SEAMEO INNOTECH
Driving innovation for education

16th INNOTECH International Conference

CONFERENCE SYNTHESIS

AI in Education:

Unlocking Potential Through Accessible and Equitable Learning

16 MAY 2025 | THE MANILA HOTEL

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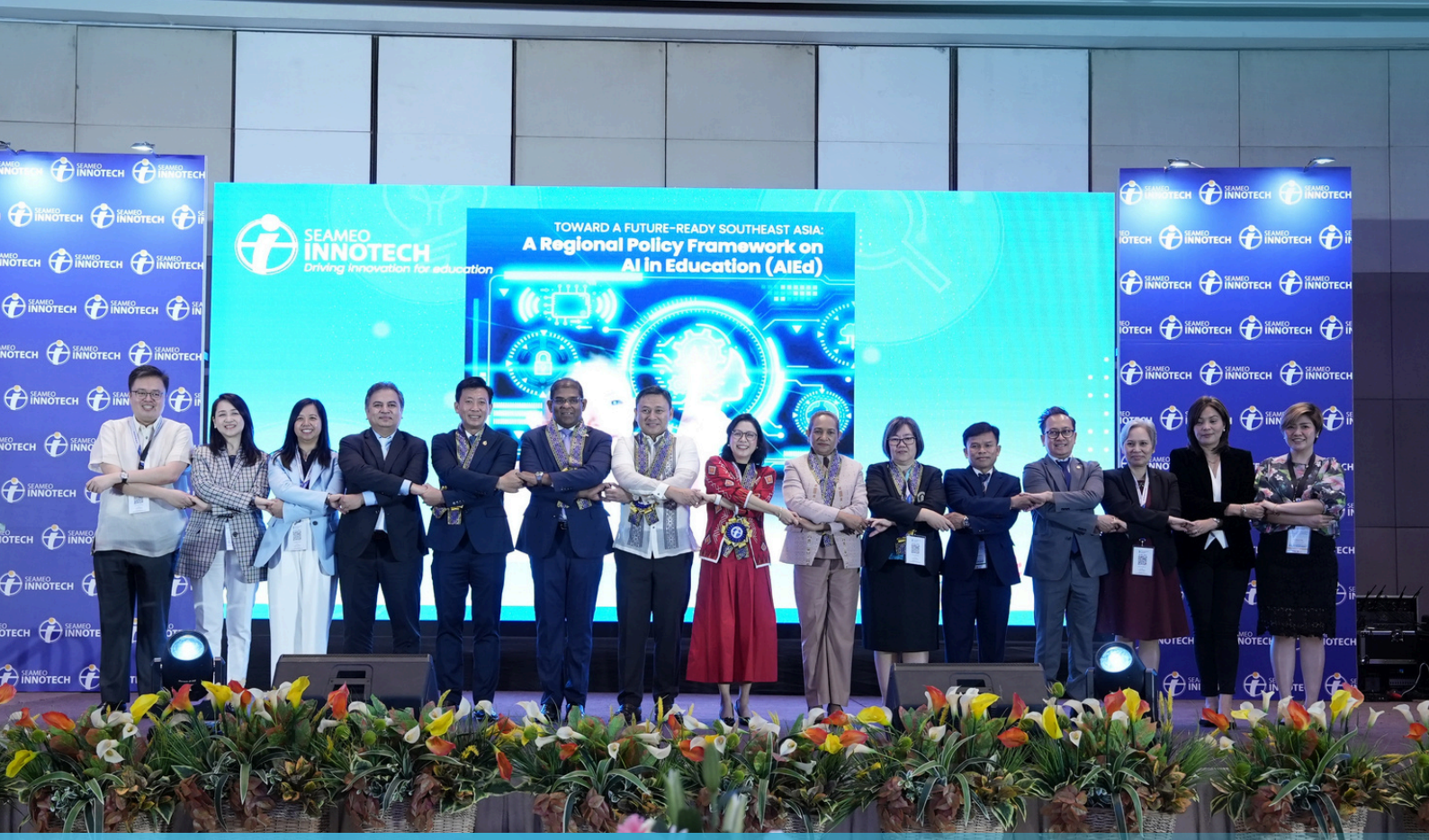
Background



ASEAN HANDSHAKE. Philippine Department of Education (DepEd) Secretary H.E. Juan Edgardo "Sonny" Angara, Timor-Leste Minister of Education H.E. Dulce de Jesus Soares, Malaysian Ambassador to the Philippines His Excellency Dato' Abdul Malik Melvin Castelino bin Anthony, and SEAMEO INNOTECH Centre Director Dr. Majah-Leah V. Ravago, join esteemed education leaders and partners in the traditional ASEAN handshake during the 16th INNOTECH International Conference.

The Regional Centre for Educational Innovation and Technology (INNOTECH) International Conference, held biennially since 1986, serves as Southeast Asia's premier forum for fostering educational innovation and collaboration. For nearly four decades, it has brought together policymakers, educators, researchers, and industry experts to address the region's most pressing educational issues. The 16th edition of the conference was strongly supported by the Philippine Department of Education (DepEd), which served as a key partner in convening this landmark regional gathering. Through DepEd's active leadership, the conference brought together over 300 education leaders from SEAMEO member countries, along with committed education professionals and innovative technology specialists from around the globe. Underscoring the significance of the Philippines' presidency of the Southeast Asian Ministers of Education Organization (SEAMEO) Council from 2023 to 2025, the conference featured a dedicated session on DepEd's 7-7-7 Flagship Program, highlighting the country's commitment to advancing regional educational cooperation and innovation. Central to this gathering was the shared goal of addressing the urgent challenge of integrating Artificial Intelligence (AI) into educational settings in ways that are equitable, effective, and responsible for all learners.

Through in-depth policy dialogues, insightful plenary sessions, and targeted breakout workshops, the conference generated rich discussions that significantly contributed to fostering a collective vision for AI in education. The gathering underscored the region's shared responsibility to leverage AI's potential thoughtfully, while actively preserving Southeast Asia's distinct educational and cultural values.

Conference Rationale

As AI rapidly transforms learning worldwide[1], Southeast Asia faces both an opportunity and a challenge: how can education systems harness the power of AI while ensuring that its use promotes equity, safeguards cultural identities, and supports the most vulnerable learners?

The 16th INNOTECH International Conference was convened to catalyze regional dialogue and collaboration around this critical question. Building on nearly four decades of shared efforts to address the region's evolving educational needs, the conference reflected a new imperative: to shape AI adoption in ways that align with Southeast Asia's diverse contexts and shared aspirations.

The timing of the conference proved especially important, as AI technologies continue to evolve rapidly and gain traction in education systems around the world[1][2]. Yet, alongside this momentum, Southeast Asia faces persistent challenges that complicate AI integration. Many schools and education systems are still grappling with resistance to AI adoption, limited infrastructure, and uneven access to digital tools[3][4]. Concerns about fairness, transparency, and accountability further contribute to an environment of hesitation and uncertainty[2][5]. These realities underscore the urgent need for coordinated, evidence-based policy guidance and inclusive regional dialogue to ensure that AI integration supports equitable and effective learning.

In this context, the leadership role of INNOTECH is particularly vital. With its mission to serve as a catalyst of innovation and technology, transforming Southeast Asian education, INNOTECH is uniquely positioned to bring together key stakeholders and facilitate a structured, region-wide conversation on AI integration. Its ability to bridge diverse perspectives ensures that discussions remain grounded in both the region's shared aspirations and its complex realities, advancing INNOTECH's vision of shaping learners to become changemakers of tomorrow.

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[1]F. Miao, W. Holmes, R. Huang and H. Zhang, "AI and education: Guidance for policy-makers," United Nations Educational, Scientific and Cultural Organization, 2021.

[2]G. Ignjatović, "AI TECHNOLOGIES IN EDUCATION: Regulatory frameworks at the international, regional and national level.," 2024.

[3]S. Chitturu, D.-Y. Lin, K. Sneader, O. Tonby and J. Woetzel, "Artificial Intelligence and Southeast Asia's Future," 2017.

[4]F. Miao, K. Shiohira and N. Lao, "AI competency framework for students," United Nations Educational, Scientific and Cultural Organization, 2024.

[5]M. Sadiku, T. Ashaolu, A. Ajayi-Majebi and S. Musa, "Artificial intelligence in education," International Journal of Scientific Advances, vol. 2, no. 1, pp. 5-11, 2021.

STRONGER TOGETHER. INNOTECH Executive Committee members and Department of Education officials join together at the 16th INNOTECH International Conference, a partnership between the two institutions to advance equitable and innovative approaches to AI in education.

Conference Objectives

The 16th INNOTECH International Conference pursued four interconnected objectives aimed at transforming Southeast Asia's approach to AI in education while maintaining ethical foundations and regional collaboration priorities:

- **Garnering expressions of support for the Regional Policy Framework on AI in Education (AIEd)** represented one of the conference's most significant objectives. This initiative seeks to establish a coordinated regional approach to AI integration that honors national sovereignty while fostering meaningful collaboration. The framework, championed by the Philippines and facilitated by INNOTECH, presents a collaborative opportunity with potential to provide comprehensive guidance for ethical, equitable, and sustainable AI adoption tailored to Southeast Asia's diverse educational contexts.

- **Strengthening collaboration** among government, academia, industry, and civil society recognizes that successful AI integration requires coordinated action across diverse stakeholders. The conference convened government officials from education ministries and legislative bodies, academic leaders and university representatives, industry partners, and civil society advocates focused on issues of equity and inclusion. This multi-sectoral participation ensured that discussions on AI implementation were informed by diverse perspectives and aligned with the varied needs and priorities of different stakeholders.

- **Providing actionable insights and policy recommendations for ethical AI adoption** that address the urgent need for practical guidance as countries navigate the challenges of AI integration. The conference moved beyond theoretical discussions to offer concrete strategies for responsible implementation, including evidence-based recommendations, practical guidelines for avoiding AI pitfalls, and governance frameworks that strike a balance between innovation and the protection of learner rights and educational values.

- **Showcasing AI-driven educational innovations** that inform policy and practice demonstrated the conference's commitment to evidence-based decision-making. The conference prioritized practical applications that could directly influence educational policies and classroom practices across diverse Southeast Asian contexts. This objective was exemplified through presentations such as the Central Visayan Institute Foundation-Dynamic Learning Program (CVIF-DLP), the Philippines' Education Center for AI Research's (E-CAIR) comprehensive project portfolio, and participant testimonials.

This synthesis document serves multiple critical functions in advancing the conference objectives and ensuring its impact extends beyond the event. Primarily, it aims to document key insights and consensus emerging from conference discussions, creating a permanent record of the collaborative wisdom generated through high-level dialogues, plenary presentations, and breakout sessions.

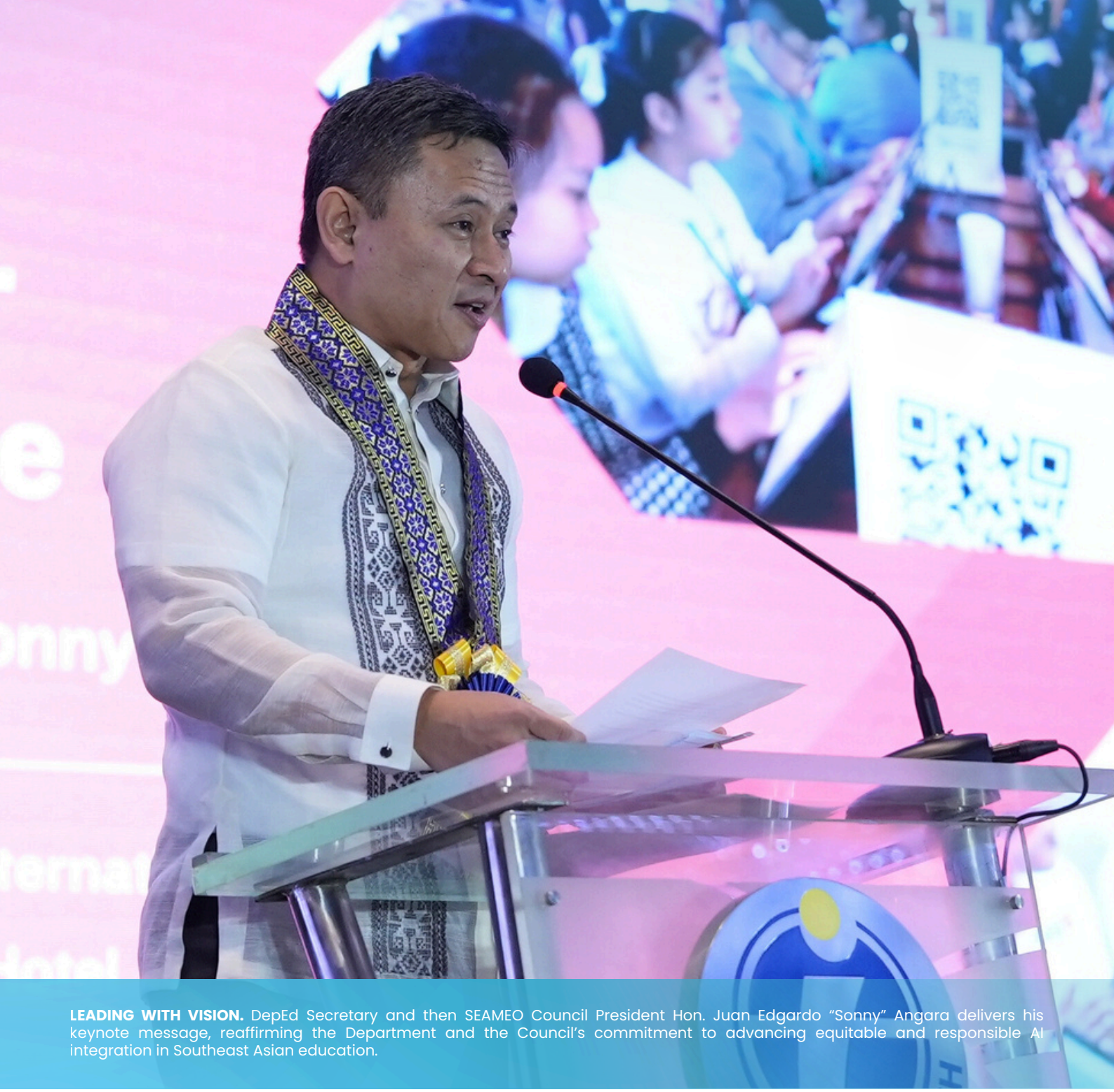
The document serves as an essential reference for the over 300 participants who attended, including government leaders from Southeast Asia's Ministries of Education (MoEs), representatives from SEAMEO Centres and United Nations (UN) agencies, education and research institutions focused on AI in learning, and industry leaders and innovators in AI-driven education. The synthesis approach distills discussions into accessible insights while preserving the nuance and critical details that emerged from the stakeholders.

