Best Practices for Inclusive Innovation, Digital Sustainability and Cross-Regional Talent Development

Project Summary Report

APEC Human Resources Development Working Group

December 2024

Asia-Pacific
Economic Cooperation

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Note:
The term “national” and names of public or private institutions used in the text are for purposes of this report and do not imply the political status of any APEC Member Economy.

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INTRODUCTION

1. BACKGROUND

This project aimed to address talent shortages in emerging industries by fostering a market-driven, inter-ministerial talent cultivation system. Aligned with APEC 2023 priorities of promoting innovation and inclusivity, the 2024 APEC Industry-Academia Collaboration Workshop was held in late August in Chinese Taipei, bringing together education policy makers and stakeholders from APEC economies. The workshop showcased best practices for industry-academia collaboration, expanding inclusive and innovative talent development to meet the needs of emerging industries and addressing ongoing economic challenges.

Building on a decade of successful collaboration within the APEC Human Resources Development Working Group (HRDWG), this project continued a long-standing tradition of promoting cooperation between industry and academia. Since its inception in 2014, this initiative has brought together representatives from various APEC economies to explore and enhance models of industry-academia collaboration, particularly within the realm of technical and vocational education. Over the years, the workshop has evolved, expanding from sharing basic collaboration experiences to focusing on specialized areas such as vocational training, international exchange, gender issues, and sector-specific developments in engineering, tourism, healthcare, the digital economy, green technology, and artificial intelligence.

The 2024 workshop continued this tradition by engaging 13 APEC economies in dynamic discussions and exchanges. Participants, including government officials, educators, and industry leaders, shared best practices related to fostering inclusive innovation, advancing digital sustainability, and enhancing cross-regional talent development. In addition to the forum, the event included site visits to educational institutions and enterprises, offering participants first hand insights into successful models of industry-academia collaboration.

Through this workshop, the project aimed to deepen understanding of how industry-academia partnerships can be leveraged to develop tailored educational systems that align with the evolving needs of economies in the APEC region. Participants were encouraged to actively engage in the discussions to collectively shape the future of education and workforce development.

2. EXPECTED OUTCOMES

This project was designed to better equip APEC economies with talent development strategies and enhance youth employability, contributing to social development and industrial growth across the region. Aligned with the APEC Putrajaya Vision 2040, the 2024 APEC Industry-Academia Collaboration Workshop focused on fostering practical skills, cross-sector collaboration, and knowledge-sharing, while promoting market-driven adaptability to prepare participants for emerging industries and ongoing economic challenges.

1. Improved Knowledge-sharing:

The workshop successfully facilitated knowledge-sharing among education policy makers and stakeholders from APEC economies. Best practices in talent training and development were exchanged, and participants provided positive feedback on the usefulness of the shared information. This outcome was assessed by the number of knowledge-sharing

sessions conducted and participant responses, demonstrating that the workshop effectively laid the foundation for more informed approaches to talent development across the region.

2. Strengthened Market-driven Adaptability:

The event enhanced participants' understanding of market-driven adaptability, enabling them to align talent cultivation systems with newly emerged industries. Participant surveys indicated an increased awareness of market trends and the ability to incorporate market-driven strategies into their talent development initiatives. This outcome showed that participants gained actionable insights for adapting educational and vocational systems to meet the demands of evolving industries.

Through these outcomes, the workshop met its goals of fostering inclusive innovation, digital sustainability, and cross-regional talent development. The active exchange of ideas and best practices has set the stage for ongoing collaboration and improvements in talent cultivation across the APEC economies.

METHODOLOGY

1. RESEARCH METHOD

The primary outputs of this project include the 2024 APEC Industry-Academia Collaboration Workshop and the Project Summary Report. To ensure the quality and relevance of these outputs, pre-event research was conducted during the initial phase of the project. This research involved collecting and analyzing information on best practices for industry-academia collaboration and talent cultivation models across APEC economies, with a focus on emerging industries and market-driven adaptability.

1. Workshop: The two-day workshop served as a platform for in-person participants to engage in experience exchange and gather critical information on government-industry-academia collaboration within the Technology and Vocational Education and Training (TVET) system. The workshop aimed to showcase best practices for industry-academia collaboration, expanding inclusive and innovative talent development aligned with emerging industries and economic challenges.

The workshop was structured as follows:

Day 1: A full-day forum featuring speakers and participants from various APEC economies. Presentations and discussions focused on the best practices of talent training and development within industry-academia cooperative models.

Day 2: A field trip to selected industry-academic collaboration sites, including visits to schools and industrial locations. These site visits provided participants with first hand insights into successful collaboration models and enabled in-person discussions and experience sharing at a practical level.

After the workshop, a post-event survey was conducted to assess the quality of the speakers, the relevance of the content, and the effectiveness of the experience exchange. This survey provided critical feedback for evaluating the workshop’s success in capacity building and its contribution to future APEC-related cooperation initiatives.

2. Evaluation: The post-event survey played a crucial role in evaluating the project outcomes. Participants were asked to provide feedback on the workshop's impact, efficiency, and relevance to their work in policy and workforce development. The survey also solicited suggestions for policy implications and potential areas for future APEC cooperation.

2. RESEARCH TARGET (BENEFICIARIES)

This project primarily benefited education policy makers and academia, both of whom participated actively in the workshop, while secondary beneficiaries experienced the project's broader impact on talent development and cross-sector collaboration.

Primary Beneficiaries:

1. Education Policy Makers: Education policy makers from the Ministries of Higher Education, Technology, and Vocational Education and Training (TVET) institutions were a central participant group. Their roles in overseeing policies, curriculum development, assessment methods, and institutional structures positioned them as crucial stakeholders for the workshop. The event provided these policy makers with insights into best practices for industry-academia collaboration, enabling them to develop programs aligned with industry needs and support initiatives that enhance workforce readiness. Policy makers also gained knowledge of the latest trends in education and innovation, better equipping them to advance talent development policies and support youth employability across APEC economies.

2. Academia: Representatives from higher education and TVET institutions were highly engaged throughout the workshop. They benefited from understanding industry needs and priorities more deeply, helping them identify opportunities for collaboration. Workshop sessions offered practical examples of curricula and research projects that align with industry demands, providing academia with new perspectives for equipping students with the skills required in emerging industries. Additionally, the event allowed them to explore the latest educational trends and innovations, further strengthening their talent cultivation initiatives.

3. Industry Representatives: Industry representatives gained insights into collaborative models with academia and learned about the latest practices in skills development. Although fewer in attendance, their involvement contributed to discussions on aligning education with market needs, helping educators and policy makers to better address skills gaps and economic challenges through targeted workforce development initiatives.

Secondary Beneficiaries:

1. Students and Graduates: While not directly attending the workshop, students and graduates from higher education and TVET institutions will benefit indirectly from strengthened academic-industry collaboration. The improvements in curriculum design and industry alignment enhance students' practical skills and employability prospects in an evolving job market.

2. Society and Economy: Broader society and the economy benefit indirectly from the workshop's impact on talent development and employability. By equipping policy makers

and academia with the tools to address skill shortages in emerging industries, the project contributes to economic growth and industrial resilience, fostering more sustainable and inclusive communities across the APEC region.

