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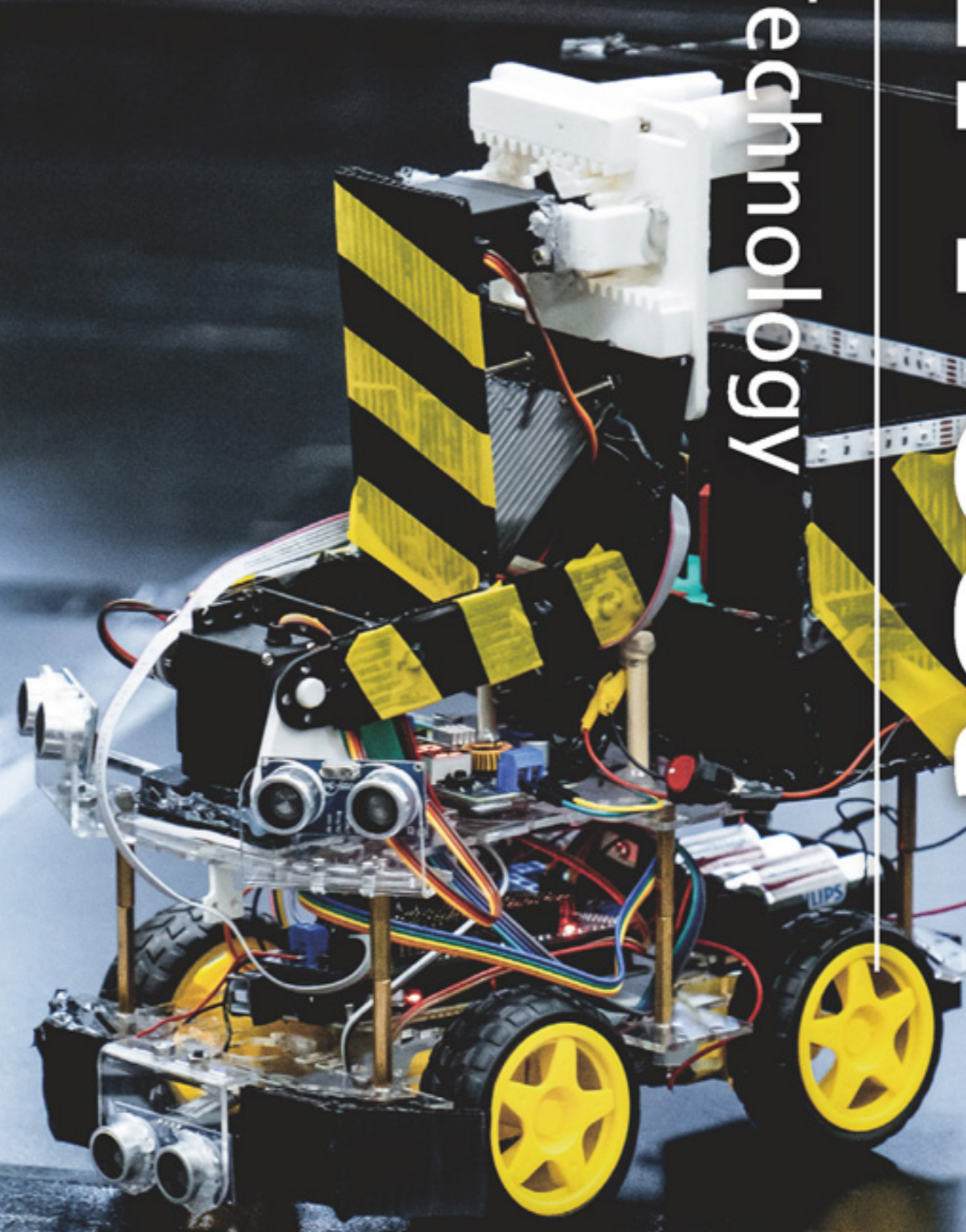
Empowering Refugee Children: Taipei Tech and Centre for World Citizens Unite for Innovation

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Taipei Tech's High-Value Biomaterials Research and Commercialization Center (HBRCC, or MT3+) on July 26 held an international forum during the 2024 Bio Asia-Taiwan conference. Many renowned biomaterial experts from across the globe attended. Chaired by MT3+ director Fang Hsu-wei, attending experts discussed international collaboration models in biomaterials. It shared its experiences in industry-academia cooperation, with the goals of strengthening cross-border exchanges and jointly advancing research in biomaterials.