This synthesis covers the keynote address highlighting AI's transformative potential in education; the high-level policy dialogue on the regional prospects of AI integration; three plenary sessions addressing policy innovation, collaborative solutions and regional calls to action, and the breakout sessions exploring implementation experiences and showcases of regional AI innovations.

Most importantly, this synthesis serves as a strategic resource for guiding future policy actions, helping governments, institutions, and development partners translate conference insights into concrete steps for the ethical, equitable, and sustainable AI integration across Southeast Asia's education systems.

INNOTECH is uniquely positioned to bring together key stakeholders and facilitate a structured, region-wide conversation on AI integration. Its ability to bridge diverse perspectives ensures that discussions remain grounded in both the region's shared aspirations and its complex realities.

AI and the Future of Education in Southeast Asia



LEADING WITH VISION. DepEd Secretary and then SEAMEO Council President Hon. Juan Edgardo "Sonny" Angara delivers his keynote message, reaffirming the Department and the Council's commitment to advancing equitable and responsible AI integration in Southeast Asian education.

The global emergence of artificial intelligence has fundamentally altered educational landscapes worldwide, creating both significant opportunities and complex challenges that demand thoughtful and coordinated responses. The 16th INNOTECH International Conference convened against this backdrop of rapid technological change, recognizing that Southeast Asia's educational future depends on how effectively the region harnesses AI's potential while mitigating its risks.

Critical Juncture: Why Southeast Asia Cannot Afford to Wait

The conference opened with a clear reflection on the region's ongoing educational challenges, as outlined in the remarks of Dr. Majah-Leah V. Ravago, Centre Director of INNOTECH. Persistent learning gaps continue to affect millions of children across Southeast Asia: 56% of Grade 5 learners do not meet minimum proficiency levels[6], and the 2022 Programme for International Student Assessment (PISA) results revealed significant underperformance in mathematics in countries such as the Philippines and Indonesia[7].

> ***"These figures represent not just numbers, but children being left behind, their futures uncertain in an increasingly digital and data-driven world,"***

Dr. Ravago emphasized. Her words serve as an urgent wake-up call. The region cannot afford to treat these gaps as abstract challenges when real children's futures hang in the balance. Educational innovation has become both an urgent necessity and a moral imperative.

The statistics become even more concerning when viewed in terms of ASEAN's position as one of the fastest-growing economic regions globally. This could create a significant gap between educational outcomes and economic needs, with employers struggling to find workers possessing the right combination of technical skills and soft skills required for the modern economy.

The region thus faces a dual challenge: addressing current learning deficits while simultaneously preparing students for a rapidly evolving digital future.

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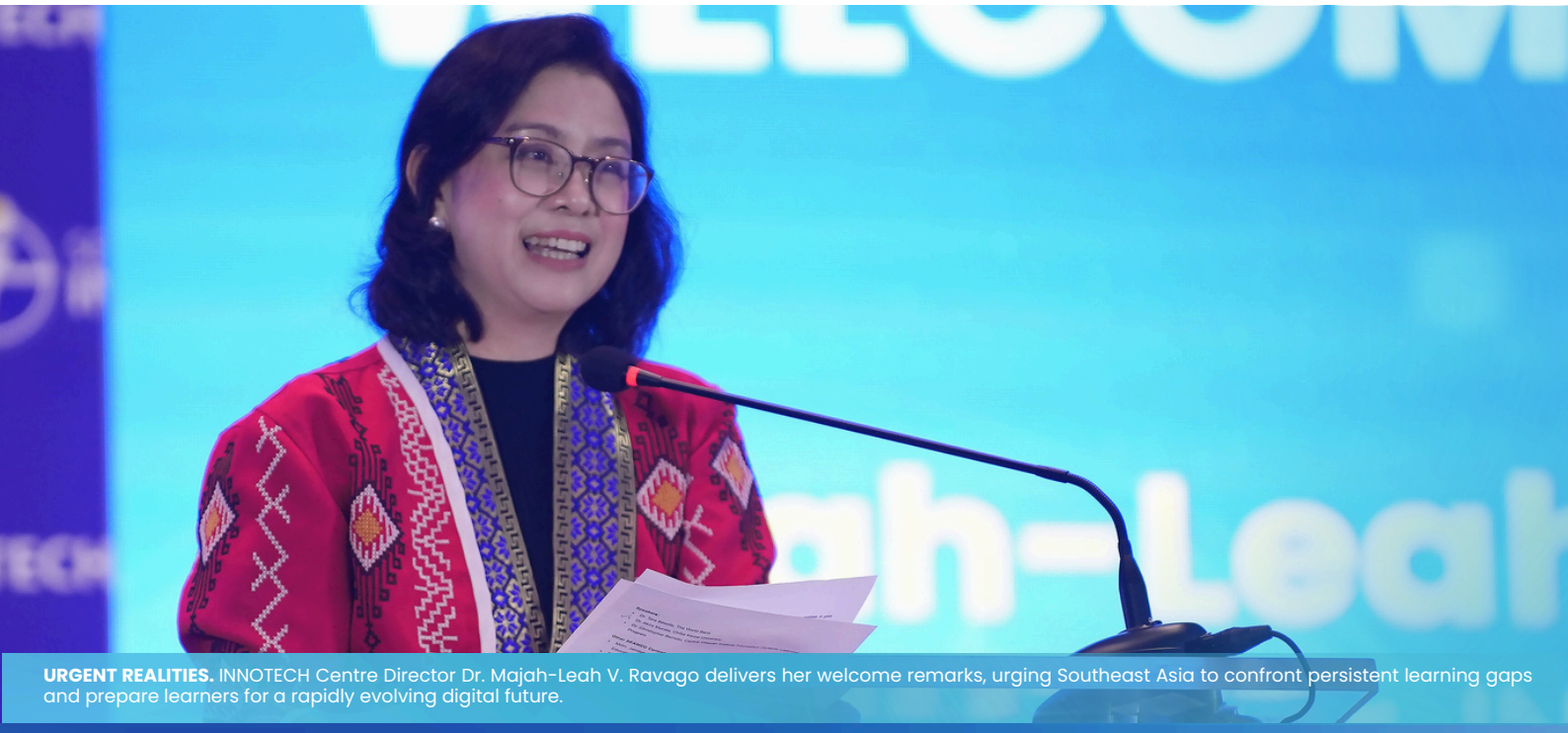
[6]UNICEF & SEAMEO, SEA-PLM 2019 Main Regional Report, Bangkok, Thailand: United Nations Children's Fund (UNICEF) & Southeast Asian Ministers of Education Organization, 2020.

[7]OECD, "PISA 2022 Results (Volume I): The State of Learning and Equity in Education," OECD, Paris, 2023.



URGENT REALITIES. INNOTECH Centre Director Dr. Majah-Leah V. Ravago delivers her welcome remarks, urging Southeast Asia to confront persistent learning gaps and prepare learners for a rapidly evolving digital future.

AI's Potential to Revolutionize Learning

Against this challenging backdrop, AI applications in education have evolved from experimental projects to mainstream implementations across diverse contexts globally[1] [8]. What makes this evolution particularly relevant for Southeast Asia is AI's great potential to address the very challenges the region faces[9].

Dr. John Arnold Siena from the SEAMEO Secretariat emphasized this transformative potential, noting, *"The question is no longer whether to integrate AI into education, but whether Southeast Asian nations are bold enough to leverage its affordances to prepare children, knowing that our children will require a different set of competencies for them to thrive and flourish in the 21st century and in the age of AI."*

The conference highlighted four key areas where AI can revolutionize education in Southeast Asia. These technologies offer the potential to support customized learning experiences tailored to individual student needs, enabling each learner to progress at their own pace and according to their unique learning style. Beyond direct student benefits, AI can alleviate teachers' burdens through automated administrative tasks, freeing educators to focus on teaching and mentoring. It also promises to provide content in different language formats to promote inclusivity, addressing Southeast Asia's rich linguistic diversity. Finally, AI's capacity to manage big data can inform evidence-based policy decisions, enabling education leaders to make more strategic choices grounded in real-time insights about student performance and system effectiveness.

While the technological promise is clear, Philippine Department of Education (DepEd) Secretary Sonny Angara's keynote address reminded participants that potential alone is not enough. It demands vision, urgency, and commitment. Describing AI as "the new oil," he warned that Southeast Asia must act decisively or risk falling behind in the global race for technological leadership.

"We stand at a turning point in history ... where artificial intelligence is already present in our classrooms, in policymaking, as well as in the hands of every learner," Secretary Angara said. He underscored both the risks and opportunities of this transition, citing data from the World Economic Forum (WEF)[10] indicating that AI will displace 85 million jobs while creating 97 million new ones, resulting in a net gain of 12 million. Without proactive investments in AI-ready education systems, he cautioned, the region may fail to equip its learners for this rapidly changing landscape.

Dr. John Arnold Siena, SEAMES Deputy Director

[1]F. Miao, W. Holmes, R. Huang and H. Zhang, "AI and education: Guidance for policy-makers," United Nations Educational, Scientific and Cultural Organization, 2021.

[8]C. K. Y. Chan, "A comprehensive AI policy education framework for university teaching and learning. International Journal of Educational Technology in Higher Education, 20 (38)," 2023.

[10]World Economic Forum, The Future of Jobs Report, World Economic Forum, 2020.

Most importantly, Secretary Angara called for a human-centered approach to AI integration. "AI is built by machines, but it is shaped by human hands, let us always remember," he declared. "These hands belong to educators, to policy makers, to innovators. People like you and me in this room, who believe that every child, from the bustling cities of Jakarta to the hills of Vietnam, to the quiet barrios of the Philippines, deserves to be part of this revolution."

This message resonated as a central theme throughout the conference, emphasizing that while AI provides powerful technological capabilities, human wisdom, values, and moral compass must guide its implementation.

Digital Divides and Implementation Barriers

However, translating this vision into reality faces practical obstacles across the region. Despite the promise outlined by leaders, realizing AI's potential in Southeast Asian education confronts three interconnected challenges that threaten to derail progress.

First, human resistance poses an immediate barrier. Many educators, school teachers, and policymakers remain uncomfortable with AI, largely due to unfamiliarity with technology and legitimate concerns about fairness and accuracy[11]. This apprehension is compounded by inadequate preparation[12]. Dr. Ravago revealed that up to 61% of students in some areas receive no digital literacy education[13], while teachers themselves often lack confidence and training in using digital technologies[14]. Without addressing these foundational gaps in digital readiness, even the most sophisticated AI tools will fail to take root.

Second, infrastructure inequalities threaten to undermine AI's equalizing potential. Dr. Siena illustrated this divide: while the regional average shows 57% of Southeast Asian students have technology access, this figure masks extreme disparities ranging from merely 16% in some countries to 98% in others[15]. These uneven development patterns mean that AI initiatives risk becoming another privilege of the already-advantaged, potentially exacerbating rather than addressing existing educational inequalities.