RESULTS

1. EVENT SUMMARY

The 2024 APEC Industry-Academia Collaboration Workshop, held on 28-29 August 2024, addressed APEC's concerns regarding talent shortages in emerging industries and the need for enhanced education cooperation across the region. The event brought together 111 officials and educators from 13 APEC member economies, serving as a platform to share best practices in digital transformation, industry-academia collaboration, and innovative talent cultivation, reinforcing Chinese Taipei's contributions to regional talent and sustainability initiatives.

Opening remarks emphasized the importance of collaboration in addressing the digital age's complex challenges and highlighted the need for APEC economies to build a more inclusive, sustainable, and innovative future together. With a focus on both innovation and inclusivity, the workshop explored strategies for talent development and models of digital transformation tailored to meet the evolving needs of emerging industries.

The workshop included sessions on fostering dialogue and collaboration among policy makers, industry, and academia, as well as exploring how AI is transforming education. Highlights included case studies such as the AI FinTech Center at National Kaohsiung University of Science and Technology and the Asia Foundation Malaysia's STEM ConnectHER program, which promotes female participation in STEM fields. Participants engaged in discussions around developing talent for digital transformation and innovation in sectors like semiconductors, cybersecurity, and sustainable energy.

On the second day, participants visited the Sustainable Development Office and Smart Agriculture Center at National Pingtung University of Science and Technology, as well as TCI Biotech, a sustainable enterprise collaborating with the university. These site visits provided a hands-on view of successful industry-academia collaboration in research and development using smart technologies.

The workshop concluded by strengthening cross-regional networks among APEC economies, fostering talent to meet the demands of emerging industries, and supporting an inclusive, sustainable, and innovative future.

Keynote Speech Topics:

- Fostering Dialogue and Collaboration Between Policy Makers, Industry and Academia for Effective Education and Training Systems
- Educational Transformation Through AI Empowerment

Best Practice Case Studies:

- AI Fintech
- Generative AI in Education

- Catalysing Industry-Academia Collaboration to Support Women in STEM
- A Human-Centred Approach to Developing a Cooperative Model for the Training of Skilled Workers

Panel Discussion:

- The Challenge of Cultivating Digital Transformation and Innovation Talents

2. KEYNOTES

2.1 Fostering Dialogue and Collaboration Between Policy Makers, Industry and Academia for Effective Education and Training Systems

Speaker Summary: Katrina Sutich

Katrina Sutich, General Manager of Tertiary and Evidence Policy at New Zealand's Ministry of Education, has contributed to the ministry since 2018, where she began as a policy manager focused on vocational and skills policy. Promoted to General Manager for Tertiary Policy in 2020, Katrina took on an expanded role in April 2023, overseeing both international education and a newly established evidence team. Her policy group shapes New Zealand's higher education and vocational education frameworks, overseeing aspects of foundation education and Kaupapa Māori (indigenous) education. The group's responsibilities include setting regulatory levers on fees and funding, as well as providing key data on tertiary participation, attainment, and outcomes. Prior to her work in education, Katrina's career included roles in policy development at New Zealand's Ministry of Business, Innovation and Employment, as well as positions in law and business in both New Zealand and the United Kingdom.

Speech Summary

In her presentation, Katrina highlighted New Zealand's evolving approach to technical and vocational education and training (TVET), a cornerstone of the nation's education system. She underscored New Zealand's commitment to adapting its education and employment systems to meet the evolving needs of the workforce, community, and economy. This includes proactive government measures to address demographic shifts and future labor market trends through coordinated multi-agency efforts. Katrina emphasized that achieving sustainable employment requires partnerships beyond government, with new models of collaboration across the public and private sectors.

Her presentation outlined New Zealand's historical and current strategies for skills and talent cultivation within TVET, particularly as these relate to the challenges of meeting demand in emerging industries. She explored the role of government agencies in bridging skills gaps by working closely with industry and academic representatives. This partnership-focused approach aims to address current economic challenges while preparing for future workforce needs in a rapidly changing job market.

Katrina Sutich emphasized New Zealand's strategic initiatives to address workforce and skills shortages in the digital technology sector, which is poised to become the economy's leading export industry. She highlighted the government's plans to establish a workforce planning mechanism that anticipates both current and future needs. A specific example was the ICT Graduate School policy, where collaboration between industry and education sectors plays a central role in curriculum design and real-world learning opportunities for students. Additionally, she mentioned ongoing reviews of the vocational and university systems to enhance leadership, strategic alignment, and integration with the research and science sectors, aimed at producing graduates ready to meet New Zealand's future demands.

2.2 Educational Transformation Through AI Empowerment

Speaker Summary: Yi-Shin Chen

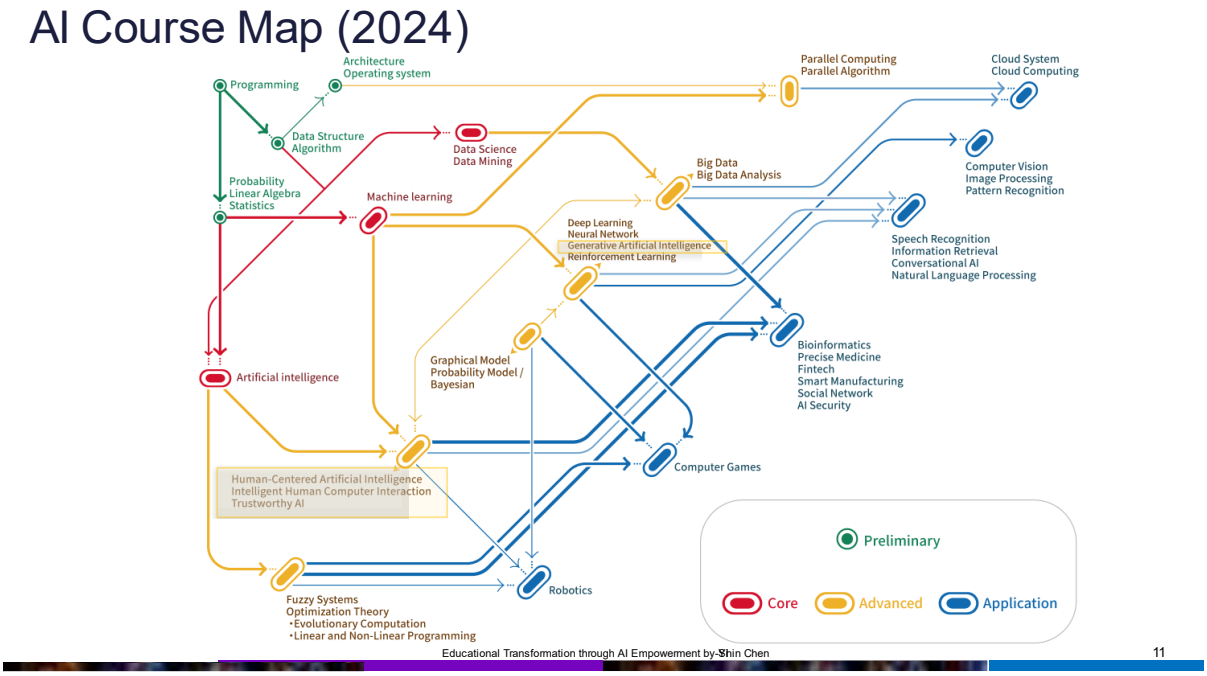
Yi-Shin Chen is a Professor in the Department of Computer Science at National Tsing Hua University (NTHU), where she has been affiliated since 2004. She earned her Ph.D. in Computer Science from the University of Southern California in 2002. Professor Chen has played a significant role in enhancing NTHU's global educational outreach by leading the International Master Program of Information Systems and Applications (IMPISA) and chairing the International Bachelor Degree Program (IBP). Currently, she leads the Artificial Intelligence Technology and Application Courses program, supported by the Ministry of Education since 2016, and serves as the executive director of the Association for Artificial Intelligence in Chinese Taipei. Her research interests focus on web intelligence, social networks, and natural language processing.