At the event, Taipei Tech and the Institute of Biomedical Engineering and Nanomedicine (IBEN) at Taiwan's National Health Research Institutes (NHRI) jointly signed an agreement to promote academic and talent exchanges and advance technology transfer. Fang, director of Taipei Tech's MT3+, stated that assisting professors in commercializing their findings into products has been a perennial mission at his institution, with successes including patents on an artificial tear solution in Japan and Taiwan. Although biomedicine commercialization is challenging due to regulatory, safety, and efficacy considerations, he hopes this agreement will spark new opportunities in Taiwan's biomaterials field.

Liao Lun-de, IBEN deputy director, said that the NHRI is Taiwan's leading medical and biomedical research institute. The agreement with MT3+ will bring closer collaboration in technical research, talent cultivation, and technology transfer. Liao further stated that the 3P (Public-Private Partnerships) model could be a game changer for academia-industry collaborations, and this agreement with Taipei Tech could see the 3P model in play to drive new momentum in advancing Taiwan's biomaterials industry.

At the forum, professors from Japan, Israel, New Zealand, and Taiwan discussed international collaboration opportunities. Suggestions included joint research papers and patent development between Israel and Taiwan, establishing cross-border educational programs, and participating in global research networks. Japan-Taiwan collaboration could build on existing semiconductor partnerships and expand into biomedical applications through nanotechnology. Experts recommended Taiwan leverage its semiconductor expertise while strengthening its

Global Experts Chart Course for International Biomaterial Cooperation at Taipei Tech Forum

biomanufacturing capabilities to compete with regional leaders. The focus should shift from small-scale industry-academia projects to larger international collaborations in innovative technologies and drug development.

Fang stated that Taipei Tech, with its strong research capabilities and backing from alumni, is well-positioned to advance research commercialization. He added that further improvements in resource integration and market insights are needed to accelerate development and build new Taiwanese brands. Noting that the MT3+ is experienced in technology transfer, Fang said he is looking forward to collating the attending experts' insights and forming closer international collaborations to jointly open new horizons in the global biomedical industries.



Taipei Tech Welcomes International Youth from 14 Countries for the 2024 APEC Training Program

To nurture talent in international affairs, Taipei Tech's Department of English, through the APEC Institute of Innovation & Education Development (APEC IIED) that is commissioned by the Ministry of Education (MOE), recently hosted the 2024 APEC Youth Capacity-Building Training & Model APEC event. This year's event saw 29 participants from 13 APEC economies and 32 Taiwanese students from top Taiwanese universities, including NTU, NYCU, and Taipei Tech, engage in discussions to enhance their understanding of APEC operations.

Taipei Tech Vice President Thomas C.K. Yang noted that with support from the MOE, Taipei Tech has been hosting APEC workshops since 2014. "The APEC Youth Capacity-Building Training & Model APEC allows participants to deepen their understanding, discuss regional issues, and develop diplomatic skills," he said. Now in its sixth year, the program is a platform to foster students' global perspectives, interpersonal skills, and management abilities, preparing them for future roles in international collaboration.

The event began with insights from Dr. Yang Yun-hua and Dr. Yen-liang Lin of Taipei Tech, who outlined APEC's priorities and Taiwan's contributions and emphasized the importance of cross-border cooperation on global issues. Alumni shared experiences from previous APEC events, and Peruvian volunteers from the Second Senior Officials' Plenary Meeting (SOM 2) shared firsthand insights. The day concluded with an explanation of international

decision-making procedures and a mock election to prepare for Model APEC to take place the next day.

The event's highlight, Model APEC, had participants assume roles of an APEC meeting and present proposals for co-sponsorship. Guided by Dr. Lin and Dr. Michael Tanangkingsing, associate professor of English, participants received feedback on their performance, gaining practical insights into international conference operations and diplomatic negotiation.

Reflecting on the experience, Bill Puah Ee Joe from Singapore Management University said, "It was an honor to participate in the APEC training in Taiwan and serve as the HRDWG Lead Shepherd. The experience taught me the practical aspects of organizing international meetings, including collaboration and leadership."

Xu Shici, an English junior from Taipei Tech, shared, "This was my first time participating in APEC training. The simulation was a valuable opportunity to hone my communication skills and expand my international perspective."