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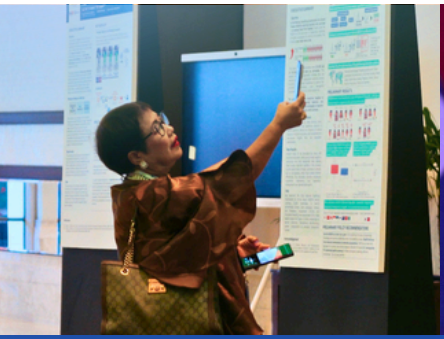
[11]F. Miao and M. Cukurova, "AI competency framework for teachers," United Nations Educational, Scientific and Cultural Organization, 2024.

[12]F. Miao and H. Wayne, "Guidance for generative AI in education and research. United Nations Educational, Scientific and Cultural Organization," 2023.

[13]UNICEF East Asia and Pacific Regional Office, Digital Literacy in Education Systems Across ASEAN: Key Insights and opinions of young people, UNICEF East Asia and Pacific Regional Office, 2021.

[14]A. Endris, A. Tlili, R. Huang, L. Xu, T. Chang and S. Mishra, "Features, Components and Processes of Developing Policy for Artificial Intelligence in Education (AIED): Toward a Sustainable AIED Development and Adoption. Leadership and Policy in Schools, 24(1), 233–241," 2024.

[15]Global Education Monitoring Report Team, SEAMEO, Global education monitoring report 2023, Southeast Asia: technology in education: a tool on whose terms?, 2023.

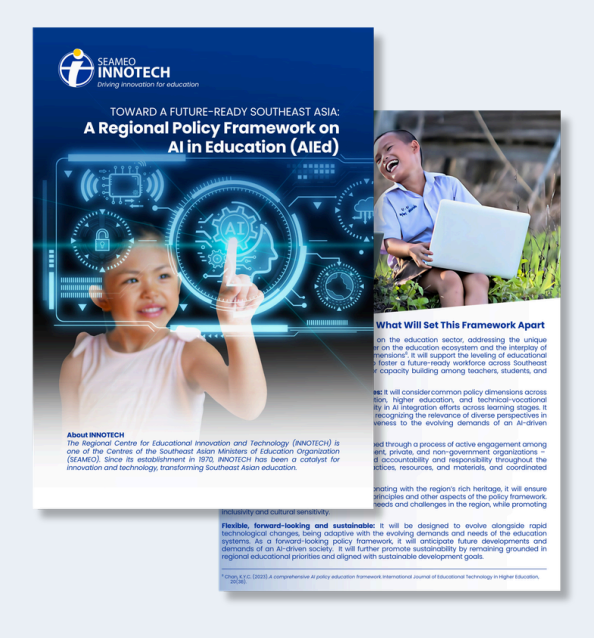


Third, cultural and contextual factors demand careful consideration for AI implementation. AI systems must align with Southeast Asian values, pedagogical traditions, and educational practices to be truly effective. The region's rich linguistic diversity creates complexity for AI systems that must serve multilingual populations. Additionally, varying educational philosophies and teaching approaches across different countries require thoughtful adaptation. Without careful localization and cultural sensitivity, these tools may fail to resonate with local communities or address their specific educational needs.

Together, these barriers—human resistance, infrastructure gaps, and cultural misalignment—make regional collaboration imperative for Southeast Asia's AI transformation. The conference emphasized that isolated national efforts would fall short. Instead, member states must unite to share resources, co-develop culturally appropriate AI policies and tools, and ensure no country is left behind in the digital transition. By working together on capacity building, infrastructure development, and creating region-specific solutions, Southeast Asia can transform these shared challenges into opportunities for collective advancement.

The Regional Policy Framework: A Pathway for Coordinated Action

Recognizing the region's shared challenges highlighted the need for more structured and coordinated action. As Dr. Ravago emphasized, *"The discussion must move beyond concepts to concrete commitments."* A key step toward this goal was securing support for a Regional Policy Framework on AI in Education (AIEd), which is one of the conference's central objectives.



The Regional Policy Framework on Artificial Intelligence in Education, led by INNOTECH, reflects Southeast Asia's commitment to approaching AI integration in education in a more coordinated and strategic manner. With many countries still in the early stages of policy development, the framework responds to growing concerns about keeping pace with technological changes while ensuring that education systems are adequately prepared. Globally, AI is already influencing education through developments such as personalized learning, streamlined administration, and improved assessment[8][1]. However, the region's varying levels of technological capacity risk creating uneven outcomes.

[1]F. Miao, W. Holmes, R. Huang and H. Zhang, "AI and education: Guidance for policy-makers," United Nations Educational, Scientific and Cultural Organization, 2021.

[8]C. K. Y. Chan, "A comprehensive AI policy education framework for university teaching and learning. International Journal of Educational Technology in Higher Education, 20 (38)," 2023.

Without thoughtful coordination, AI may benefit only select groups, missing the opportunity to support more inclusive progress. As Secretary Angara emphasized, *"the framework will reflect our shared values and our unique contexts."* He added that it will collectively help the region "face cross-border challenges on data privacy, algorithmic fairness, and AI safety." Ultimately, the goal is to ensure that AI bridges rather than deepens the digital divide.

The framework's development process, as proposed by INNOTECH, will be a collaborative engagement. Regional policy workshops will bring together ministries of education, technical experts, and practitioners to discuss and address key issues and challenges. Surveys and consultations will capture the views of teachers and learners, while validation activities will ensure the framework remains relevant to country-level needs. This inclusive approach will align the framework with both the practical realities of implementation and the broader goals of education systems. Dr. Ravago encouraged a firm commitment to this framework, urging participants to *"hold ourselves accountable to the learners we serve."*

The proposed AIEd framework is structured around six key principles that aim to support responsible and inclusive AI integration:

1) **Education-specific** and supports the development of a future-ready workforce

2) **Student-centered** AIEd framework

3) **Adaptable** to the dynamic nature of AI

4) **Cuts across levels** of education and disciplines

5) **Aligns with cultural and local contexts**

6) **Flexible, forward-looking,** and **sustainable**

These principles will provide a foundation for collective progress that respects local contexts and priorities, ensuring that AI in education supports long-term, inclusive development across Southeast Asia.

AI is built by machines, but it is shaped by human hands, let us always remember... These hands belong to educators, to policy makers, to innovators. People like you and me in this room, who believe that every child, from the bustling cities of Jakarta to the hills of Vietnam, to the quiet barrios of the Philippines, deserves to be part of this revolution.

– Secretary Sonny Angara
Philippine Department of Education

Policy and Innovation for Global Learning Equity

LEADERS IN FOCUS. Esteemed education leaders and experts serve as panelists in Plenary 1, Policy and Innovation for Global Learning Equity, sharing critical insights on advancing inclusive and sustainable AI-driven education.

Understanding Southeast Asia's Educational Equity Landscape

Southeast Asia's educational landscape reflects complex patterns of inequality that predate AI integration but risk being amplified without thoughtful policy intervention[16]. Conference discussions revealed persistent disparities between urban and rural educational opportunities, with rural areas often lacking basic infrastructure, qualified teachers, and learning resources that urban students enjoy. These foundational inequalities create contexts in which AI integration can either bridge gaps or widen them, depending on the implementation approach.

[16]P. Sahoo, Understanding data and AI regulations in Southeast Asia, 2023.

Economic disparities likewise translate into educational disadvantages across the region. Students from lower-income families often attend schools with limited technological infrastructure, older devices, and unreliable internet connections. These factors could exclude them from AI-enhanced learning opportunities unless specific measures are taken to ensure equitable access. H.E. Minister Dulce de Jesus Soares from Timor-Leste illustrated this reality, though she found some comfort in learning that infrastructure problems affect schools throughout Southeast Asia, not just smaller countries. During the pandemic, resource constraints inspired creative solutions across the region. Minister Soares shared how Timor-Leste transformed a limitation into opportunity by encouraging parents to repurpose their social media-capable phones for children's education, proving that simple solutions could yield effective results. This community-driven strategy demonstrates that equity-focused strategies must build on existing community assets rather than wait for ideal technological conditions, offering a model for how resource-limited contexts can still pursue educational continuity.

Madam Jamilah Binti Kadir, Director, SEAMEO SEN

Beyond economic and infrastructure barriers, the linguistic diversity in Southeast Asia also presents unique challenges. With hundreds of languages spoken across the region, students whose mother tongues differ from the language of instruction face additional barriers to learning. Language barriers present significant equity challenges, particularly for minority populations whose languages may not be supported by mainstream AI systems, potentially creating additional barriers to educational success for already vulnerable populations.

Equity challenges extend to specific vulnerable populations. Students with disabilities encounter obstacles in accessing quality education. Madam Jamilah Binti Kadir of SEAMEO Regional Centre for Special Educational Needs (SEN) stressed,

> ***"Accessibility is not only a feature, but it is a fundamental right"*** **and warned that** ***"while AI is transforming how we live and also work, we must agree that not everyone has the equal access to the necessary technologies that are related to AI."***

Similarly, gender disparities in technology access and usage patterns also emerged as concerns requiring attention in AI implementation strategies. Conference participants noted that in some contexts, girls and women have less access to digital devices and internet connectivity, potentially limiting their ability to benefit from AI-enhanced educational opportunities[1][8][17]. Additionally, the underrepresentation of women in technology development sectors means that AI algorithms may inadvertently reflect gender biases, potentially disadvantaging female learners in AI applications.

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[1]F. Miao, W. Holmes, R. Huang and H. Zhang, "AI and education: Guidance for policy-makers," United Nations Educational, Scientific and Cultural Organization, 2021.

[8]C. K. Y. Chan, "A comprehensive AI policy education framework for university teaching and learning. International Journal of Educational Technology in Higher Education, 20 (38)," 2023.

[17]UNESCO, Recommendation on the ethics of artificial intelligence, United Nations Educational, Scientific and Cultural Organization, 2021.

Bridging Educational Divides Through AI

Conference discussions revealed avenues for AI technologies to address rather than exacerbate educational inequalities when implemented with equity as a primary design principle. Dr. Tara Béteille of the World Bank cited AI-powered early warning systems as a promising example. These tools can analyze data such as attendance records, assignment completion, assessment results, and behavioral trends to identify students at risk of dropping out or falling behind. Unlike traditional approaches that rely solely on teacher observation, AI can detect subtle patterns that might otherwise remain hidden until academic failure becomes apparent, enabling targeted interventions with personalized support tailored to individual learning needs.

Left to right: Malaysian Ambassador **H.E. Dato' Abdul Malik Melvin Castelino**, Philippine Senator **Sherwin Gatchalian**, and Timor Leste Minister of Education **H.E. Dulce de Jesus Soares**

Dr. Tara Béteille, World Bank

For students with disabilities, AI removes longstanding barriers to educational participation. Text-to-speech systems can support learners with visual impairments or reading difficulties, while speech recognition technology assists students with motor impairments in completing written assignments. AI-powered translation tools can also provide real-time language support for students whose first language differs from the language of instruction.

The Philippines' E-CAIR, managed by INNOTECH and funded by DepEd, exemplifies this equity-focused approach through targeted interventions designed to support the most vulnerable learners. The Platform for Analyzing Access and Resource Allocation in Learning or Project PAARAL, demonstrates how AI can ensure educational subsidies reach their intended beneficiaries by using geospatial analysis to integrate multiple data sources. By analyzing national survey data and school hardship indices, the system provides natural language intelligence to education officials and reveals critical misalignments in government resource allocation across areas.

Student health represents another area where AI can bridge equity gaps. The System for Intelligent Growth and Learner Anthropometry, also known as Project SIGLA, is part of E-CAIR and addresses malnutrition through smartphone-based screening. This technology enables teachers or health workers to photograph a child and receive automated estimates of height and weight, eliminating the need for traditional measuring tools. This offline-capable system functions even in schools without stable internet connectivity while providing analytics to help decision-makers identify trends, allocate resources, and intervene early.

Administrative applications further promote equity through strategic resource allocation. E-CAIR's Learning Institution Geohazard Tracking and Assessment for Safety, or Project LIGTAS, identifies schools in critical and dangerous areas during natural disasters, moving beyond reactive emergency responses to proactive planning that maintains learning continuity despite recurring climate challenges. The system maps relationships between flood risk patterns and reading proficiency levels across the Philippines, enabling targeted support for the most vulnerable educational communities.

Intentional Design for Equity

The conference strongly emphasized that achieving equitable AI implementation requires deliberate design choices that prioritize inclusion and accessibility from system conception through deployment and ongoing operation. This intentional approach contrasts with technology-first implementations that may inadvertently exclude vulnerable populations or reinforce existing educational disparities.

Policy frameworks play a central role in embedding equity into AI integration at national and institutional levels. To be effective, these frameworks must establish clear requirements for inclusive design, accessibility features, and multilingual support that reflect the linguistic diversity of Southeast Asia. They should also define rigorous standards for responsible data use, ensuring that student privacy is protected while enabling meaningful and ethical use of data to support those most vulnerable to exclusion or harm. Effective policy frameworks must also include mechanisms for ongoing monitoring and evaluation to ensure that equity goals are being met in practice, not just in principle.