Speech Summary

In her presentation, Professor Chen addressed the transformative impact of artificial intelligence (AI) on education and the skills required for the future workforce. She emphasized the necessity for curriculum reforms in higher education that enable students to gain hands-on experiences, thereby converting theoretical knowledge into practical skills. Through the

TAICA College Alliance, she highlighted efforts to lower barriers between universities, facilitating access to exceptional learning resources that combine technical knowledge with real-world applications, ultimately preparing students for future challenges.

Professor Chen outlined essential skills for the AI era, including the ability to understand the world, redefine problems, and establish personal value. She discussed the importance of linking concepts to applications through recurrent practices and the need for a coherent series of AI courses that integrate application domains across the curriculum.



Her presentation detailed a phased approach to AI applications across various sectors. The first phase included healthcare, elderly welfare, manufacturing, and the financial sector, while subsequent phases expanded into areas like the Internet of Things (IoT), precision health, and generative AI. She also stressed the need to address generative AI risks, focusing on data governance and misinformation, as integral to the future of teaching and learning.

3. BEST PRACTICE CASE STUDIES

3.1 NKUST AI Fintech Industry-Academia Experience Sharing

Speaker Summary: Ping-Chen Lin

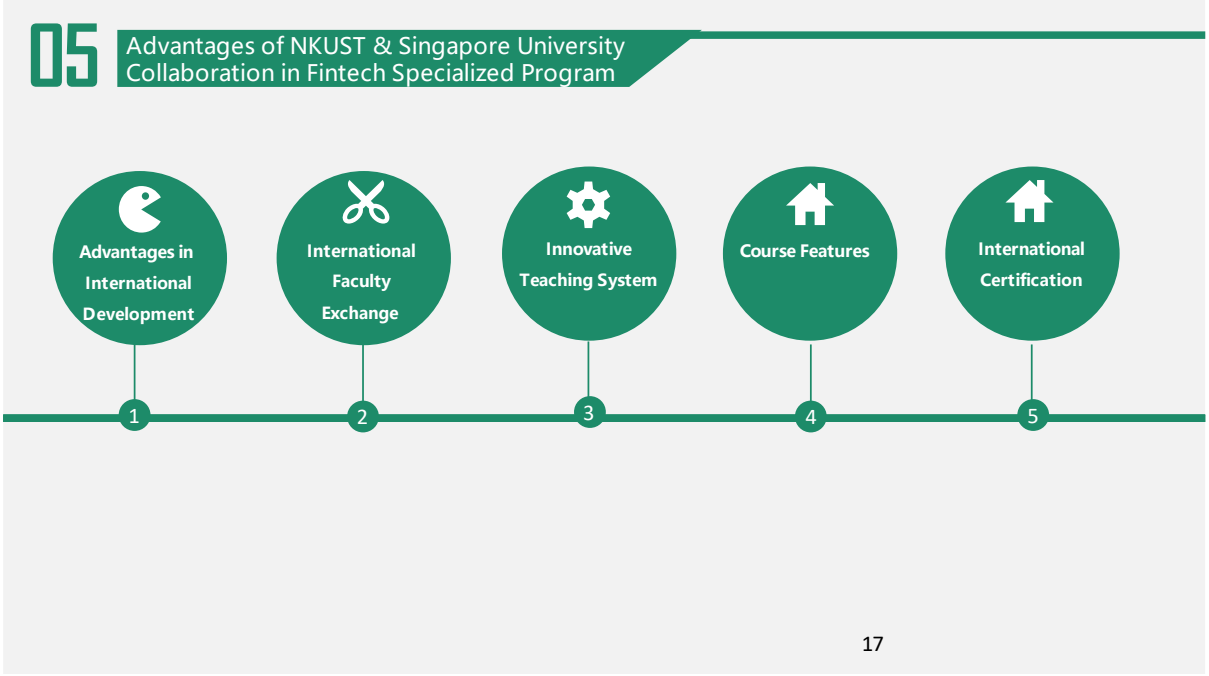
Professor Ping-Chen Lin is an accomplished professional with extensive experience in academic research and practical applications, particularly in finance, business, programming languages, artificial intelligence, and machine learning. She has authored and self-edited two comprehensive textbooks on "Python Programming Language" and "Genetic Algorithms and Neural Network Models," which are part of a series of nine professional books now available for public publication. Professor Lin has published 19 academic papers in domestic and international journals, contributing to the application of AI and machine learning models to business and financial issues. Additionally, she has successfully secured funding for 13 research projects through the National Science Council, significantly enhancing scientific and technological research and development.

As the founder and director of the AI Fintech Center at National Kaohsiung University of Science and Technology, Professor Lin has presided over 33 industry-university cooperation projects, resulting in substantial financial growth for the center. Under her leadership, the center has focused on collaborating with the talent training industry, providing public tenders, talent training courses for public sector units, and coaching for private enterprises. Professor Lin has also established partnerships with various publishing houses to produce educational resources, and she has initiated projects with the Kaohsiung City officials aimed at mentoring local youth.

Speech Summary

In her presentation, Professor Lin discussed the significant advancements made at the AI Fintech Center since its establishment in 2018. She highlighted the center's growth, which has increased 54-fold over six years, and its mission to collaborate with the talent training industry by offering public tenders and coaching services. She emphasized the center's commitment to writing and publishing educational materials, including collaborations with Boshuo Publishing House and Qili Publishing House, resulting in vocational textbooks approved by the Ministry of Education.

Professor Lin shared details about recent projects won from the Youth Bureau of the Kaohsiung City Government, focusing on mentoring local youth through corporate resources. Additionally, she discussed exciting developments regarding a potential collaboration with a university in Singapore, sparked by interest in the center's free online workshops. This partnership aims to integrate local expertise in Fintech education into an international program, fostering closer exchanges between local and Singaporean educators.



