapt to and lead the development of society through AI literacy education.

This article will focus on innovations and practices in AI literacy education within the Asia-Pacific region, examining typical case studies from 8 countries: China, Japan, South Korea, Singapore, Malaysia, India, Sri Lanka, and Kazakhstan. By analysing these countries' strategic plans, competency framework, action routes, and key measures, the article aims to explore how AI talent development can be effectively implemented, and to present a global perspective and future trends in AI literacy education.

> Higher education institutions (HEIs) across the globe have undergone an attitude shift of "Precaution - Exploration - Proactive Adaptation - Seeking Transformation".

China: Enhancing AI Literacy Education through a Comprehensive Talent Cultivation Model

On June 16, 2024, the Zhejiang University AI Education and Teaching Research Center released *Red Book on Artificial Intelligence Literacy of College Students (2024 Edition)*, taking the lead in explaining in detail what kind of AI literacy Chinese college students should have, and proposing corresponding talent cultivation objectives and action strategies. The Red Book stresses that "the primary goal of education should always be the cultivation of the overall ability of independent thinking and judgment, rather than the knowledge acquisition."

The Red Book suggests that systematic knowledge, constructive ability, creative value, and humanistic ethics are the 4 core components of college students' AI literacy. To achieve the vision of AI literacy education, the Red Book also explores the practical methods for the cultivation of college students' AI literacy in terms of curriculum, teaching materials, teacher training, platform development, and synergetic mechanisms, and proposes a series of action strategies, including adding AI general education courses, exploring the "AI+X" interdisciplinary talent training model and offering AI-related micro majors.

Red Book on Artificial Intelligence Literacy of College Students (2024 Edition)

South Korea: Developing a Competency Framework for Teachers to Guide AI Literacy Education

MEXT conducts a comprehensive assessment of AI literacy education in HEIs, focusing on curriculum setting, industry-academia collaboration, talent training characteristics, and the breadth of student coverage. The evaluation covers 3 key areas: (1) understanding the relationship between AI and society; (2) recognizing the ethical, legal, and social issues that may arise from the use of AI; (3) acquiring basic skills in AI data interpretation and processing.

Japan: Launching a University Accreditation Programme to Ensure the Quality of AI Literacy Education

In 2021, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) launched the "Approved Programme for Mathematics, Data Science, and AI Smart Higher Education (MDASH)," which has become an important measure for ensuring the quality of AI talent development in Japan's higher education.

Through this programme,

The AI Education Alliance and Policy Lab (AIEDAP) at Seoul National University in South Korea has developed an AI competency framework for teachers. This framework outlines the AI literacy that teachers need to possess in the AI era from a professional perspective. It argues that AI literacy should not be viewed as an additional element in a teacher's professional development, but rather as a catalyst for rethinking the role of teachers.

The framework divides teacher's AI competencies into 3 key areas: AI basics, AI education practice, and professional involvement. These areas encompass 9 core competencies, including utilization of AI technology, practice of AI ethics, educational context analysis using AI technology, teaching-learning design using AI technology, development of educational resources using AI technology,

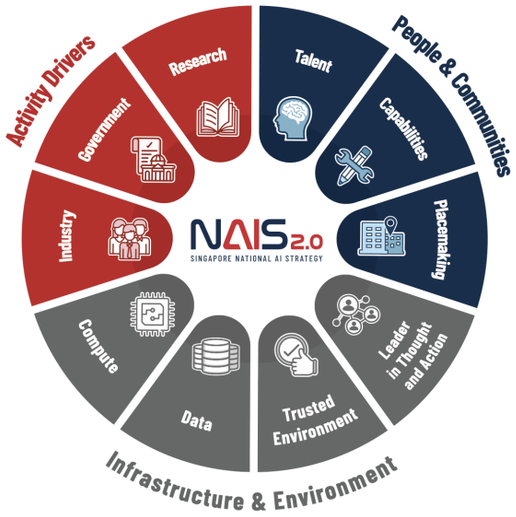
implementation of classes using AI technology, educational evaluation and reflection using AI technology, professional development, and social participation. Additionally, the framework outlines **30** behavioural indicators focusing on "teaching and learning", providing teachers with effective guidance for enhancing their AI competencies.

AI Utilization Workbook for Teachers (South Korea)

Singapore: Establishing a Professional Qualification Framework to Define AI Literacy Development Pathways

According to the Singapore government's renewed National *Artificial Intelligence Strategy 2.0 in 2023*, "People & Communities" has been identified as one of the three main strategic pillars. The strategy considers talent, capabilities, and placemaking as key focus areas.

In terms of talent development, a professional qualification framework for AI engineers has been introduced to assess the capabilities of professionals in areas such as data analysis, model design, project management, problem-solving, and strategic planning. In terms of capacity building, the Singapore Ministry of Education, in collaboration with schools and AI technology companies, has launched targeted AI training programmes for various groups, including students, teachers, and professionals, based on the development needs of different AI learners.



Singapore National Artificial Intelligence Strategy 2.0

Malaysia: Leveraging Online Training Platforms to Improve Citizens' AI Literacy

On January 16, 2024, the Malaysian government, in collaboration with Intel, launched the "AI Untuk Rakyat", which aims to improve the AI literacy of the entire public through an online learning platform. The programme has accelerated the process of popularizing AI literacy among all Malaysians and is an important milestone in improving AI literacy among all Malaysians and building a digital society.