Effective policy frameworks must also include mechanisms for ongoing monitoring and evaluation to ensure that equity goals are being met in practice, not just in principle.

His Excellency Dr. Som Ratana, Cambodia's Undersecretary of State

Sustainable financing emerged as a critical enabler of equitable access to AI technologies. Participants discussed multiple strategies to address cost-related barriers, including innovative public-private partnerships that combine private sector technological expertise with public sector oversight to uphold accountability and equity goals. Regional cooperation and resource-sharing were highlighted as particularly viable strategies to help smaller or less-resourced countries access advanced AI tools without bearing prohibitive development costs alone. As Cambodia's Undersecretary of State, His Excellency Dr. Som Ratana noted, "to make it work, it needs money,"

emphasizing the importance of establishing trust funds and collaborative financing mechanisms that enable sustainable, region-wide implementation. The design of AI tools must also be fundamentally guided by principles of accessibility and inclusivity from the outset. This includes ensuring compatibility with a wide range of devices and avoiding over-reliance on sophisticated infrastructure that may not be available in all contexts. Such intentional design choices can significantly expand access, particularly in rural or underserved areas with limited digital resources. AI systems must also be developed with cultural sensitivity and local relevance in mind, ensuring they can adapt to diverse educational contexts rather than imposing one-size-fits-all solutions.

Finally, meaningful community engagement is essential to ensure that AI implementation aligns with local values, priorities, and cultural contexts. Engaging parents, students, community leaders, and other local stakeholders from the outset helps build trust and a sense of shared responsibility. When communities are included in both planning and implementation, AI solutions are more likely to be accepted and adapted to fit real-world conditions. This collaborative approach not only improves adoption and long-term impact but also ensures that AI supports the goals and priorities of the people it is meant to serve.

Human-Centered AI: Implementation, Ethics, and Governance

ORCHESTRATING AI. Dr. Akira Murata introduces the "Prompt Conductor" model and an AI-powered Kaizen network, underscoring educators' leadership in orchestrating technology and driving continuous improvement in learning.

The equity principles and policy innovations discussed earlier points to a recurring theme that emerged throughout the conference: AI in education must serve human purposes rather than drive them. This human-centered philosophy became even more critical as conference discussions moved from policy development to actual implementation. As educators and policymakers begin deploying AI systems in classrooms and administrative offices, conference participants emphasized the need to navigate complex questions about the appropriate relationship between human expertise and artificial intelligence, the inherent risks and benefits of these technologies, and the ethical frameworks needed to protect learners while enabling innovation.

Human-centered AI

Dr. Akira Murata's presentation introduced the concept of the "Prompt Conductor," a metaphor that reimagines the relationship between educators and artificial intelligence technologies. Rather than positioning teachers as mere users of AI tools, this model elevates educators to the role of conductors who orchestrate diverse technological capabilities into harmonious, educationally effective experiences for students.

The conductor metaphor is particularly powerful because it emphasizes the creative, interpretive, and leadership aspects of effective AI integration. Just as a symphony conductor must understand each instrument's capabilities and limitations while bringing them together to create beautiful music, educators must understand the strengths and weaknesses of various AI tools while coordinating them to create meaningful learning experiences.

This model recognizes that effective AI integration requires expert pedagogical judgment that goes far beyond technical proficiency. Educators must understand not just how AI tools work but when to use them, how to combine them effectively, and how to maintain focus on learning objectives rather than being distracted by technological capabilities. As Dr. Murata concluded,

> ***"The human practitioner leads AI and assembles with strategy and oversight."***

The Prompt Conductor approach emphasizes that human expertise remains central to educational effectiveness even as AI capabilities expand. Teachers bring irreplaceable understanding of individual student needs, cultural contexts, learning objectives, and the complex social dynamics that shape educational experiences. As Director Gerson Marvin Abesamis from the Philippines' DepEd Education Futures Office emphasized, *"Educators must be given the space to try using AI tools to harness their power for education; see for themselves the risks and harms AI brings."* He stressed the importance of educators practicing optimism and skepticism together while having first-hand experience and creating spaces for dialogue where educators can learn together.

Conference discussions illustrated how this model can reshape professional development by moving beyond tool-specific training toward cultivating educators' ability to critically assess, select, and integrate technologies aligned with pedagogical goals. This approach empowers teachers to remain at the center of instructional decision-making, preserving their professional agency and preventing reliance on rigid, technology-driven solutions.

School administrators play an equally critical role in this human-centered approach, as AI can significantly streamline administrative processes that currently consume considerable amounts of time and energy. Dr. Béteille highlighted how AI applications can improve planning processes, serve as predictive tools for challenges like natural disasters, and function as early warning systems to identify students at risk of falling behind. This administrative efficiency frees up leaders to focus more directly on educational activities while maintaining human oversight and decision-making authority.

The conference emphasized that this human-centered approach requires continuous professional development that goes beyond initial training. AI applications for teachers show particular promise, with Dr. Béteille highlighting programs that provide mentorship support for stress management, classroom management, and workload optimization, while offering data-driven feedback to help educators enhance their instructional approaches and better support student learning outcomes.

AI's Dual Nature

Dr. Christopher Bernido's presentation on AI as a "double-edged sword" provided crucial perspective on limitations and risks that must be carefully managed to prevent AI from undermining educational goals. Drawing from extensive experience with the Central Visayan Institute Foundation Dynamic Learning Program (CVIF-DLP), he offered practical guidance for understanding AI's role and limitations in education.

"AI harvests information, including fake news, which are passed on to you," Dr. Bernido cautioned, highlighting the inability of AI systems to distinguish between reliable and unreliable sources. This makes it possible for misinformation to be unintentionally propagated to both teachers and students who may not critically evaluate AI-generated content. A key educational concern he raised is that AI's tendency to provide immediate, packaged responses can discourage critical thinking and problem-solving, fostering a "copy-and-paste culture" where answers are accepted without understanding the underlying process. He further warned that mandating AI use in classrooms risks excluding students and schools without adequate technological infrastructure, potentially reinforcing existing inequalities rather than alleviating them.

These concerns about AI's limitations were echoed by other conference speakers who highlighted additional systemic risks. Dr. Béteille noted that AI systems can amplify existing human biases present in their training data, meaning that if underrepresented students are categorized unfavorably in historical records, predictive analysis systems may perpetuate discriminatory treatment patterns through biased content recommendations and teacher support tools that reinforce rather than address existing inequalities.

Infrastructure realities further compound these challenges. Senator Sherwin Gatchalian's observation that only 30% of Philippine schools have internet connectivity reinforces Dr. Bernido's warning that mandating AI use can exclude students and schools without adequate technological access. These infrastructure gaps mean that AI integration could exacerbate rather than address educational inequalities if implementation doesn't account for varying technological access levels across different communities and regions.

Moreover, the presentation highlighted the fundamental difference between AI's pattern-based processing and human creativity, emphasizing that educational approaches must preserve and nurture uniquely human capabilities that AI cannot replicate.

> ***"The algorithm of AI is incremental,"* Dr. Bernido noted, *"but our imagination goes by leaps and bounds."***

Addressing these multifaceted challenges requires deliberate human oversight. Dr. Bernido emphasized the critical importance of human mediation in AI integration: *"AI per se cannot be used without human intervention. Quality checks should be done by humans."* He advocated for maintaining human review between AI output and final student materials, with teachers polishing AI-generated content before sharing it with learners. This approach ensures that AI serves as a productivity tool for educators while maintaining human oversight to ensure the quality, relevance, and integrity of learning experiences.

Dr. Christopher Bernido, Plenary 2 Speaker President of the Central Visayan Institute Foundation

Ethical Concerns of AI Use

Throughout the conference, speakers and participants raised ethical challenges surrounding AI integration in education, recognizing that these concerns represent legitimate barriers to implementation that must be addressed through comprehensive safeguards rather than dismissed as resistance to change.

Data privacy emerged as a primary concern during sessions, particularly given that AI systems in schools often collect sensitive information about students, many of whom are minors unable to give informed consent. This data extends beyond test scores to include behavioral trends, social interactions, and personal preferences, requiring stronger safeguards given the vulnerability of young learners.

IN DISCUSSION. Mr. Afonso Soares, SEAMEO INNOTECH Governing Board Member of Timor-Leste, raises vital questions and key points in support of inclusive, future-ready education.

Algorithmic bias was another critical issue raised throughout the day's discussions. Participants noted that AI systems can unintentionally disadvantage students based on factors like gender, socioeconomic background, or ethnicity. These biases can be difficult to detect, requiring careful monitoring for students who may not have advocates speaking on their behalf. Director Abesamis provided a specific example, citing research demonstrating that AI detection systems systematically misidentified essays written by non-native English speakers as artificially generated, while correctly recognizing work by native speakers written by humans. This finding illustrates how AI systems can inadvertently penalize students based on their linguistic backgrounds rather than fairly evaluating their actual academic work.

Sessions also addressed questions of consent and autonomy, with participants warning about the risk that AI could potentially take over decision-making in ways that exclude students and parents from shaping educational paths. Instead, speakers emphasized that technology should support rather than replace human oversight in educational decisions.

Ethical Implementation of AI Integration

Conference discussions highlighted the need for clear and comprehensive ethical frameworks to guide how AI is developed and used in education. These frameworks should include safeguards built into every stage of the AI system lifecycle, from design and development to deployment and ongoing use. As H.E. Dr. Som Ratana from Cambodia emphasized during the policy panel, *"AI must not be employed chaotically, nor should it be needlessly restricted,"* reflecting the delicate balance required in implementing ethical AI frameworks that enable innovation while protecting learners.

A critical principle that emerged was that ethical considerations must be embedded in AI systems from the very beginning, rather than added later once the technology is already built and deployed. This proactive approach ensures that ethical safeguards are built into the system's design, making them more effective and harder to overlook or disable. Key ethical features such as privacy protection, fairness, and transparency should be treated as essential components of system architecture.

Essential safeguards include responsible data governance, with frameworks specifying what types of student data can be collected, how that data can be used, storage duration limits, and access protocols. These protections must be particularly robust given the sensitivity of student information and the involvement of minors. E-CAIR's AI Governance Framework is an example of how an organization adheres to a governance model that advances responsible innovation in AI, ensures system technical and ethical integrity, institutionalizes accountable and adaptive governance mechanisms, and fosters collaboration and trust within the AI ecosystem.

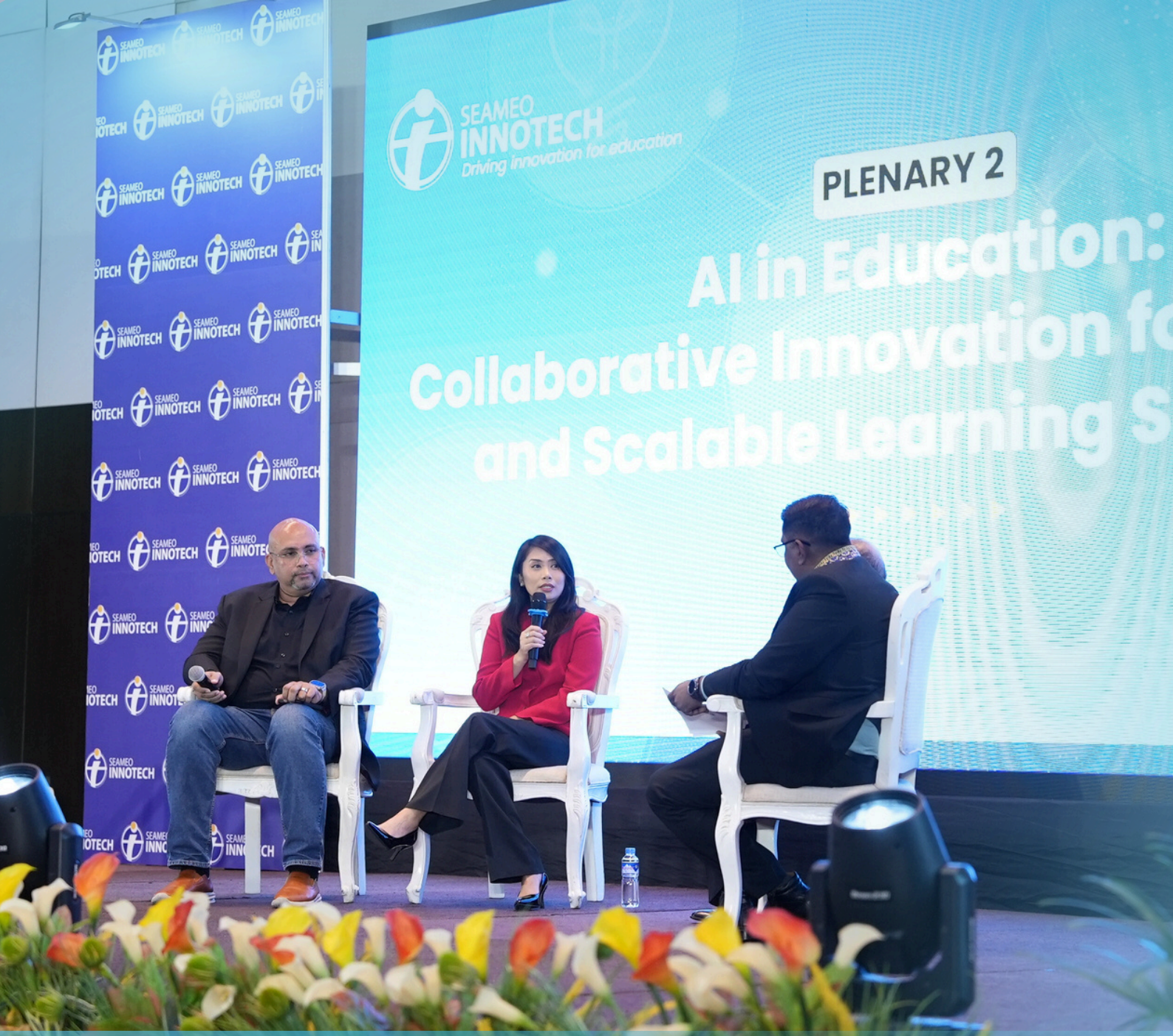
Transparency was also identified as fundamental to ethical implementation. Students, families, and teachers need accessible explanations about how AI systems work, what data they collect, how they arrive at decisions, and what options are available for challenging those decisions. Many stakeholders lack awareness of what information AI systems are gathering, making open dialogue and feedback mechanisms essential for building trust and accountability.