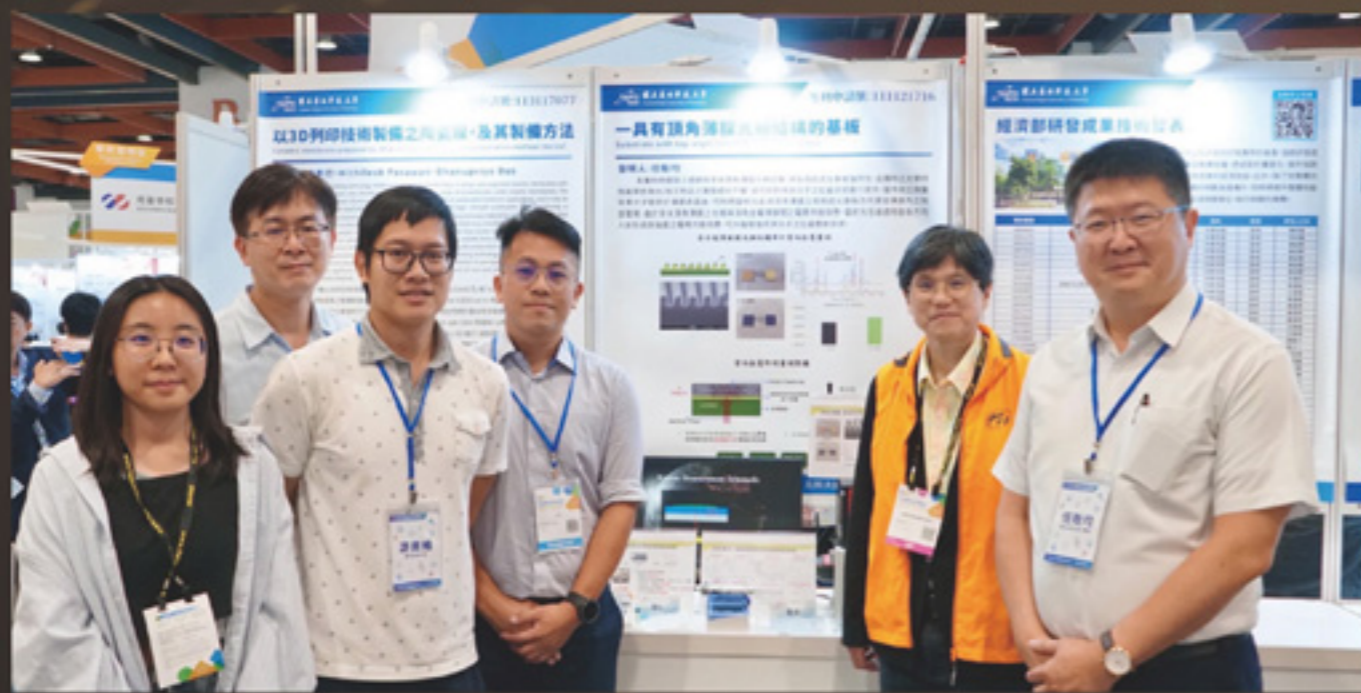
Putri Kartika Dewi from Indonesia added, "Representing Indonesia in this event allowed me to learn about cross-border policymaking and diplomatic negotiation, which provided valuable insights into global political dynamics."

Taipei Tech Shines at the 2024 Taiwan Innotech Expo with Six Awards

Setting a new institutional record, Taipei Tech performed extraordinarily at the 2024 Taiwan Innotech Expo, winning six major awards: three gold, two bronze, and the prestigious MSI Award. This year's event saw nearly 90 companies and over 40 academic and research institutions submit approximately 1,100 patented projects for the competition. Taipei Tech showcased ten patented technologies, including smart home appliances, electronic components, mechanical designs, and chemical engineering materials, highlighting the university's innovative and practical strengths.

The three Taipei Tech projects that won gold medals at the 2024 Taiwan Innotech Expo are:

1. Substrate with Apical Thin-Film Grating Structure (Patent Application No. 111121716):



Developed by Professor Jen Yi-jun from the Department of Electro-Optical Engineering, this SERS (Surface-Enhanced Raman Scattering) substrate has high sensitivity. It has been applied in food safety testing to detect Sudan dyes, preservatives, bleaching agents, histamines, and veterinary drug residues, significantly improving screening accuracy and efficiency. Its cost-efficient nature also offers mass production opportunities.