Looking ahead, Professor Lin noted Singapore's prominent position in global finance and the potential for Chinese Taipei to cultivate skilled Fintech professionals by integrating its educational resources with Singapore's advanced curriculum. She detailed the planned collaborative Fintech course, designed to merge local technical expertise with Singapore's management skills, featuring joint course design, shared teaching responsibilities, and a focus

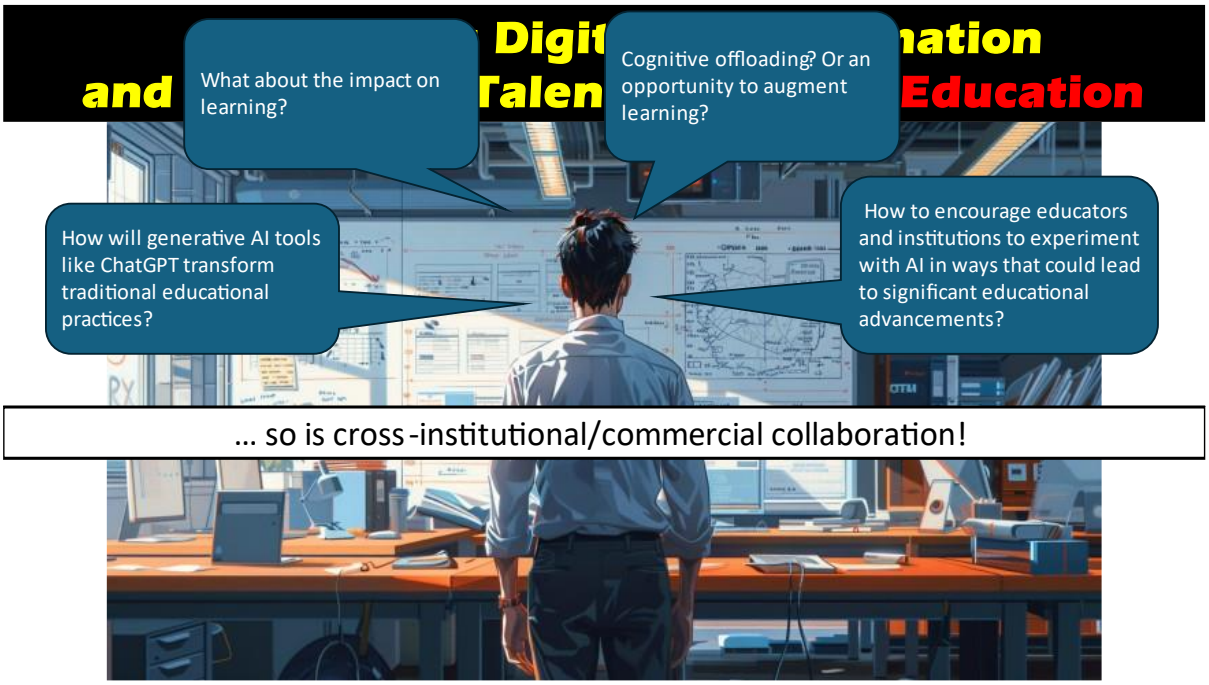
on international career prospects for students. The collaboration aims to create a robust program that leverages the strengths of both regions, ensuring a comprehensive education in Fintech and offering students valuable global opportunities.

3.2 Cultivating Digital Transformation and Innovation Talents: GenAI and Education

Speaker Summary: Sean McMinn

Dr Sean McMinn joined The Hong Kong University of Science and Technology (HKUST) in Hong Kong, China in July 2022 as the Director of the Center for Education Innovation. He holds a PhD in E-Research and Technology Enhanced Learning from Lancaster University, United Kingdom. Sean first joined HKUST in 2005, taking on various teaching and leadership roles in the Center for Language Education (CLE) and the School of Humanities and Social Science (SHSS). He served as the Academic Director of the Master Program in International Language Education from 2018 to 2020 and as the Associate Director of CLE in 2020. After leaving HKUST in 2021, he became the Director of the English Language Centre at the Hong Kong Polytechnic University in Hong Kong, China, leading over 100 academic and non-academic staff to support English language teaching and learning.

With nearly 20 years of experience in higher education, Sean has taught subjects such as Business Communications, English for Academic Purposes (EAP), Digital Literacies, and Social Complex Systems. He has a keen interest in educational technology, digital literacies, and networked learning. In 2007, he won a Teaching Innovation Award for his work with podcasts and education at HKUST, and he has published and presented extensively at international conferences on topics including MOOCs, social media and education, and digital literacies.



Speech Summary

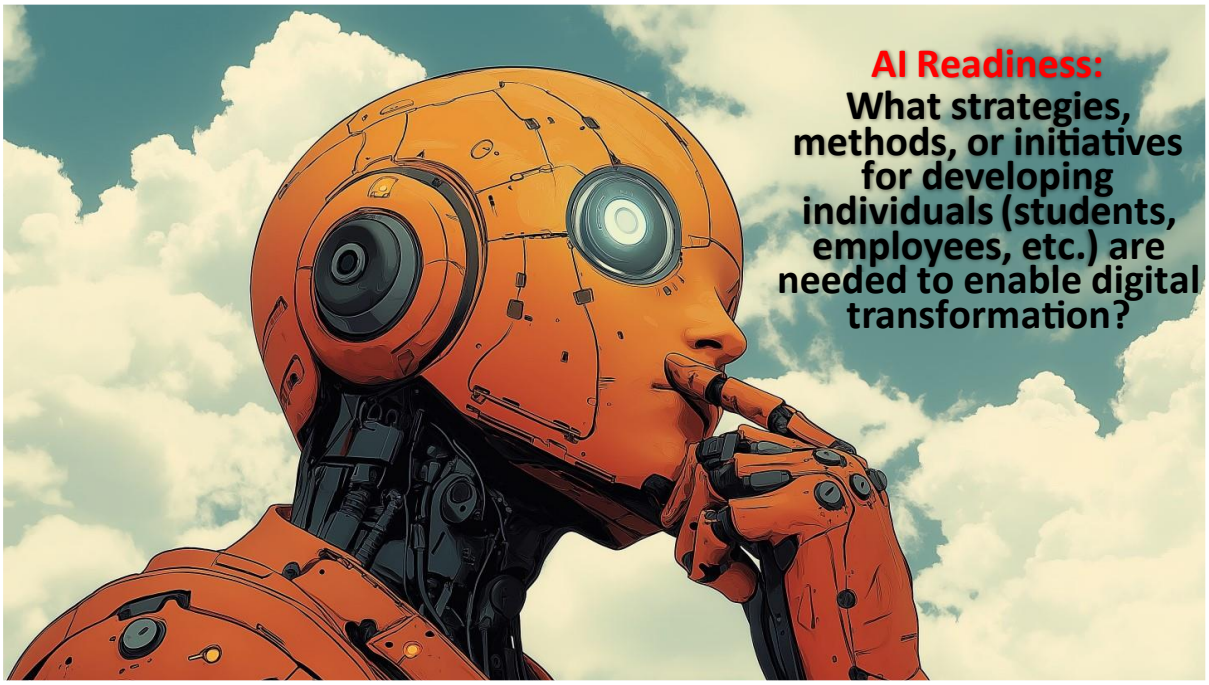
This presentation by Dr Sean McMinn, Director of the Center for Education Innovation at The Hong Kong University of Science and Technology in Hong Kong, China delved into the

transformative potential of Generative AI in education. Drawing on a case study from the Association of Pacific Rim Universities (APRU) and Microsoft's collaborative project, “Generative AI in Higher Education,” Dr McMinn explored the current challenges in cultivating digital transformation and innovation talents. The APRU project aimed to map a baseline snapshot of the adoption of Generative AI tools across APRU member institutions, identifying specific needs and knowledge gaps that can be addressed in future phases of the work. The presentation provided insights into these findings, highlighting innovative practices and challenges encountered in integrating AI tools into educational programs and institutional operations.