Conference participants emphasized that AI development processes should include regular ethical reviews at key stages, involving diverse participants that extend beyond technical developers and vendors to include educators, students, parents, community leaders, and privacy experts. This inclusive process helps ensure that AI systems reflect real-world classroom needs and community expectations rather than just technical priorities.

Several regional examples shared during the conference demonstrate that countries are successfully involving diverse stakeholders from the earliest design stages, while others are developing technical solutions that embed ethical safeguards directly into how AI systems operate, showing that ethical AI implementation is both possible and practical when prioritized from the outset.

Dr. Christopher Bernido emphasized the critical importance of human mediation in AI integration: **"AI per se cannot be used without human intervention. Quality checks should be done by humans."**

Collaborative Innovation for Inclusive and Scalable Learning Solutions



INCLUSIVE SOLUTIONS. Esteemed panelists from the private sector, namely Mr. Nelson John of DMe Solution Consulting at Adobe Systems and Ms. Stephanie Orlino OF SMART-PLDT, discussed about collaborative innovation for inclusive and scalable learning solutions and exchanged insights on harnessing partnerships and innovation to advance inclusive, equitable, and future-ready education across Southeast Asia.

The integration of AI in education cannot succeed as an isolated endeavor. Throughout the conference, speakers consistently emphasized that meaningful AI implementation requires sustained collaboration across multiple levels, from international partnerships that share knowledge and resources, to local community engagement that ensures AI solutions meet real classroom needs. This collaborative effort underscores the complex nature of educational challenges and the meaningful progress that can be achieved through unified, cross-sector engagement.

Building a Foundation for Regional Cooperation

Conference discussions emphasized that no single country possesses all the expertise, resources, or solutions needed to successfully navigate the AI revolution in education. As H.E. Dr. Som Ratana from Cambodia emphasized, *"AI is not really a problem or an opportunity of a particular country. It's a cross-border challenge and cross-border opportunity."* This recognition calls for a fundamental shift in how AI integration in education is approached. It should not be seen as a set of isolated national initiatives but as a shared regional effort where meaningful progress relies on collective action and mutual support.

Recognizing the importance of collaboration is only the starting point. Professor Vina Adriany of the SEAMEO Regional Center for Early Childhood Care Education and Parenting (CECCEP) offered a key reminder that meaningful partnerships require intentional dialogue:

> ***"In order for us to have a collaboration, you need to have a conversation first. And in my opinion, in order to have a conversation, you need to have a shared understanding."***

Professor Vina Adriany, SEAMEO CECCEP Director

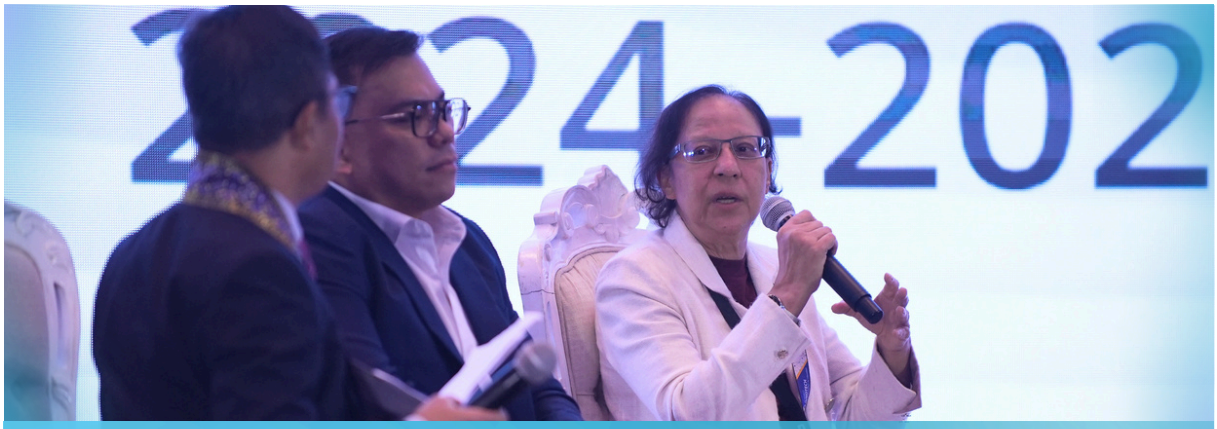
Her remarks underscored a central message of the conference. That is, effective cooperation in AI in education is built on mutual understanding, open communication, and a common sense of purpose.

The Southeast Asian experience suggests that diversity can be a strength when supported by purposeful collaboration. While countries across the region face common challenges such as learning gaps, teacher shortages, infrastructure limitations, and equity concerns, these shared issues also create opportunities for mutual learning. Each country contributes distinct innovations and approaches that others may find useful and adaptable to their own contexts.

Complementary efforts are already taking shape across the region as discussed during the conference. The Philippines has developed creative strategies for connecting last-mile schools, demonstrating how infrastructure gaps can inspire inventive solutions. Malaysia advances teacher professional development through digital platforms, showing how technology can transform educator capacity building. Cambodia contributes policy leadership through its development of national AI strategies, while Lao PDR highlights practical curriculum innovation by incorporating AI into higher education programs. These are just a few of the many initiatives shared at the conference as representatives from across Southeast Asia presented approaches tailored to their specific contexts and needs. Together, these examples form a growing pool of knowledge that strengthens the region as a whole.

However, the true value of these innovations is their relevance across borders. Because they come from similar socio-economic and educational contexts, they are more easily understood, tested, and adapted by neighboring countries. Peer-to-peer exchange across Southeast Asia allows countries to learn not only from each other's successes but also from the challenges encountered along the way. This kind of learning is more practical than importing solutions from very different systems and helps ensure that progress is grounded in local realities.

The value of this approach was summed up by Ms. Duriya Amatavivat, Director of the SEAMEO Regional Center for Sufficiency Economy Philosophy for Sustainability (SEPS). She remarked that while countries can achieve good outcomes on their own, working together enables them to achieve even greater impact. Her message reflects a core belief that echoed throughout the conference: regional collaboration does not simply combine efforts, it amplifies them, making it possible to find solutions that would be out of reach for any single country acting alone.



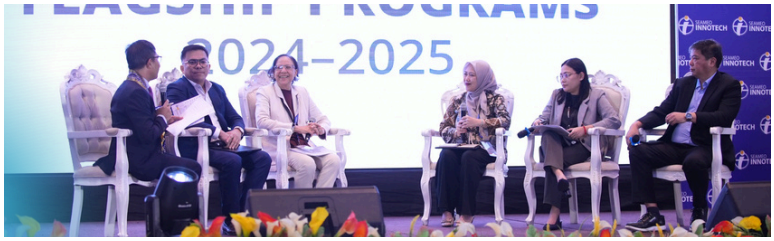
Left to right: SEAMES Deputy Director **Dr. John Arnold Siena**, Special Assistant to the Director of SEAMEO SEARCA Dr. Rico Ancog, and SEAMEO SEPS Director **Ms. Duriya Amatavivat**,

Regional Flagship Programs: 777 Initiative

Building on this spirit of shared learning and collaboration, the Philippines' SEAMEO Council Presidency presented the 777 Flagship Programs as a practical mechanism for translating regional aspirations into action.

The 777 Flagship Programs represent the Philippines' specific implementation framework during its 2023-2025 SEAMEO Council Presidency, designed to address SEAMEO's Seven Priority Areas for Education (2015-2035). The seven flagship programs directly respond to the long-term strategic priorities: (1) early childhood care and education; (2) addressing barriers to inclusion; (3) resiliency in the face of emergencies; (4) promoting technical and vocational education and training (TVET); (5) revitalizing teacher education; (6) promoting harmonization in higher education and research; and (7) adopting a 21st Century curriculum[18].

[18]SEAMEO INNOTECH, "Southeast Asian Education Ministers update on regional education agenda," [Online]. Available:https://www.seameo-innotech.org/southeast-asian-education-ministers-update-on-regional-education-agenda/#:~:text=The%20seven%20priority%20areas%20that,(TVET)%3B%20(5)%20revitalising. [Accessed 5 June 2025].



The programs revealed essential lessons about effective regional collaboration. Professor Vina Adriany from SEAMEO CECCEP, reflecting on three years of collaboration with the Philippine Department of Education, identified three critical success factors: continuous advocacy, high-level engagement, and appreciation of local knowledge. She emphasized that collaboration requires sustained effort with continuous feedback, rather than one-time activities.

DepEd Disaster Risk Reduction and Management Service (DRRMS) Director Felino Castro's experience with Ready SEA (Program 3) reinforced the importance of dialogue as the foundation for collaboration. He stressed that meaningful collaboration must begin with conversations. The disaster risk reduction program provided opportunities for knowledge exchange, with participating countries identifying common areas, including learning continuity practices and teacher capacity building. Castro noted that addressing these concerns requires a whole-of-society approach.

Programs 4 and 6 demonstrated how diversity becomes an asset. The micro-credentialing study of Dr. Rico Ancog from SEAMEO Regional Centre for Graduate Study and Research in Agriculture (SEARCA) found that while all six participating countries had relevant policies, their varied approaches created a menu of options that could be carefully selected and adapted to work effectively in particular contexts. Similarly, Assistant Executive Director Katherine Amor Zarsadias of the Philippine Technical Education and Skills Development Authority (TESDA) noted that the TVET flagship program enabled countries to learn from each other's challenges and best practices.

The educator community building initiative (Program 5) and AI in Education meetings (Program 7) focused on establishing networks for ongoing knowledge exchange, while the child protection program (Program 2) addressed cross-cutting concerns about learner wellbeing in digital environments.

Sustainability emerged as a critical concern across all programs. Dr. Ancog warned that without deliberate effort to build on gains, each new initiative risks starting from scratch rather than building on previous achievements. The solution, participants agreed, lay in leveraging SEAMEO's permanent structures. Ms. Amatavivat suggested using inter-center collaboration for continuity, while Professor Adriany emphasized the SEAMEO Secretariat's crucial role in facilitating ongoing regional conversations.

These flagship programs ultimately proved that meaningful collaboration requires institutional relationships that transcend individual presidencies. As Malaysian Ambassador Dato' Abdul Malik Melvin Castelino Anthony observed, they enable countries to tap into each other's strengths, creating a community united by common purpose and shared values. Throughout the discussion, participants like Director Castro emphasized the importance of sustained engagement and strong institutional connections, elements that ensure regional collaboration succeeds beyond temporary initiatives.

Innovation Through Public-Private Partnerships

The conference showcased how collaboration between public institutions and private sector innovators can accelerate AI implementation while safeguarding educational equity and accessibility. Participants shared concrete examples demonstrating that these partnerships work well when anchored in shared educational objectives rather than purely commercial interests.

The Central Visayan Institute Foundation-Dynamic Learning Program illustrates sustained public-private collaboration. Over 15 years, PLDT-Smart, a telecommunications company based in the Philippines, has supported the implementation of this program, which emphasizes independent learning through carefully designed learning activity sheets. Ms. Stephanie Orlino from PLDT-Smart explained how the Dynamic Learning Program integrates effectively with AI technology. She emphasized that AI can be used by teachers to craft and refine learning activity sheets, freeing up significant time for coaching, mentoring, one-on-one sessions, and developing students' soft skills.

Adobe's partnership approach demonstrates how technology companies can address both innovation and equity concerns in educational settings. Mr. Nelson John from Adobe emphasized the critical role of government in ensuring equitable access to AI tools, stating, "I think the government should subsidize and buy the software and give it to everyone," highlighting that cost barriers should not prevent students from accessing essential learning technologies. Adobe has also developed specific features to support educational integrity, including content credentials that allow educators to track the exact steps students have taken in creating projects, which helps address concerns about AI-assisted work while maintaining learning accountability.