2. Adjustable Rotary Damper (Patent No. I795695):

Professor Xiao Yao-jung from the Department of Vehicle Engineering created an adjustable rotary damper using magneto-rheological fluid technology. The damper eliminates frictional wear, consumes minimal energy, and provides rapid response and high precision control. It has

applications in spin bikes, rehabilitation devices, and bicycle suspension systems, contributing to intelligent semi-active exercise and rehabilitation systems.

3. Connector and Method for Increasing Its Data Transmission Rate (Patent No. I751081):

Developed by Professor Eric S. Li from the Department of Electronic Engineering, this invention addresses resonance issues in USB Type-C connectors by modifying line widths of differential transmission lines. It enhances data transmission efficiency, eliminating signal degradation and meeting USB 3.2 Gen 2x2 standards for faster speeds.

Bronze Medal Highlights:

- Edge Connector with Structure for Improving Resonance Issues (Patent No. I812513):

Also developed by Professor Li, this innovation solves resonance issues in PCIe connectors by introducing a standard ground structure, improving high-frequency signal transmission and meeting PCIe 5.0 standards.

- Ceramic Membrane Prepared by 3D Printing Technology (Application No. 113117077):

Professor Chen Shiao-shing's innovative ceramic membrane, developed using advanced 3D printing technology, is designed for applications in wastewater treatment and microbial fuel cells. This ultra-thin membrane, with a thickness ranging from 0.01 to 1.5 cm, demonstrates exceptional durability in harsh chemical environments. The invention's unique structure and functionality earned it the prestigious MSI Award.



Taipei Tech Shines with International Honors at the iF Design Student Award and ADC Young Ones

Taipei Tech's Department of Industrial Design is gaining international recognition! Product design students Lin Yun-jhu and Lim Pei-cher won the highly competitive 2024 iF Design Student Award for their Trekking Pole Rental Station concept, representing just 1% of all submissions. The award ceremony took place in Milan, Italy. Additionally, graduate students Lee Yuan-chieh and Guo Jia-xin received the Young Ones Student Award at the 2024 New York Art Directors Club Annual Awards (ADC) for Touchable Message—the only winning entry from the Asia-Pacific region in the product design category.

The iF jury commented, "Some people only realize that they need a trekking pole after they start climbing, especially those with little mountaineering experience who may not fully understand their physical capabilities. In this instance, this design can enhance their experience and motivate them to continue."

Advisor Huang Meng-fan from Taipei Tech emphasized that sustainability and AI are key trends. The Product-as-a-Service (PaaS) model, favoring renting over ownership, reduces waste and promotes sustainability, making it one of the six core Circular Economy Strategies popularized by the Ellen MacArthur Foundation. The students spent a year refining their designs and utilized generative AI to enhance their posters, demonstrating remarkable dedication.

Touchable Message, the ADC award-winning project, was inspired by Lee Yuan-chieh's observation that people with visual impairments struggle to hear mobile messages in noisy settings. Touchable Message lets users read messages by touching the clip-on braille display on their white canes, a specialized cane for the visually impaired. Through Bluetooth, the device can translate and display messages on the user's mobile phone in the standard six-dot braille, allowing users to access the messages anytime, anywhere.

Advisor Zheng Meng-cong believes this inclusive design aligns with the UN's sustainability development goal of reducing inequalities. It enhances information accessibility for the visually impaired, reflecting the designers' empathy and commitment to equality through thoughtful design.

Reflecting on her project, Lin Yun-jhu shared that hiking with her grandfather helped her understand the benefits of trekking poles in reducing muscle and knee strain. She realized that it is more environmentally sustainable if those who do not hike often can rent trekking poles instead of purchasing them. Together with Lim Pei-cher, they proposed Let's Summit, a trekking pole rental service that centers around green economy and sustainable development. Their concept involves installing rental stations at trailheads and midway points, enabling hikers to make one-way rentals, which means they can pick up or drop off trekking poles at different locations along their route. The system is designed to be accessible through a mobile interface and support mobile payments. The trekking poles also feature GPS and SOS buttons for safety, aiding rescue efforts and reducing search time.





Collaboration

Taipei Tech recently hosted the 11th International Problem-Based Learning (PBL) Competition Workshop, attracting 66 outstanding students from 12 partner universities in Japan, the United States, Vietnam, Thailand, Poland, and other countries. For eight days, together with 12 Taipei Tech students, they worked closely in teams to design and build smart autonomous vehicles. This project aimed to enhance the students' skills in software-hardware integration, problem-solving, and international collaboration.