Microsoft-backed Foresight Workshop: “The Future of Generative AI in Education” at The Hong Kong University of Science and Technology

The event attracted over40 international academic experts, key practitioners specialising in generative AI and education, university students and education technology start -ups.

Taking place at the 2024 APEC TVET Industry-Academia Workshop, this presentation contributed to the workshop's goal of showcasing best practices for industry-academia cooperative models that expand the scope of inclusive and innovative talent training. Dr McMinn's insights offered valuable perspectives on how Generative AI can enhance learning experiences, address academic integrity concerns, and navigate issues of privacy and bias.

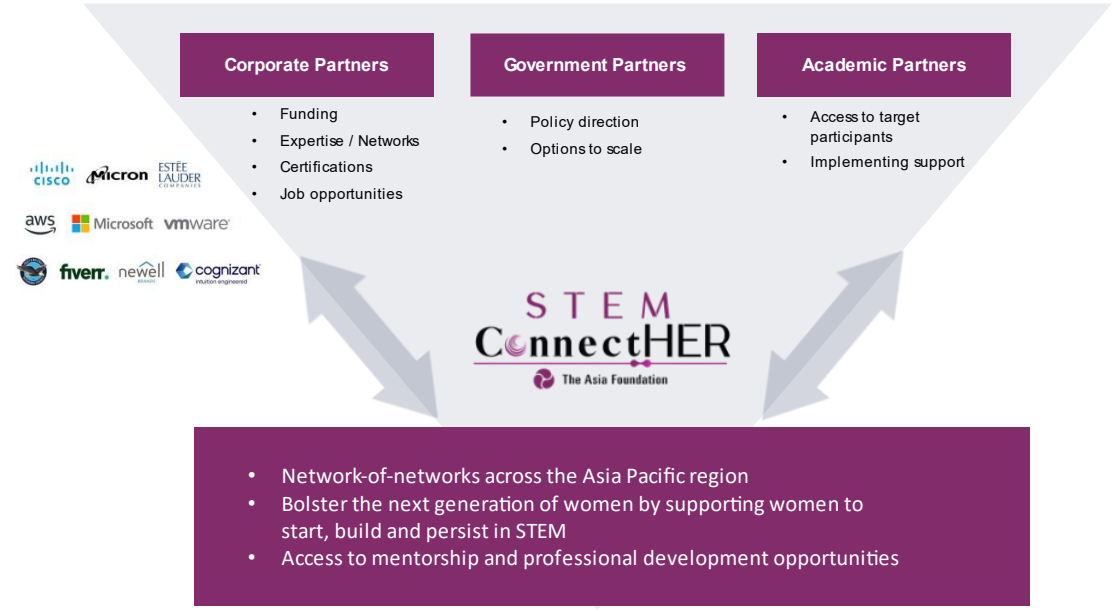


3.3 STEM ConnectHER: Catalyzing Industry-Academia Collaboration to Support Women in STEM

Speaker Summary: Nadya Subramaniam

Nadya Subramaniam is a seasoned educator and program manager specializing in technical and vocational education and training (TVET) and digital skills programs. Currently, she holds the position of Senior Programs and Operations Manager at The Asia Foundation (TAF) in Malaysia, where she plays a pivotal role in overseeing and enhancing a variety of programs, notably in green jobs and digital skilling to support inclusive economic growth. With an impressive background that includes leading a national policy reform initiative to support the growth of Malaysia's TVET industry and pioneering large scale digital upskilling programs that support micro-businesses, Nadya has a proven track record of advancing educational and developmental initiatives across various sectors.

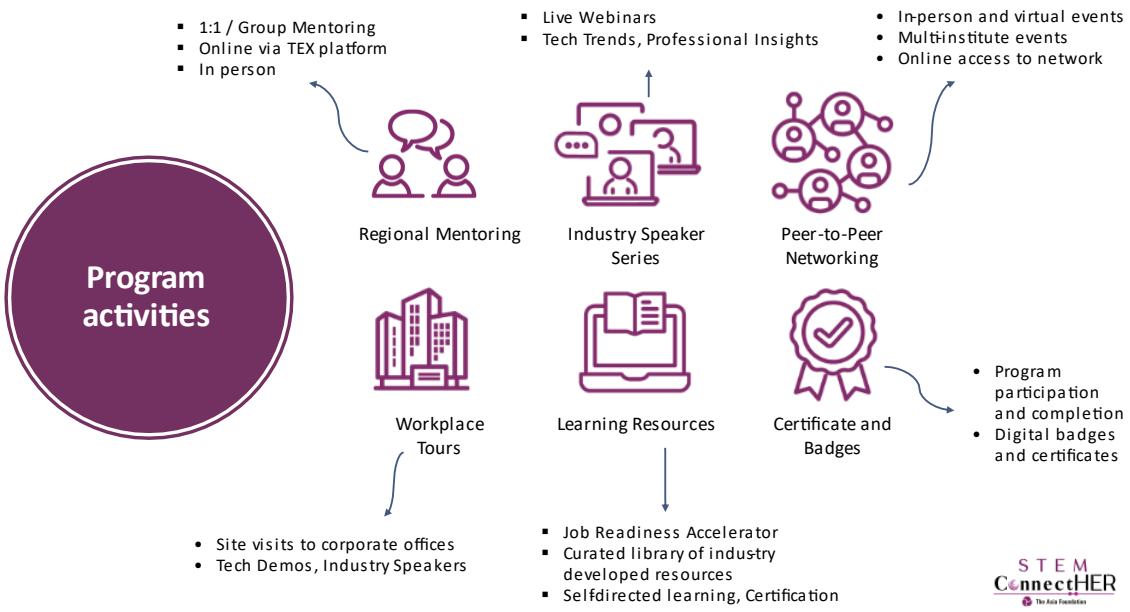
She currently leads a talent development initiative to support young women to enter and persist in the STEM fields. The program, called STEM ConnectHER, is multi economies, with APEC members including Korea; Japan; Malaysia; and Singapore, and is hopeful to include Indonesia and Viet Nam soon. The program brings together corporate partners and learning institutions with the aim to address the gender gap in STEM across the region by supporting over 1500 young women enter and persist in STEM fields over the next year. She leads the program management of a multitude of activities including professional development programs, a career accelerator, webinars, mentoring, peer-to-peer networking, industry visits, and more.



Speech Summary

In response to the rapid growth of the STEM industry, there is a heightened focus on fostering inclusion and diversity at all levels. However, a persistent leaky pipeline remains, as young women—despite being educated in STEM fields—do not enter and persist in the STEM industry at the same rates as their male counterparts. The Asia Foundation has launched a regional talent development initiative, STEM ConnectHER, to support young women in

entering and thriving in STEM fields across multiple APEC economies, including Korea; Japan; Malaysia; and Singapore.