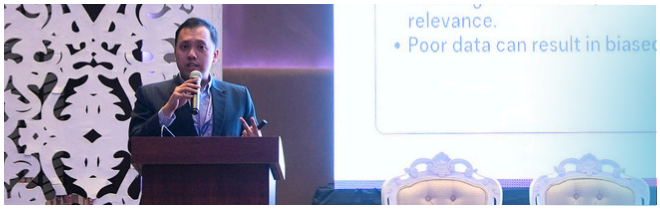
From a regional perspective, participants emphasized how multi-stakeholder collaboration drives successful AI integration. Ms. Duriya Amatavivat noted that the private sector can provide much needed support, citing examples from Thailand where private schools fill gaps in kindergarten provision and private companies help design TVET curricula with advanced technology that educational institutions cannot maintain alone. Ms. Stephanie Orlino reinforced this ecosystem approach, advocating for "PPCP - public-private community partnership," where government provides policy frameworks, private sector develops technology and connectivity, academe creates content, and communities actively use these tools.

These collaborative models show that successful AI integration needs shared goals and clear roles among partners. Government ensures broad access and policy alignment, private sector brings technology and funding, educators provide pedagogical expertise, and communities help ensure programs meet local needs. This multi-stakeholder approach helps integrate AI in ways that support rather than replace traditional educational practices.

Institutional Innovation: The E-CAIR Model

The establishment of the E-CAIR within the Philippine Department of Education, carried out in partnership with INNOTECH, marks a significant step in institutional innovation within the public sector. Instead of relying on commercial solutions, E-CAIR builds in-house expertise by employing a dedicated team of data scientists and AI engineers embedded within the education system. Through a portfolio of targeted projects, E-CAIR demonstrates how government institutions can develop AI capabilities that directly address educational challenges.

Among these initiatives, Project PAARAL (discussed earlier for its equity-focused approach) exemplifies how E-CAIR builds evidence-based policymaking capabilities within government structures[1] While PAARAL focuses on policy insights, the Specialized AI for Live Inquiries and Knowledge Seeking, or Project SALIKSEEK, addresses operational efficiency by tackling the growing volume of data requests received by the department. With over 50 requests daily, manual responses have become unsustainable for the current staff. The project automates the process using a chatbot that generates SQL queries and retrieves data from DepEd's systems, streamlining workflows and improving both response time and data accuracy. As Mr. Biboy Villarin explained, this significantly reduces the administrative burden while preserving information integrity in the Department.



Beyond administrative applications, E-CAIR's health-education initiatives like Project SIGLA demonstrate the center's commitment to developing accessible technologies that function even without stable internet connectivity. Similarly, Project LIGTAS showcases how E-CAIR transforms reactive emergency responses into proactive planning. The project's analysis revealed distinct patterns in the relationship between environmental hazards and academic performance.

Complementing these data-driven interventions, Project SIKAP or Strengthening and Improving the Knowledge Assessment of Aspiring Principals addresses human resource challenges by examining factors affecting performance in the principal qualification exam. According to Mr. Derrick Tan, recent data revealed that 7 out of 10 candidates failed in 2022, increasing to 8 out of 10 in 2023, leaving almost 25,000 schools without permanent principals. Analysis showed that most non-passers held advanced degrees and had substantial experience, suggesting a need to reassess how leadership potential is evaluated.

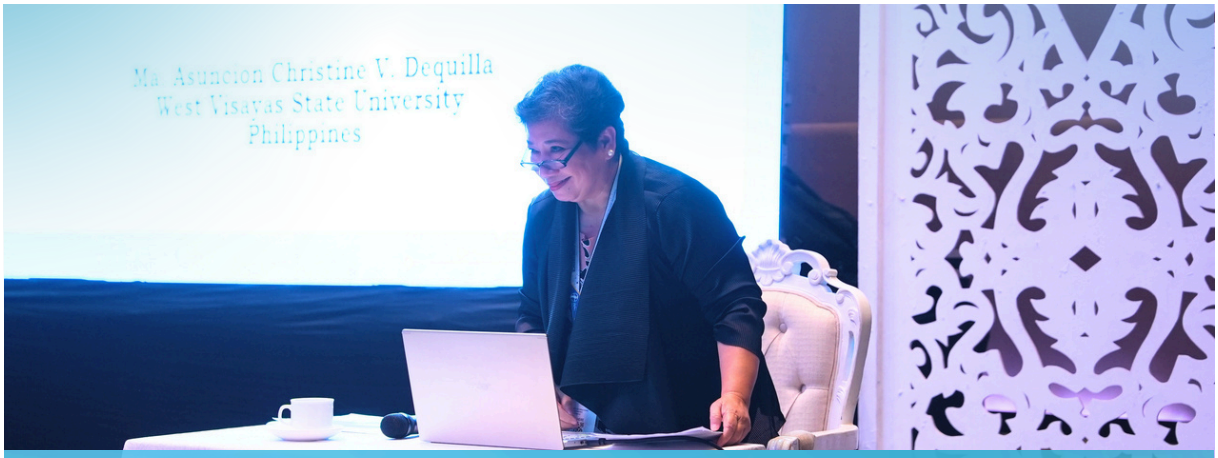
Collectively, these initiatives demonstrate how internal capacity-building and institutional design can drive responsible and contextually relevant AI innovation. As Dr. Erika Legara noted, E-CAIR was established with the belief that "governance is built in, not bolted on," ensuring that public accountability and educational goals remain central from development through deployment.

[1]Projects PAARAL, SIGLA, and LIGTAS are also discussed in Section 3.3. "Bridging Educational Divides Through AI"

Community and Stakeholder Engagement

One of the most important aspects of successful AI integration is engaging the communities where these technologies will be used. The conference emphasized that lasting and inclusive adoption depends on the involvement of teachers, students, parents, and local stakeholders. These groups are often left out when technology initiatives are designed from the top down.

Teachers play a key role because they are the primary link between AI tools and student learning. Discussions during the presentation of UNESCO-INNOTECH Technical Seminar highlighted the value of treating educators not only as users but also as co-designers and evaluators of AI systems. Using UNESCO's AI framework to assess baseline competencies, the research of Dr. Ma. Asuncion Christine Dequilla from West Visayas State University found that teachers reported improved competencies and efficiency after training. However, significant concerns emerged about infrastructure costs, sustainability, scalability, potential impacts on critical thinking, ethical issues, and the lack of clear AI guidelines.



Dr. Ma. Asuncion Christine Dequilla, Breakout Session 2 Speaker and Vice President for Academic Affairs, West Visayas State University

Building educator capacity extends beyond current teachers to those entering the profession. Associate Professor Praweenya Suwannatthachote of Chulalongkorn University conducted action research on AI literacy for pre-service teachers, collaborating with five Rajabhat universities to integrate AI literacy into educational technology curricula. Post-intervention assessments showed significant improvement in pre-service teachers' learning metrics, demonstrating the effectiveness of targeted AI literacy training for future educators.

Student engagement can also enhance AI adoption in educational settings. Ms. Stephanie Orlino from PLDT-Smart proposed creative strategies, such as letting students lead AI training sessions for teachers, noting that students are often more adept with technology and this approach makes them feel included while helping teachers understand what students are actually using. This strategy can foster shared responsibility and build a stronger sense of community participation within schools.

Building Sustainable Collaborative Networks

Successful collaboration requires intentional network building through formal mechanisms for dialogue, shared standards, and systems for continuous learning. Inter-center collaboration within SEAMEO INNOTECH exemplifies this approach, as Ms. Duriya Amatavivat noted regarding partnerships between centers on cross-cutting themes.

To translate these collaborative principles into action, Dr. Chorboon Chiranuparp from Thailand's Ministry of Education proposed a concrete mechanism: *"I think [SEAMEO INNOTECH] can make a sandbox AI for education for ASEAN. We can share everything on a sandbox platform."* This sandbox approach would create a protected environment where countries could experiment with AI applications, share tools and resources, and learn from each other's implementations without the risks associated with full-scale deployment. Such a platform could serve as both a testing ground for new innovations and a repository of proven solutions adapted to Southeast Asian contexts.

This vision of shared platforms is already becoming reality across the region. The Digital Educational Learning Initiative Malaysia (DELIMa) platform, featuring 16 AI applications, demonstrates successful integration of multiple tools within a unified system. Similarly, Dr. Akira Murata's concept of an "AI-powered Kaizen network" emphasizes continuous improvement through collaborative learning. These initiatives show that professional networks and knowledge sharing platforms are not just aspirational goals but essential infrastructure for sustained regional cooperation.

From Innovation to Systems Change

Moving beyond pilots to system-wide transformation requires treating pilot projects as rich sources of evidence rather than simple success-or-failure exercises. As Director Gerson Marvin Abesamis emphasized, *"The purpose of a pilot is to get the essence of success in which parts of the pilot were successful enough to be scaled or unsuccessful enough to be pivoted or changed."* He noted that pilots should provide *"rich evidence that you could use to really tweak some of the particular programs or projects towards refining them to be more purposeful and to be more successful."*

Human capital investment proves crucial, as demonstrated by E-CAIR's approach of building internal expertise rather than outsourcing. However, they acknowledged the challenge of talent retention, competing directly with industry for AI talent.

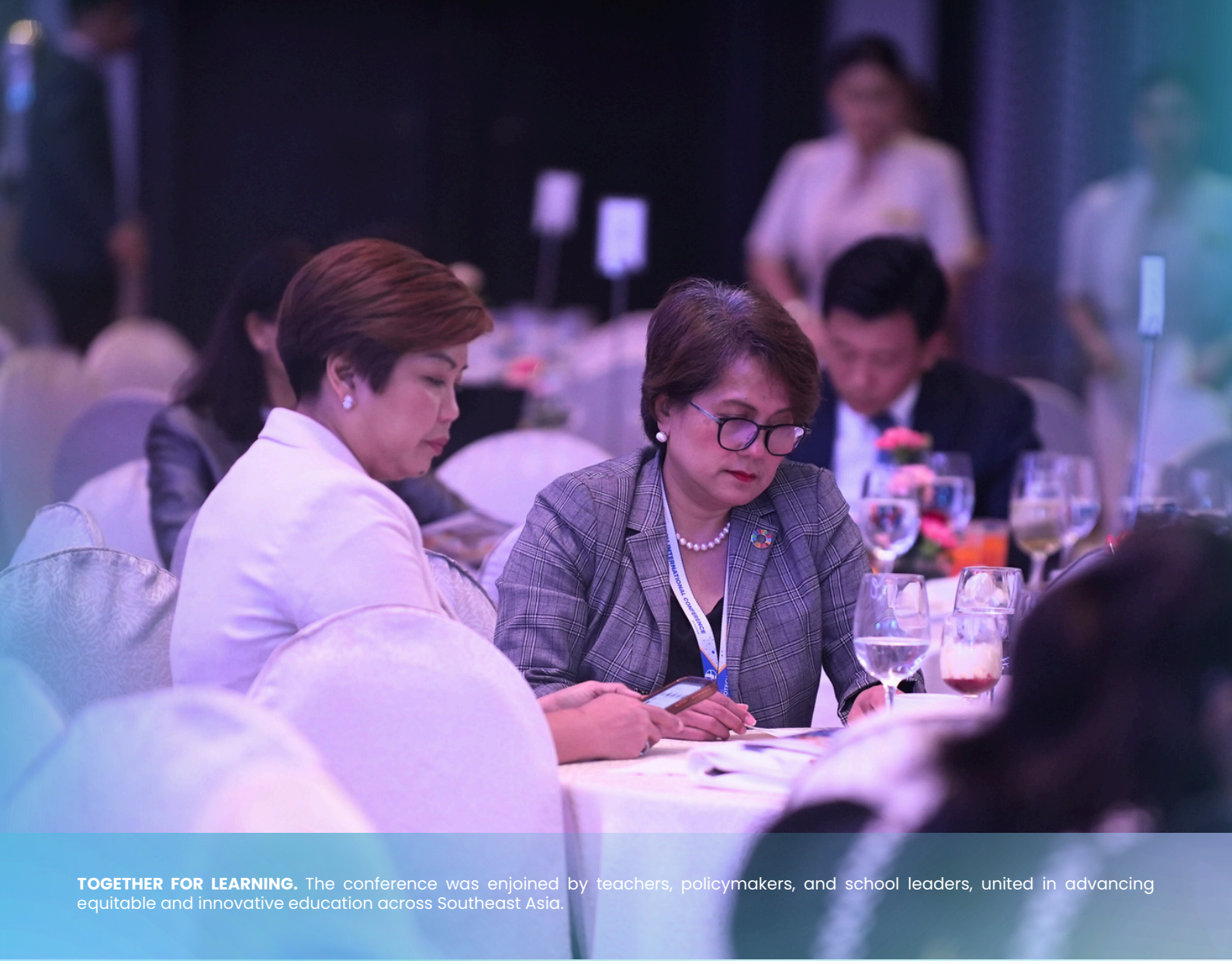
Avoiding the "pilot trap" requires institutional embedding through sustained funding and integration into regular structures. Madam Jamilah Binti Kadir warned against projects that launch with enthusiasm but lack long-term support, emphasizing that AI should be embedded into national education frameworks with consistent investment. This need for sustained financial commitment extends beyond national boundaries, as Philippine DepEd Undersecretary Ronald Mendoza emphasized: *"We should put our money where our mouth is and invest not just in our own countries but in each other."* His vision recognizes that investment takes many forms, from sharing knowledge and best practices to learning from both successes and failures. As he explained, reaching critical mass in AI inclusion requires collective action:

> ***"Each of our nations is only this size, but together we are a powerful economic and knowledge-building block."***

This collaborative approach, which could include practical mechanisms like regional trust funds as suggested by other panelists, enables Southeast Asia to harness its collective strength.