Vice President Thomas C.K. Yang warmly welcomed the international participants, highlighting the first-time participation of Poland's Gdańsk University of Technology. Other newcomers included the New Jersey Institute of Technology, University of Cincinnati, Arizona State University, University of Washington, Kyushu University from Japan, and Hanoi University of Science and Technology from Vietnam. Institutions returning for a consecutive year included the University of California, Riverside, Thammasat University (Thailand), Ho Chi Minh City University of Technology (Vietnam), Osaka Institute of Technology, and Kyushu Institute of Technology (Japan).

Students were divided into nine teams to create autonomous vehicles featuring automatic navigation, precise color recognition, positioning, and object pickup. Using Arduino kits and 3D modeling and printing techniques, teams tackled programming, hardware integration, time management, data analysis, and strategic planning challenges. The goal was to finalize prototypes during the workshop and achieve the highest scores in the competition.

Mouli Suri from the University of Cincinnati expressed excitement about meeting new people and learning new skills, particularly working with Arduino. Huang You-sian, a student from the Department of Mechanical Engineering at Taipei Tech, participated for the second time and noticed a boost in enthusiasm with more participants from Europe and the US. He encouraged students to join, saying this is a great opportunity for cultural exchange and professional collaboration.

Taipei Tech and Osaka Institute of Technology have collaborated on this event since 2013. Dean Toshimitsu

International Collaboration at Taipei Tech: Students Compete in PBL Workshop

Morizane said this year's challenge emphasized practicality, urging participants to showcase their best skills. After witnessing the event's growth over 11 years, Professor Zhou Hong, also from Osaka Institute of Technology, praised the teams for overcoming significant challenges and delivering outstanding performances.

Thammasat University from Thailand sent seven students. Team leader Hsu Shu-han indicated that the Thai students noted collaborating with peers from different countries was an invaluable experience that enhanced their project design and teamwork skills. Chuang Ho-chiao, Dean of Research and Development at Taipei Tech, thanked students for their dedication, highlighting that many worked tirelessly, even sleeping in classrooms. He emphasized the importance of the international friendships formed during the event.

At the closing ceremony, Taipei Tech Vice President Jen Yi-jun thanked international students and encouraged them to share their experiences to inspire more participation in the future. Tohru Kamiya, Executive Vice President of the International Operations Headquarters at Kyushu Institute of Technology, thanked Taipei Tech for hosting and invited partner schools to Japan for next year's workshop, expressing confidence that the experience will bring students unforgettable memories and valuable friendships.

Taipei Tech Implements Mandatory AI Course for Freshmen, Encourages Creative and Responsible Adoption of: Expanding AI Integration for Faculty and Students

To help students develop critical cross-domain skills irreplaceable by AI, Taipei Tech is encouraging AI adoption among faculty members and students with an emphasis on exploration and critical thinking. Starting in the 2024 academic year, over 1,500 Taipei Tech freshmen are required to complete AI-related credits. Nine Taipei Tech faculty members, working in humanities, design, engineering, and business, have also recently received funding from the Ministry of Education to integrate generative AI in their teaching.

According to Vice President Yang Shih-hsuan, Taipei Tech launched the generative AI-integrated teaching initiative in academic year 2023, encouraging faculty members to explore innovative teaching methods using AI tools. Professors who integrate multiple AI tools in at least three sessions of their classes can apply for subsidies. More than 200 faculty members have also participated in the popular AI workshops since spring 2024.

Yang further indicated that Taipei Tech has restructured its programming course, which is a required course across the board, to incorporate AI and computational thinking. In addition to foundational AI courses, the university offers specialized micro-programs such as Artificial Intelligence and Deep Learning, Digital Engineering Technology and Artificial Intelligence, and Human-centered Natural Language Processing and Interaction Design, providing students flexibility in tailoring their learning paths.

Dean of Academic Affairs Hwang Yuh-shyan noted that over 90% of students find AI tools useful in increasing their interest in self-directed learning and enhancing their engagement with academic content. "Using generative AI in class helps me explore programs and methods I hadn't considered," shared one student.

In the Digital Signal Processing course, Professor Chang Chih-yuan collaborated with students to explore practical ways of using generative AI and compiled their findings into a Generative AI Usage Guide. Students also created a Generative AI Bylaw to note down standardized usage, enabling them to customize learning materials. For the final assignment, students used AI to create a course material review packet as a personal, customizable study aid, even adding a song to make studying more engaging.