Recognizing the significance of industry-academia collaboration and its inherent complexities, The Asia Foundation acts as a convener, uniting corporate partners—such as Amazon Web Services, Microsoft, and Cisco—with educational institutions. This collaboration ensures that funders and mentors connect with academics and students eager to advance their careers. The initiative addresses the gender gap through a comprehensive range of activities, including professional development programs, a career accelerator, webinars, mentoring, peer-to-peer networking, and industry visits. The program aims to connect over 1,500 young women within this network over the next two years, contributing to a more inclusive and equitable STEM workforce.

3.4 A Human-Centred Approach to Developing a Cooperative Model for the Training of Skilled Workers

Speaker Summary: Jed Looker

Jed Looker is the founder and Principal Investigator of the Human-Centred Design Lab and Professor of Design Research at Algonquin College in Canada. He has been a user experience practitioner for over twenty years and now works with businesses, governments and not-for-profit organizations to provide students an industry-focused learning experience.

Most recently, Jed and his students collaborated with Dominica State College to co-design a study of carpenters in the Commonwealth of Dominica as part of an initiative by their government to develop hurricane resiliency. Findings from the mission supported the development of a database of carpenters on the island. Funded by Global Affairs Canada and administered by Colleges and Institutes Canada, the project was part of an intergovernmental programme to develop technical and vocational education in economic sectors associated with climate change in the Caribbean.

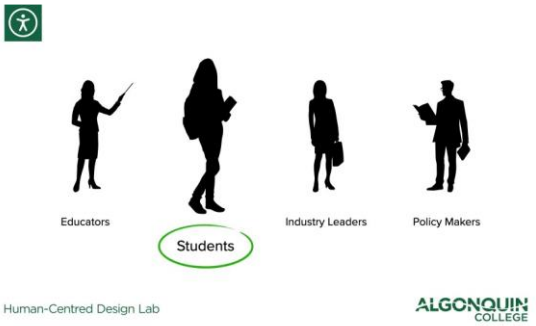
Jed has also worked with the International Action Network on Small Arms to develop an evidence-based response to youth affected by gun violence in South Africa. Taking a participatory design approach, his students worked with regional stakeholder Gun Free South Africa to develop and pilot an after-school workshop for youth living in the Cape Flats. Project outcomes were later presented to the United Nations Programme of Action on Small Arms and Light Weapons, Seventh Biennial Meeting of States.

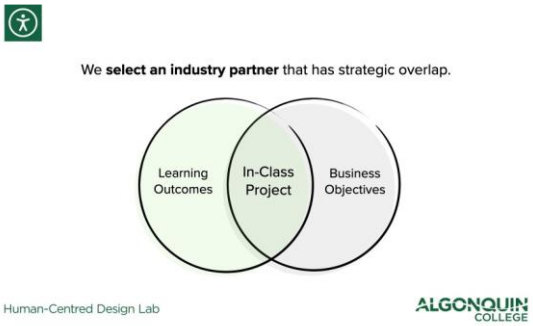
Off-campus Jed has been an Interaction Design Association (IxDA) Local Leader and Chair of Capital Computer-Human Interaction (CapCHI), an Association for Computing Machinery Special Interest Group (ACM SIGCHI). He is also an educational member of the World Design Organization (WDO) where he facilitates the Young Designers Circle, a global programme for emerging design talent that explores the role of design in meeting the United Nations Sustainable Development Goals (SDGs).

Speech Summary

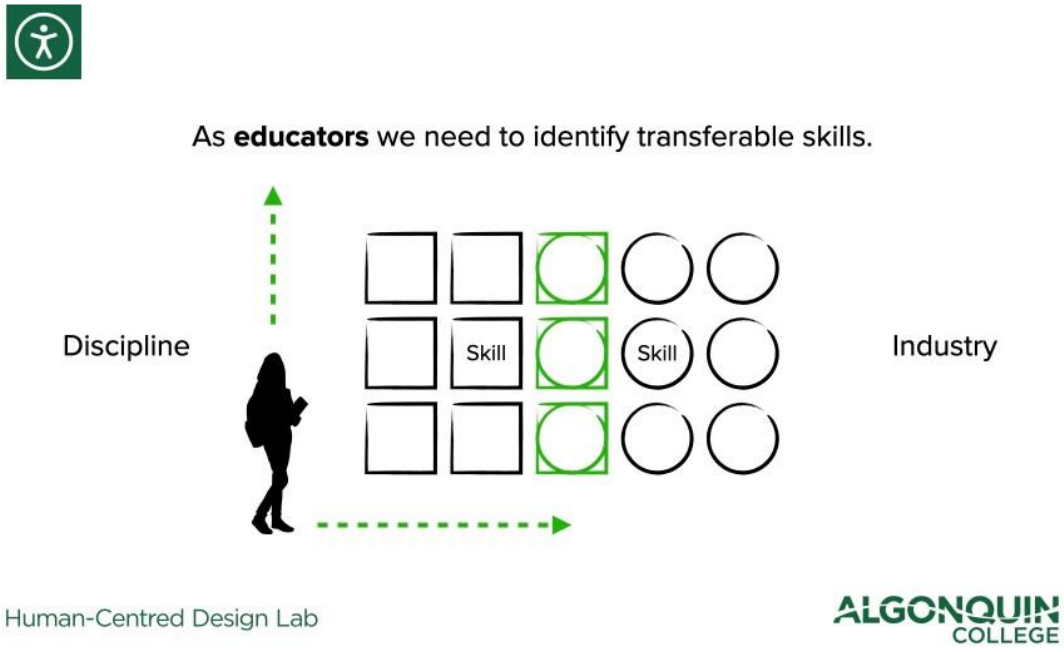
Jed Looker addressed the need for innovative talent acquisition strategies in emergent industries facing ongoing labor shortages. He proposed a human-centered approach to establish an equitable relationship among government, academia, and industry. By understanding the behaviors and motivations of post-secondary students, stakeholders could develop training programs that aligned career ambitions with market demands. Looker discussed human-centered and systems thinking methodologies and examined several case studies. He introduced a cooperative model designed to empower government policymakers, post-secondary educators, and industry leaders to advance work-integrated curricula that cultivate skilled workers and support sustainable economic growth.

Looker emphasized that industry leaders must invest in talent cultivation by hiring students directly from school and bringing projects into the classroom. He noted that the responsibility of training skilled workers should not rest solely on post-secondary institutions. As educators, he urged the identification of transferable skills, which should encompass the inherent practices and methodologies of their respective disciplines, rather than just communication and teamwork.





He acknowledged the challenges students face in understanding how the skills they acquire transfer to industry. Educators could aid students by identifying skills within their syllabi that aligned with industry needs. For instance, colleagues in the Anthropology department at Carleton University developed a course titled "Design Anthropology," which merged social science methodologies with user experience and service design practices, effectively preparing graduates for careers in high-tech and government sectors.



In conclusion, Looker expressed confidence that by understanding the career ambitions of their talented students, stakeholders could collaboratively build effective pathways to industry.

4. PANEL DISCUSSION

In this session, we invited 4 panelists to discuss the challenge of cultivating digital transformation and innovation talents.