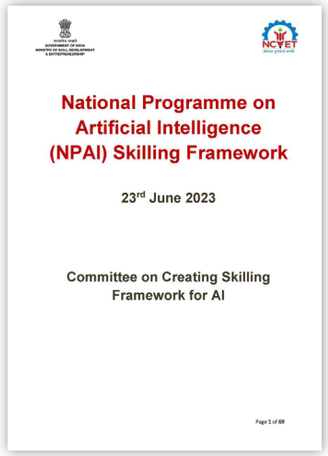
The "AI Untuk Rakyat" opens the AI online self-study platform to the public for free, and provides learning courses in 4 languages: Malay, English, Mandarin and Tamil, aiming to improve the AI literacy of all Malaysians. In less than six months since its launch, **over one million** Malaysians have completed the "AI Untuk Rakyat" self-learning online programme on AI.

AI Untuk Rakyat" Digital Badge

India: Introducing National AI Skilling Framework to Improve AI literacy

On June 23, 2023, the Government of India's Ministry of Skill Development and Entrepreneurship issued the *National Programme on Artificial Intelligence Skilling Framework*. With the theme of "AI skills development," the plan aims to improve AI literacy among all citizens and emphasizes expanding AI courses for students from both technical and non-technical backgrounds.

Different groups of people (All, Many, Few) are required to have different levels of AI skills. All citizens should have basic AI literacy, be able to use AI tools effectively, and identify potential risks of AI; most of the public should master AI applications in their respective fields to improve productivity; a small number of AI professionals should master professional knowledge including coding, data analysis, machine learning, and other related technologies, and have the ability to develop AI products and provide solutions.



AI Utilization Workbook for Teachers (South Korea)

Sri Lanka: Integrating AI Literacy Education into National AI Development Vision

On April 26, 2024, the National AI Center of the Ministry of Technology in Sri Lanka released *Artificial Intelligence in Sri Lanka White Paper* to solicit opinions from the general public.

The White Paper provides a concrete plan for the strategies and goals of AI development. On the one hand, enhancing AI literacy for all is one of Sri Lanka's overall AI strategic objectives, emphasizing the need to enhance AI literacy across different groups and provide corresponding certification. On the other hand, it outlines short-term, mid-term, and long-term initiatives that build AI literacy and skills. The short to mid-term initiatives target working professionals, such as AI engineers, aiming to improve their understanding of AI basic knowledge, ethics, and applications. The long-term initiatives place greater emphasis on the reform of the education system, advocating for the inclusion of digital and AI literacy at all levels of education.

Artificial Intelligence in Sri Lanka White Paper

Kazakhstan: Fostering AI Development & Application through AI Literacy Education

On July 16, 2024, Kazakhstan released the *Concept of Artificial Intelligence Development for 2024-2029*, emphasizing the application of AI in various fields.

The Ministry of Science and Higher Education of the Republic of Kazakhstan put forward the planning for AI talent cultivation, approximately cultivating **10,000** AI talents as well as **1,000** AI specialists, developing **100** AI startups, and **10** key AI research projects. The target indicator will be an increase in the share of universities teaching AI from **20%** in 2025 to **60%** in 2029. As of 2024, there are **17** Kazakhstani universities offering AI-related programmes, with a total of **2,196** students enrolled.

Kazakhstan Concept of Artificial Intelligence Development for 2024-2029

References

AIEDP.(2022). AIEDAP Competency Framework(AIEDAP 역량체계). Available at: https://aiedap.or.kr/?page_id=4050&ckattempt=2#globus

AI Singapore.(2023). #LEARNAI Making artificial intelligence accessible to all. Available at: https://learn.aisingapore.org/wp-content/uploads/2023/01/LearnAI-Booklet-2023_v2.pdf

AI untuk Rakyat. (2024). AI untuk Rakyat. Available at: https://aiur.ai.gov.my/#/home
CFSAI. (2024). Artificial Intelligence in Sri Lanka White Paper. Available at: https://mot.gov.lk/assets/files/AI%20White%20Paper%20March%202024-c09aa49f7990358ad1442103b804511d.pdf

Council for Science, Technology and Innovation - Japan. (2022). AI strategy 2022. Available at: https://www8.cao.go.jp/cstp/ai/index.html

Government of India Ministry of Skill Development & Entrepreneurship. (2023). Committee on Creating Skilling Framework for AI. Available at: https://www.ugc.gov.in/pdfnews/5732498_Report-on-NPAI-Skilling-Framework.pdf

Ministry of Education, Culture, Sports, Science and Technology - Japan. (2021). Promoting education in mathematics, data science, and AI(数理・データサイエンス・AI 教育プログラム認定制度). Available at: https://www.mext.go.jp/a_menu/koutou/suuri_datascience_ai/00001.htm

Ministry of Education, Science and Technology , Sri Lanka. (2024). AI Clubs in Sri Lanka Schools. Available at: https://mot.gov.lk/notices/ai-clubs-in-sri-lanka-schools

Official Information Source of the Prime Minister of the Republic of Kazakhstan. (2024). Concept for Artificial Intelligence Development for 2024-2029 adopted by Government. Available at: https://primeminister.kz/en/news/concept-for-artificial-intelligence-development-for-2024-2029-adopted-by-government-28786

Smart Nation Singapore. (2023). National AI strategy (NAIS). Available at: https://www.smartnation.gov.sg/nais/

Wu, F., Li, Y., Chen, J., et al. (2024). Red Book on Artificial Intelligence Literacy of College Students (2024 Edition). Journal of Science, Technology and Education Studies, 4(2), 71-96.