In Lifestyle Research, Professor Chen Ching-i used tools like Padlet and ChatGPT for user research. She also asked students to utilize ChatGPT to explore what designers can do to nudge users to use a design in real life. This helped students examine generative AI's role in design and promoted critical thinking.

For the Internet Entrepreneurial Management course, Professor Yin Chin-ching guided students using AI tools for idea generation and product design refinement for their entries in the Makerthon 2024 competition. One project, ForeignSoul, seeks to help match international students with compatible study partners for cultural and academic exchange.

Professor Lin Hwai-en, who teaches Nanostructured Materials Processing, used ChatGPT and ChatPDF to make abstract concepts more accessible. This encouraged active class participation and improved students' problem-solving skills.

Taipei Tech continues expanding AI education through industry partnerships, preparing students for advanced AI roles and fostering cross-sector collaboration.



Impact

Empowering Refugee Children: Taipei Tech and Centre for World Citizens Unite for Innovation

Crossing borders to bring hope to more children! At the invitation of Chen Hsiu-yi, a teacher at Taipei's Xinsheng Elementary School in Taipei, the team of Taipei Tech's USR team for the Wood Culture Rooting Innovation USR Project II has partnered with the Centre for World Citizens for the very first time. Together, they designed woodcraft courses for Syrian refugee children at the summer camp in Turkey. Through these courses, the team hopes to share the art of woodcraft globally and inspire children 7,000 kilometers away.

Project leader Associate Professor Chang Ro-han of Taipei Tech's Department of Industrial Design stated that a spinning top construction kit named "Ever-changing" was devised by Song Jen-ping, a design manager at the Center of Woodwork Technology and Innovation, for this project. design manager Song Jen-ping from the Center of Woodwork Technology and Innovation developed the "Ever-changing" spinning top lesson plan. This construction kit simplifies and redefines reimagines the ways a woodturner is used. s and was taught to teachers at Taipei Tech. The first teacherfirst training session of this kit took place was completed from July 20th to August 10th. Trained volunteers—including university staff, non-Taipei Tech teachersinstructors outside of school, students, and NGO/NPO team members—later brought the teaching planconstruction kit to the Centre for World Citizens, teaching about 100 refugee children during the summer camp.

Since it is nearly impossible to ship everything internationally and local resources are pretty limited, Song developed a "single piece" design. All components are laser-cut onto a thin wooden board, allowing children to break apart and reassemble the pieces during lessons. This approach eliminates the need for woodworking machinery and teaches assembly principles in a hands-on way.

The woodcraft courses simulate real-world woodturning and wood painting. Besides teaching how to assemble a woodturning tablespinning top course, they teach children how to paint while spinning the tops, introducing drawing methods, color mixing principles, and visual persistence concepts. This

offers local children new cultural and craft perspectives, experiencing the meaning and skills of using wood.

"Spinning tops are a universal toy found in many cultures. We hope that through this beloved game, we can help Syrian children explore woodcraft techniques and beauty that can, accompanying them throughout their childhood," said Song. Centre for World Citizens reported that Syrian children especially loved the woodturning and coloring parts of the spinning top education, enjoying watching their colored tops spin and feeling a sense of calm. After the course, Taipei Tech's USR team interacted online with the children, sharing learning experiences and feelings about spinning tops and enriching their lives through woodcraft. Two phases terms of this woodcraft courses have been conducted, with continued efforts planned at the Centre for World Citizens.

Centre for World Citizens reported that Syrian children especially loved the woodturning and coloring parts of the spinning top education, enjoying watching their colored tops spin and feeling a sense of calm. They thanked Taipei Tech and Xinsheng Elementary School for this collaboration, which extended goodwill and provided a special woodcraft experience.

Teacher Chen Hsiu-yi, the teacher from Xinsheng Elementary School, said that last year, Manager Song guided students in painting spinning tops, inspiring her to encourage students to donate their hand-painted tops to Syrian refugees in Turkey. She thanked Manager Song and the Center of Woodwork Technology and Innovation for their support, allowing the children's goodwill and quality courses to extend abroad. After graduating, the two students who donated toys continued enthusiastically engaging in online exchanges with Syrian children, saying, "We didn't expect the toys we donated to have such a big impact; we feel very touched!"

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