Chiang Mai World Green City: The Living Laboratory for Cultivating Talents in Social & Green Innovations

Dr Worajit Setthapun introduced the Asian Development College for Community Economy and Technology (adiCET) at Chiang Mai Rajabhat University, Thailand, as a pioneering institution dedicated to community development through graduate-level teaching, research, and academic services. The college's mission is to enhance the quality of life and support the local economy by integrating education, policy support, and evidence-based research, with linkages at local, domestic, and regional levels (ASEAN, APEC).

Dr Setthapun highlighted adiCET's flagship research and its contributions to the community economy through academic services, curriculum development, training, and policy support. This foundational work sets the stage for the Chiang Mai World Green City (CMGC), which Dr Setthapun described as a living laboratory for green technologies, demonstrating sustainable practices through real-world applications. CMGC serves as both a platform and an ecosystem to foster skills and knowledge in areas like renewable energy (photovoltaics, biogas, biomass systems), waste management and transformation, smart farming, and low-carbon business initiatives.

Using CMGC's green infrastructure, the initiative offers hands-on learning experiences that encourage innovative solutions to modern environmental challenges. By integrating renewable energy technologies with community-centered social innovations, the program aims to cultivate a new generation of leaders and professionals committed to sustainable development and environmental stewardship. Dr Setthapun emphasized that CMGC's holistic and replicable model offers inspiration for other regions, contributing to global efforts in combating climate change and advancing sustainable community development.

Smart Grid, Hydrogen Energy and Energy Storage Technology Education Alliance

Dr Dasheng Lee shared insights into the challenges and opportunities in cultivating talents for digital transformation, focusing specifically on energy education. He introduced the Smart Grid, Hydrogen Energy, and Energy Storage Technology Education Alliance, which is driven by six core missions:

1. Establishment of a Green Energy Innovation Demonstration Site
2. Implementation of Industry Integration
3. Organization of Energy Education Promotion Activities
4. Development of Interdisciplinary Energy Course Modules and MOOCs
5. Guidance for Partner High Schools in Establishing Sustainable Energy Education
6. Promotion of Interdisciplinary Teaching and Collaborative Workshops

In his discussion on Energy Technology Talent Education for future energy digital transformation, Dr Lee emphasized several key conclusions:

- The importance of *learning by doing*, with hands-on experiences available at campus "playgrounds" and factories across Chinese Taipei.
- Digital transformation talent development should extend beyond technical skills, encouraging students to use data to gain deeper insights into complex issues.
- A strong foundation in AI is essential, as applying AI in energy education is vital for achieving sustainable development goals.
- Talent cultivated in this area should be able to implement flexible energy digital transformation, ensuring diverse energy supplies that meet human needs.
- AI technology will play a crucial role in balancing industrial and commercial progress with environmental conservation.

Dr Lee highlighted that a comprehensive approach to energy digital transformation talent development is essential to equip future leaders with the knowledge and skills needed to innovate responsibly within the energy sector.

Critical Infrastructure Information Security Training Base

Dr Shyhtsun Felix Wu introduced the Critical Infrastructure Information Security Training Base, a project led by National Cheng Kung University (NCKU) in collaboration with multiple academic institutions. This alliance focuses on curriculum development, talent training, equipment procurement, technical support, and industry-academia collaboration. By bringing together resources from public sector, industry, academia, and research sectors, the project aims to enhance information security skills and capacities for critical infrastructure protection.

Highlights of the Initiative:

- Simulated Factory for Critical Infrastructure Security:
  The project includes five critical infrastructure simulation systems, covering petrochemical refineries, water purification plants, water gates, solar power systems, and automated feeder systems. These simulations are complemented by practical training and defense exercises to strengthen hands-on learning. The facility also includes a dedicated teaching area and an exhibition space, enabling students to simulate attack-defense scenarios and apply practical security strategies.

- Teaching Kits for Industrial Control Systems: Utilizing sensors and actuators from major brands (Delta, Siemens, Omron, Mitsubishi, Schneider, and Fatek), the project has developed teaching kits to facilitate training in attack and defense drills on critical infrastructure. These kits help students understand the interfaces and hardware characteristics of programmable logic controllers (PLCs) from both domestic and international suppliers, enhancing their foundational skills in industrial control system security. By familiarizing students with various communication protocols, the training prepares them to optimize defense measures across different brands' network communication structures. To date, 20 Delta electronic teaching boxes have been created, along with three sets each from five other brands, with plans to add Honeywell and ICP teaching boxes this year.

Looking ahead, the Critical Infrastructure Information Security Training Base will continue to expand its curriculum offerings, practical training equipment, and talent development efforts, preparing a skilled workforce capable of safeguarding critical infrastructure from emerging cyber threats.

Talent Cultivation Base for Semiconductors

Professor Ho Chang shared insights into Minghsin University of Science and Technology's (MUST) strategic role in advancing semiconductor education and industry collaboration. Located near Hsinchu Science Park and Hsinchu Industrial Park, MUST is in close proximity to leading semiconductor companies, positioning it as an ideal partner for industry collaboration and innovation.

Key Points:

- MUST aims to be a premier industry-friendly institution, fostering partnerships and innovations within the semiconductor sector. Seven of the world's top ten integrated circuit (IC) packaging and testing companies are located nearby, with which MUST maintains strong collaborations.
- Semiconductor Industry Equipment Facility and Testing Talent Development Center: Established in 2023 with support from the Ministry of Education, this four-story facility focuses on talent development for semiconductor manufacturing, inspection, testing, and packaging. Collaborating with partner institutions, the Center aims to meet the industry's demands for skilled professionals.
- Industry-Public Sector-Academia Collaboration: High-tech companies have donated advanced equipment valued at over NTD100 million to support this initiative, underscoring a shared commitment to preparing a skilled workforce for the semiconductor industry.

MUST is dedicated to cultivating semiconductor talent through a range of targeted programs. It offers specialized training to help students and industry employees obtain relevant certifications, and it also develops "seed teachers" to expand semiconductor expertise across educational institutions. In addition, MUST actively promotes international talent exchange, welcoming students from economies including Australia; India; Japan; Korea; Malaysia; and the United States through the TEEP program and other initiatives. The university has established global partnerships, signing MOUs with institutions such as Western Sydney University in Australia, the University of Economics Ho Chi Minh City in Viet Nam, and Montana Tech in the United States, which open pathways for a dynamic exchange of semiconductor talent and expertise.

MUST stands at the forefront of industry collaboration, with a commitment to enhancing the employability and skills of its students and contributing to the semiconductor industry’s growth and innovation.

CONCLUSION

We had designed the post-event survey and asked all participants to respond in order to assess and evaluate the workshop's outcomes effectively. Out of all registered participants for the event, we received only 50 completed survey responses. While the feedback provided was valuable, the low response rate highlights an area for improvement in encouraging greater engagement with post-event surveys. To address this, we need to explore strategies to increase participation, such as simplifying the survey process, offering incentives, and emphasizing the importance of participant feedback in shaping future events. By doing so, we can ensure a more comprehensive understanding of attendee experiences and insights.