Effective collaboration extends beyond formal agreements to sustained relationship building and adaptive governance. The flagship programs discussion highlighted that continuous engagement and institutional relationships must persist regardless of leadership changes, with SEAMEO INNOTECH facilitating ongoing regional cooperation.

Conference Synthesis



TOGETHER FOR LEARNING. The conference was enjoined by teachers, policymakers, and school leaders, united in advancing equitable and innovative education across Southeast Asia.

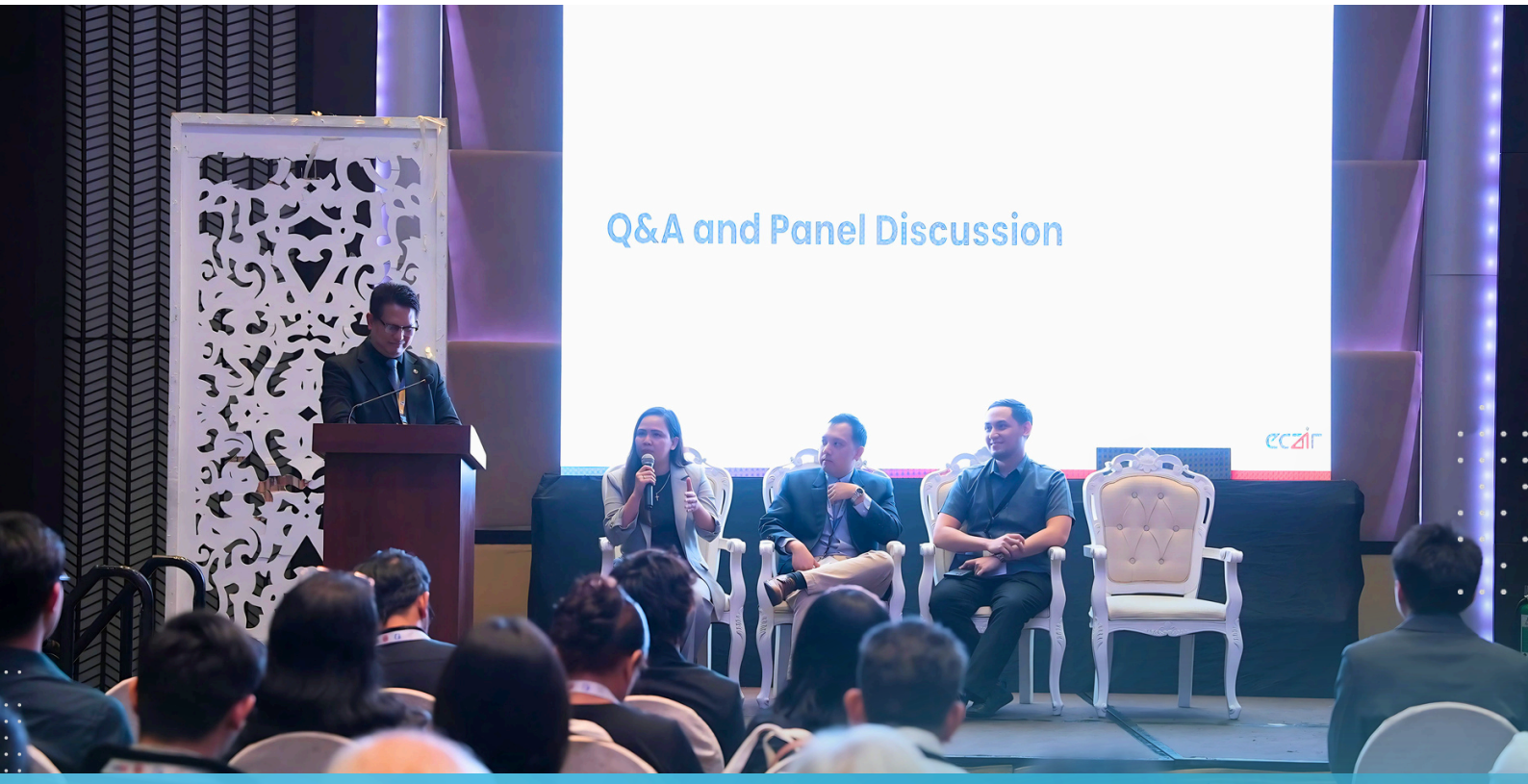
The 16th INNOTECH International Conference represented an important step in Southeast Asia's ongoing efforts to integrate artificial intelligence into education in ways that are equitable, effective, and contextually grounded. Through policy discussions, technical presentations, and collaborative workshops, over 300 participants from across the region and beyond contributed perspectives on how to navigate the complexities of AI adoption in education.

Despite the diversity of national contexts, participants expressed broad agreement on key principles. The human-centered vision expressed by Philippine Department of Education Secretary Sonny Angara that AI may be developed by machines but must be guided by human hands resonated throughout the event. This message was reflected in repeated calls for teacher empowerment, student engagement, and inclusive implementation strategies. Participants acknowledged both the promise and the risks of AI, recognizing its potential to personalize learning and reduce administrative workloads, while remaining mindful of the dangers of reinforcing inequalities, limiting critical thinking, or introducing bias into decision-making.

True to the conference's theme, equity emerged as a central concern across all discussions. Participants emphasized that Southeast Asia's education systems continue to face structural disparities, including gaps between urban and rural schools, economic inequalities, language barriers, and limited support for students with disabilities. These challenges existed prior to AI adoption but risk becoming more pronounced if not addressed directly. Examples shared at the conference, such as E-CAIR's use of geospatial data to identify mismatches in resource allocation or the use of AI for smartphone-based nutrition screening, demonstrated how inclusive design can help ensure AI serves those who are often left behind.

Participants also recognized the need for shared approaches to common challenges. Infrastructure gaps and uneven digital literacy remain widespread, while AI tools developed for other regions may not align with Southeast Asia's diverse cultures and languages. Many noted the difficulty of sustaining funding beyond the pilot phase of innovation projects. These challenges present opportunities for regional cooperation, including sharing resources, exchanging knowledge, and developing scalable solutions that benefit multiple countries.

Throughout the conference, practical models of innovation demonstrated that AI succeeds when strategically applied to address specific educational challenges rather than through broad technological transformation. The Philippines' E-CAIR projects showed the value of building government capacity for data-driven decision-making. The DELIMa platform offered insights into large-scale digital ecosystems that support teachers while preserving their professional autonomy. The Central Visayan Institute Foundation-Dynamic Learning Program illustrated how AI tools can support adaptive learning approaches even in resource-limited settings. These examples showed that incremental, targeted innovations can generate meaningful impact when adapted to local needs.



Breakout Session by **E-CAIR** as moderated by **Dr. Juan Robertino Macalde**, Learning Development and Management Office Manager, INNOTECH

A recurring theme in many sessions was the recognition that AI in education cannot be addressed in isolation by individual countries. Participants voiced strong support for regional mechanisms that promote collaboration while respecting national priorities. The proposed **Regional Policy Framework on AI in Education** reflects this spirit. Rather than offering one-size-fits-all solutions, the framework is intended to provide guiding principles that countries can adapt to their specific contexts. It seeks to balance the need for coordinated regional action with respect for the varied educational systems and development stages across Southeast Asia.

In summary, the conference affirmed that Southeast Asia's response to the growing influence of AI in education must be collaborative, inclusive, and grounded in the region's shared values. While challenges remain, the diversity of ideas and innovations presented at the conference revealed a strong foundation for moving forward together.

Way Forward and Recommendations

The discussions throughout the conference have highlighted practical pathways for advancing AI integration in Southeast Asian education. These recommendations aim to balance the need for timely action with thoughtful, principled approaches that respect the region's educational values and diverse contexts.

Immediate Priority: Establish the Regional Policy Framework

The most pressing recommendation is to advance development of the Regional Policy Framework on AI in Education under INNOTECH's leadership. This framework will align with global standards while being tailored to the specific educational contexts and needs of Southeast Asia. Rather than directly applying global guidelines, it will adapt international best practices to regional realities, focusing specifically on education in Southeast Asia to ensure practical, equitable, and sustainable AI integration that responds to the diverse situations across member countries.

The framework should serve as the foundation for coordinated regional action. It should establish common ethical standards and technical guidelines, while providing implementation approaches that accommodate countries at varying stages of AI readiness. Core principles include equity, human oversight, responsible innovation, technical and ethical integrity, accountable governance structures, and mechanisms for regional collaboration. The framework must remain flexible enough to serve countries with different levels of digital infrastructure and educational development.

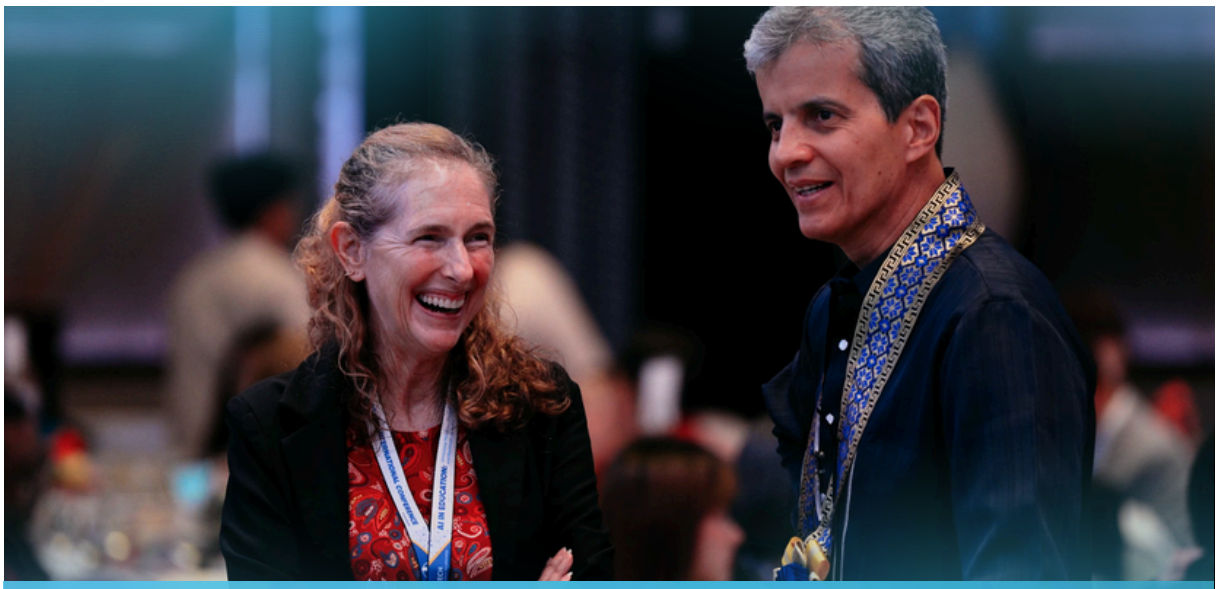
The development of the framework requires inclusive consultation processes engaging ministries of education, SEAMEO centers, educators, technology partners, and civil society organizations. This participatory approach ensures the framework reflects ground-level realities while maintaining strategic vision for regional coordination. By embedding cultural and local relevance, the framework will be applicable throughout Southeast Asia while maintaining flexibility and long-term sustainability through built-in monitoring and evaluation mechanisms. As part of the immediate priorities, the eventual issuance of an ASEAN Leader's Declaration or outcome document on AI in education should be pursued beyond the conference to signal high-level commitment and prompt coordinated regional action.

Speakers and panelists of the plenaries and breakout sessions of the 16th INNOTECH International Conference

Build Regional Implementation Capacity

Teacher development emerged as a critical priority, with consensus on the need for comprehensive training programs that go beyond basic digital literacy. Based on the conference discussions, participants emphasized developing teachers' abilities to orchestrate AI tools for pedagogical purposes while maintaining their central role in educational decision-making. Training approaches should address both pre-service preparation in teacher education institutions and continuous professional development for current educators [11].