1. **Gender impact**

The gender distribution of participants and speakers at the event highlights progress toward greater inclusivity. Out of 99 participants, 38 (38%) were female, marking an increase compared to previous events.

Additionally, the speaker lineup demonstrated a balanced representation, with 6 of the 12 speakers (50%) being female. This is a notable step toward fostering gender diversity in our events, particularly in leadership and expert roles.

These results reflect ongoing efforts to create an inclusive environment that values diverse perspectives and encourages equitable participation. However, further strategies may be explored to maintain and improve female engagement among attendees.

2. **Relevance to each participant's economy**

The survey results demonstrated that the event was well-received by participants, with the majority finding it relevant to their professional and economic contexts. Specifically:

- 39 participants (78%) reported being very satisfied with the relevance of the workshop to their respective economies.
- 84% of respondents stated that they gained new insights or ideas during the workshop, many of which they plan to implement in their institutions or organizations.

Participants noted key takeaways such as the integration of AI into educational strategies, cross-regional collaboration, and innovative approaches to industry-academic partnerships. These insights underline the workshop's alignment with the diverse economic and policy landscapes of the APEC member economies.

3. **Capacity Building for Target Beneficiaries**

The workshop served as a platform for participants to expand their understanding and skills in industry-academia collaboration.

- 41 participants reported a high to very high level of knowledge and skills in the topic after the workshop (compared to 21 prior).
- Understanding of market-driven adaptability also saw a significant increase, with 39 participants reporting high to very high understanding after the event (up from 21).

Participants engaged in sessions covering AI applications, talent development, and strategies for fostering cross-sector collaboration. They emphasized practical insights, including:

- The role of AI in curriculum design and smart agriculture initiatives.
- Best practices for cross-regional collaboration and capacity building.
- Strategies for promoting inclusive education and diversity in STEM fields, particularly women's participation.

In post-event feedback, participants highlighted the workshop's value in providing practical tools, fostering collaboration, and sharing models for implementing sustainable educational policies and AI-driven initiatives.

4. **Possible examples for utilizing the knowledge gained**

Participants shared actionable plans and ideas inspired by the workshop, reflecting its impact on fostering innovation and collaboration. Examples include:

Policy and Curriculum Development

- Implementing AI-focused courses and vocational training programs.
- Integrating industry-specific skills and market-driven adaptability into curricula.

Collaboration and Partnerships

- Initiating joint research projects between academia and industry.
- Developing partnerships across APEC economies to share best practices and resources.

Training and Capacity Building

- Organizing workshops and training sessions to disseminate workshop insights.
- Building programs to enhance digital literacy, sustainable technology use, and AI talent development.

Infrastructure and Innovation

- Establishing AI labs and promoting interdisciplinary networks.
- Using smart agriculture technologies to address region-specific challenges.

Participants expressed a strong intention to apply the knowledge in areas like policy advocacy, international collaboration, and student-oriented program design. Notable ideas included setting up a regional APEC hub for sustained collaboration, enhancing partnerships for AI integration in education, and driving innovation through cross-regional projects.

In Conclusion, the workshop was widely regarded as a well-organized, impactful event with significant contributions to building knowledge and fostering meaningful connections. While some areas like panel discussions and participant engagement could be refined, the event left a lasting positive impression and achieved its goals effectively. The 2024 APEC Industry-Academia Collaboration Workshop significantly impacted participants, equipping them with knowledge, skills, and networks to advance industry-academic collaboration. By fostering

actionable insights and practical applications, the event empowered participants to drive transformative changes within their institutions and economies.

APPENDIX – POST-EVENT SURVEY QUESTIONNAIRE

Basic Information

Full Name *

您的回答

Email Address *

您的回答

Gender *

- ◯ Female
- ◯ Male

Which APEC economy member are you representing? (國內參加者請一律填寫CT Chinese Taipei) *

- ◯ AUS Australia
- ◯ BD Brunei Darussalam
- ◯ CDA Canada
- ◯ CHL Chile
- ◯ PRC People's Republic of China
- ◯ HKC Hong Kong, China
- ◯ INA Indonesia
- ◯ JPN Japan
- ◯ ROK Republic of Korea
- ◯ MAS Malaysia
- ◯ MEX Mexico
- ◯ NZ New Zealand
- ◯ PNG Papua New Guinea
- ◯ PE Peru
- ◯ PHL The Republic of the Philippines
- ◯ RUS The Russian Federation
- ◯ SGP Singapore
- ◯ CT Chinese Taipei
- ◯ THA Thailand
- ◯ USA United States
- ◯ VN Viet Nam

What was your primary goal in attending this workshop? *

您的回答

Please indicate your satisfaction with the following aspects of the event.

Quality of Event Venue *

	1	2	3	
Not satisfied	◯	◯	◯	Very satisfied

Quality of Speakers *

	1	2	3	
Not satisfied	◯	◯	◯	Very satisfied

Quality of Sessions *

	1	2	3	
Not satisfied	◯	◯	◯	Very satisfied

Was the content well-organized and easy to follow? *

	1	2	3	
Not satisfied	◯	◯	◯	Very satisfied

Substantial knowledge increase on industry-academic collaborations shared within APEC region *

	1	2	3	
Not satisfied	◯	◯	◯	Very satisfied

Relevance to your representing economy *

	1	2	3	
Not relevant	◯	◯	◯	Very relevant

How satisfied were you with the networking opportunities provided? *

	1	2	3	
Not satisfied	◯	◯	◯	Very satisfied

Capacity Building on promoting academic-industry collaboration *

	1	2	3	
Not satisfied	○	○	○	Very satisfied

How useful did you find the sessions in terms of improving your understanding of best practices in talent training and development? *

	1	2	3	
Not useful	○	○	○	Very useful

Rate your level of knowledge of and skills in the topic prior to participating in the event *

	1	2	3	4	5	
very low	○	○	○	○	○	very high

Rate your level of knowledge of and skills in the topic after participating in the event *

	1	2	3	4	5	
very low	○	○	○	○	○	very high

How would you rate your understanding of market-driven adaptability prior to participating in the event? *

	1	2	3	4	5	
very low	○	○	○	○	○	very high

How would you rate your understanding of market-driven adaptability after participating in the event? *

	1	2	3	4	5	
very low	○	○	○	○	○	very high

Did you gain new insights or ideas during the workshop that you plan to implement in your institution or organization? *

- ○ Yes
- ○ No

If yes, please briefly describe.

您的回答

Do you feel more equipped to incorporate market-driven strategies into your talent development initiatives after attending this workshop? *

- ○ Yes
- ○ No

Event Review and Comments

How would you describe the possible impact of the workshop on fostering collaboration between your institution and industry partners? *

您的回答

What did you most enjoy about our Workshop? *

您的回答

What new skills or knowledge did you gain from this event? *

您的回答

How will you utilize the skills and knowledge gained from this event after your eturn to your home economy? *

Please provide examples (e.g. develop new policy initiatives, organize training, develop workplans/strategies, draft regulations, develop new curriculums/programs/tools etc.).

您的回答

In your view what were the workshop's results/achievements? *

您的回答

How could this project have been improved? Please provide comments on how to improve the project, if relevant.

您的回答

What topics would you like to see more of at our next event? *

您的回答