Several implementation models were discussed, ranging from national digital platforms that revolutionize teaching and learning to programs fostering digital mindsets and institutional capacity. The importance of building internal government capacity was emphasized, with some countries developing in-house expertise rather than relying solely on external technology providers.



NETWORKING. International participants engage in meaningful conversations and networking during the 16th INNOTECH International Conference.

Leadership development also needs significant attention, as evidenced by challenges in the principal selection process shared during the conference. While not specifically focused on AI preparation, the discussion highlighted the need for comprehensive leadership development that goes beyond traditional testing methods.

Infrastructure development must prioritize equitable access, with particular attention to offline-capable solutions that function in resource-constrained environments. While working toward comprehensive connectivity remains a long-term goal, immediate solutions should not exclude schools lacking reliable internet access.

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[11] F. Miao and M. Cukurova, "AI competency framework for teachers," United Nations Educational, Scientific and Cultural Organization, 2024."

Establish Collaborative Mechanisms

Regional collaboration was universally recognized as essential for addressing cross-border challenges and opportunities. Participants emphasized that individual countries cannot effectively navigate AI integration alone, requiring collective action that amplifies individual efforts and enables shared learning.

Successful regional initiatives shared during the conference demonstrate how linking national programs to shared priority areas can create meaningful connections and foster ongoing collaboration. Inter-center networks can leverage existing institutional infrastructure to conduct comparative studies, share best practices, and develop region-specific solutions.

Public-private-community partnerships emerged as a critical mechanism, with various models demonstrating how government can provide policy guidance, private sector can contribute technology and resources, educators can ensure pedagogical appropriateness, and communities can ground initiatives in local needs and values.

Financing mechanisms require regional approaches, with proposals for trust funds and cost-sharing arrangements that enable all countries to participate regardless of economic status. Such mechanisms acknowledge economic disparities within the region and create pathways for mutual support in advancing AI integration.

The proposed Regional Policy Framework on AI in Education will serve as a coordinating mechanism for these collaborative efforts, providing common standards and guidelines while respecting national contexts. It will establish principles for partnerships to ensure educational goals remain the primary focus, and its development will benefit from collaborative financing approaches to ensure broad participation across all member countries. This framework thus becomes both a product of regional collaboration and a tool for sustaining it.

Ensure Inclusive and Ethical Implementation

Equity and accessibility must be embedded from conception through deployment, with consensus that AI should serve as a bridge rather than a barrier to educational access. All initiatives should actively work to narrow rather than widen educational gaps, particularly for vulnerable and marginalized populations.

Specific concerns raised include ensuring data systems capture all learners, including indigenous populations, out-of-school youth, and others who may be invisible in national datasets. Solutions should accommodate linguistic diversity, accessibility requirements for learners with disabilities, and cultural contexts that vary across the region.

The conference acknowledged that limited connectivity and infrastructure remain significant barriers to AI integration. While some programs demonstrated that educational initiatives could function in low-connectivity environments using offline materials, participants recognized the need for solutions that don't depend entirely on high-end digital infrastructure to ensure inclusive access.

Data protection protocols must exceed commercial standards, recognizing the particular vulnerabilities of young learners and sensitivity of educational information. Implementation should include clear policies on data minimization, purpose limitation, and appropriate retention periods.

Monitor, Evaluate, and Adapt

Given AI's rapid evolution, implementation strategies must remain flexible and evidence-based through regional monitoring systems tracking AI impact on learning outcomes, equity, and teacher effectiveness. These systems should provide real-time feedback enabling rapid iteration based on classroom experiences and emerging challenges.

Documentation and sharing of both successes and failures will accelerate collective learning across the region, helping countries avoid repeating mistakes while building on effective practices. Regular framework reviews ensure continued relevance as technology and educational needs evolve, maintaining the balance between innovation and educational values.

Evaluation processes should focus not just on technical functionality but on educational effectiveness, equity outcomes, and alignment with regional values. This comprehensive approach ensures that AI integration serves long-term educational goals rather than short-term technological fascination, with mechanisms in place to adapt to new risks, emerging use cases, and lessons learned along the way.

WAY FORWARD. SEAMEO INNOTECH Centre Deputy Director Kochakorn Khattapan-Acidre presents the 'Way Forward,' emphasizing flexible, evidence-based strategies to ensure AI in education remains effective, equitable, and aligned with regional values.

Supporting Conditions for Success

Several cross-cutting themes emerged as essential for successful AI integration. The importance of maintaining human-centered approaches was consistently emphasized, with technology serving educational goals rather than driving them. AI should enhance rather than replace educational relationships, with teachers remaining central to learning processes.

National strategies shared during the conference revealed common elements including ethical and legal frameworks, infrastructure development, human resource empowerment, and cross-sector collaboration. While specific approaches vary, these core components appear essential for comprehensive AI integration.

The urgency of action was emphasized repeatedly, with calls to move beyond planning to implementation. However, this urgency must be balanced with thoughtful consideration of equity, ethics, and educational values to ensure sustainable and beneficial outcomes.

The Path Ahead

Southeast Asia is at an important point where current decisions about AI in education will influence learning opportunities for millions of students across the region. The conference showed that the region has collective knowledge, varied innovations, and collaborative approach needed to implement AI integration effectively. The Regional Policy Framework represents not just technical guidelines but a shared commitment to ensuring AI supports Southeast Asian educational values of inclusion, equity, and human development.

SHAPING CHANGE. Ms. Jennifer Wong, Chairman of the SEAMEO INNOTECH Governing Board from Brunei Darussalam, delivers her closing remarks, underscoring the importance of values-driven, future-ready education in the age of AI.

As Ms. Jennifer Wong, Chairman of the SEAMEO INNOTECH Governing Board from Brunei Darussalam, emphasized in her closing remarks, *"It is not just about AI integration. It is also shaping values-driven, future-ready education across the region."* She articulated the conference theme's deeper significance:

> ***"It is not just about adapting to change, but rather is about shaping that change responsibly, with purpose, and with the people at the heart of every innovation."***

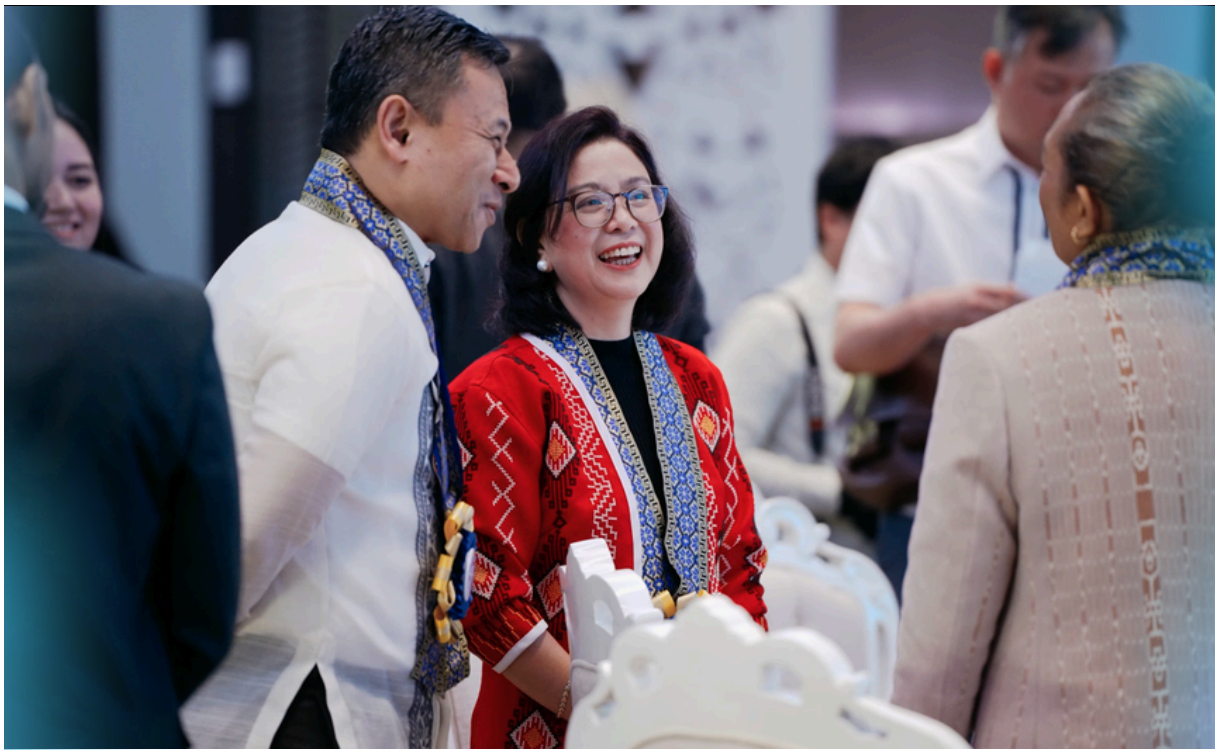
Throughout the conference, policymakers demonstrated a shift from initial enthusiasm to a growing consensus on the need to align priorities and develop a shared framework for AI in education in Southeast Asia. Their priorities include ensuring no learner is left behind, beginning implementation promptly, strengthening regional partnerships, and maintaining ethical standards throughout AI integration. This practical approach acknowledges that true success means extending AI benefits to all students, including those in remote areas with limited digital access.

Implementation will require sustained effort, continued dialogue, and willingness to learn from both successes and setbacks. Yet the strong foundation of regional cooperation through SEAMEO INNOTECH, combined with the energy and insights generated during this conference, provides confidence that Southeast Asia can lead in demonstrating how AI can enhance rather than replace humanistic education.

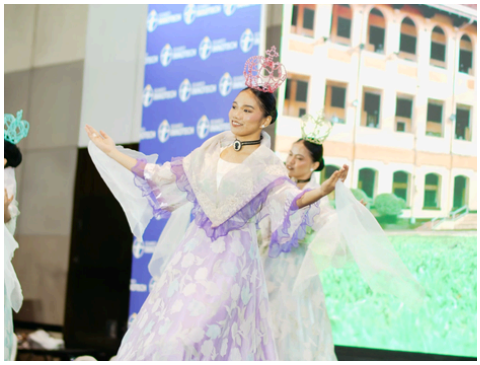
The vision articulated by Secretary Angara challenges the region not merely to participate in the global AI revolution but to ensure inclusive innovation that reaches every learner. This goal of transforming educational possibilities while honoring enduring educational values charts a clear path forward, grounded in regional collaboration and guided by the proposed framework that balances technological advancement with human wisdom and moral purpose. As Secretary Angara emphasized,

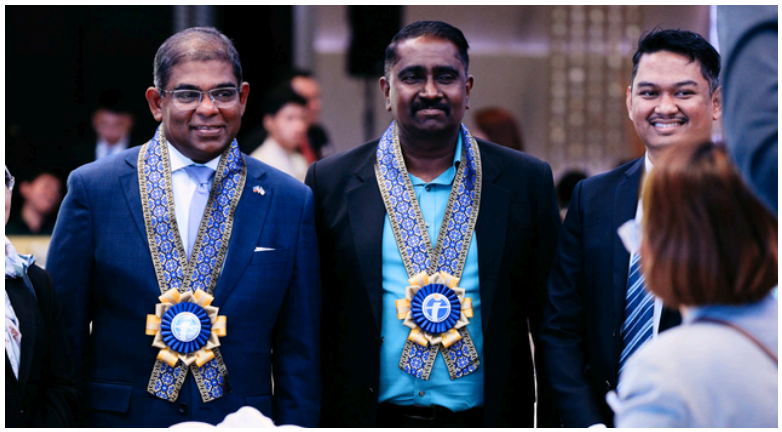
"We must be the region that proved that when the world raced for AI, Southeast Asia ran, not just to compete, but to include every single child, every single learner."

This vision of inclusive innovation, grounded in regional collaboration and guided by the proposed framework, charts a clear path forward for transforming educational possibilities while honoring enduring educational values.

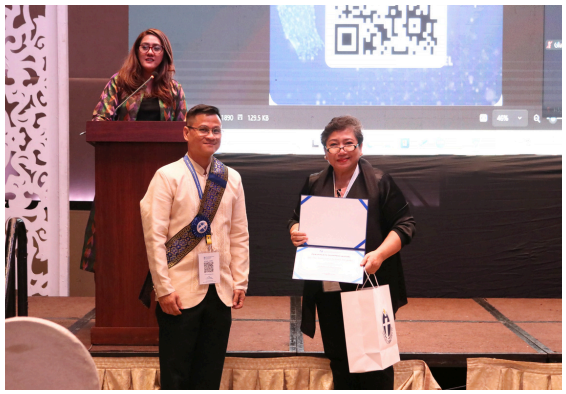


Highlights







A tapestry of shared ideas, commitments, and collaborations — reminders that shaping the future of education is as much about people as it is about innovation.

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INNOTECH

The 16th INNOTECH International Conference represented an important step in Southeast Asia's ongoing efforts to integrate artificial intelligence into education in ways that are equitable, effective, and contextually grounded.

16th INNOTECH International Conference

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Driving innovation for education

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