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TECHNICAL **and** **VOCATIONAL** **EDUCATION**

ADVANCING INDUSTRY GROWTH
IN TAIWAN AND THE WORLD

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VISION

TAIWAN'S TECHNICAL & VOCATIONAL EDUCATION

AN IMPORTANT DRIVING FORCE BEHIND ECONOMIC DEVELOPMENT

Taiwan's technical & vocational education (TVET) has a history spanning 60 years. For a long time it has trained enormous numbers of first-class personnel with professional knowledge and skills in concert with Taiwan's goals for social development and industrial upgrading, laying a solid foundation for Taiwan's infrastructure. Technical and vocational education (TVE) played an essential part in Taiwan's Economic Miracle that drew world attention.

TVET has been training world-class workers with professional knowledge and hands-on skills, constantly expanding the scope of the technical training provided in close alignment with the emergence of new industries. Taiwan started by training talents for industry, and then invested in the education of talents for the electronics, service, and biomedicine industries in accord with the times. In the past 30 years, personnel training programs training have been developed for green energy technology, and smart machinery, two emerging industry fields included in the 5+2 Innovative Industries Plan. These programs are helping Taiwan's technical and vocational students shine out in their respective professional fields.



USEFUL PRACTICAL LEARNING

TVET emphasizes giving students useful, practical knowledge and skillsets. Everything from the construction of teaching facilities, and practical learning environments, to course design and the employment of professional teachers and instructors from industry is designed to align seamlessly with what is happening in industry. After completing their education, Taiwan's technical and vocational students are more able to immediately become part

of the backbone of Taiwan's industries and contribute to driving economic growth.

Taiwan has always placed great importance on TVE. New programs are continually being developed to enhance the quality of TVE and Taiwan has gradually become one of the major centers for tertiary level technical & vocational education in Asia.

Since September 2017, Taiwan's Ministry of Education (MOE) has invested funding of NT\$8 billion into a project of the refined environment for technical practices in technical and vocational colleges. The Ministry provides them subsidies to set up practical training sites to train highly skilled professionals for the 5+2 Innovative Industries Plan (Fig.1) and to purchase teaching equipment, to strengthen the practical abilities of technical and vocational students and bridge the education-employability gap. The results so far are:

- 91 cross-disciplinary practical training sites have been set up to train highly skilled professionals, breaking through the practice of a single department being responsible for the training framework.
- 26 industry talent training bases have been set up, creating large-scale, regional talent training centers.
- 19 industry-level environments that fully replicate industry workplaces have been set up, to give students hands-on learning environments that are exactly the same as their future workplaces.
- 1,656 subsidies have been given to assist vocational high schools augment their basic teaching and practical learning facilities and improve the education environment.

In the next three years, the MOE will invest an additional NT\$2.4 billion to construct 20 regional industry talent and technical training bases. Cross-ministry cooperation and strengthening regional industry-academia links,

to help local industries upgrade their technology and provide the large numbers of highly skilled workers that industries require.

The MOE respects the right of students to learn and it strives to build fully equipped hands-on learning environments on campuses, with facilities that meet industry specifications. At the same time, the Ministry actively promotes other large-scale projects to constantly improve the quality of TVE and enhance

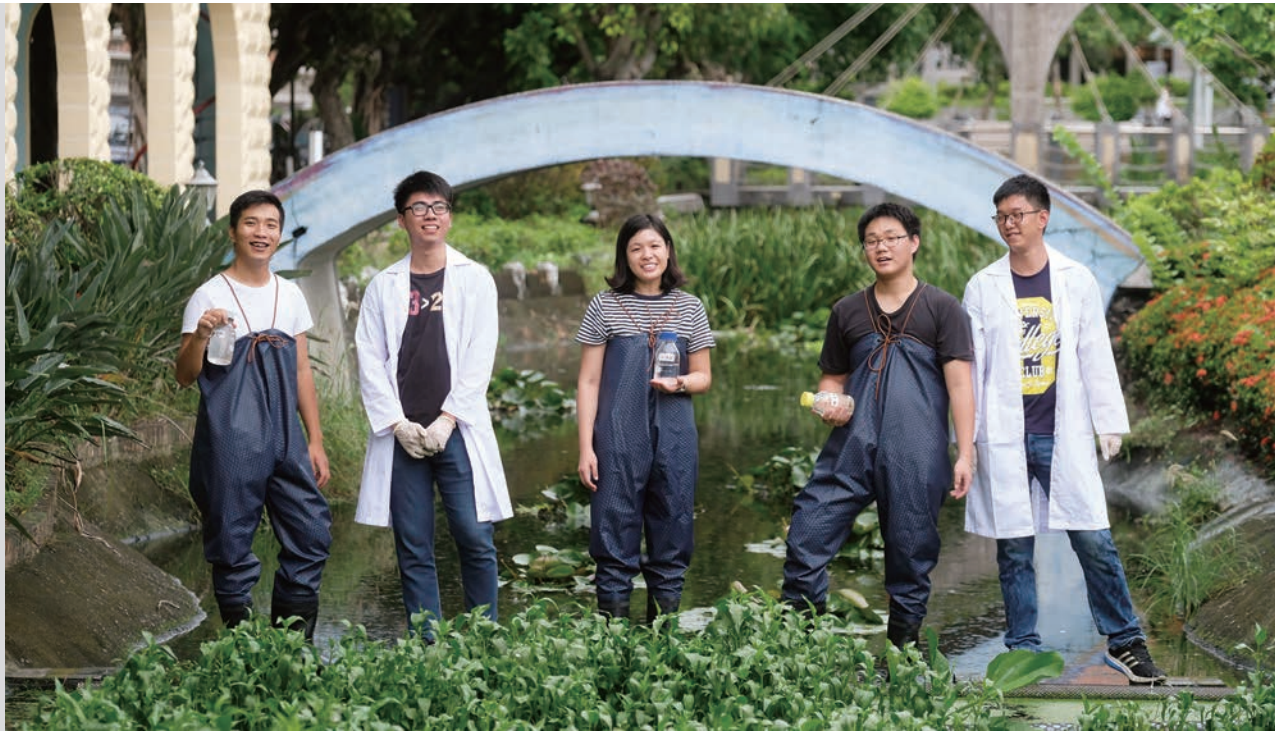
students' employment prospects. For example, the Higher Education Sprout Project assists universities to update their teaching facilities, and engage in further internationalization. The Ministry is also promoting Industry-Academia Collaboration Project that pave the way for technical and vocational students to find secure employment, and the TVE Special Achievement Student Support Program to ensure that outstanding technical and vocational students attend university.

FIGURE 1



5+2 INNOVATIVE INDUSTRIES PLAN

The 5+2 Innovative Industries Plan is a Taiwan government initiative to accelerate industry transformation by innovating seven industries with great potential for future development, to serve as the core of the next generation of industrial growth in Taiwan. The seven industries are smart machinery, the internet of things (Asia Silicon Valley), biomedicine, green energy, national defense, new agriculture, and the circular economy. The three core strategies of this initiative are: connecting with the future, connecting with the world, and connecting with local areas.



A FULLY ARTICULATED MULTI-PATHWAY EDUCATION SYSTEM

TVET system is comprehensive. It has multiple pathways and offers programs covering an enormous range of fields. Sequenced educational programs are available at junior high schools, senior secondary

schools, junior colleges, technical colleges, and universities of science and technology. Postgraduate master's degree and PhD programs are offered by graduate institutes. At each educational stage,

students can find an education pathway and program that best suits their personal strengths and aptitudes, and their study needs(Fig.2).

TVET is broadly divided into two levels that each systematically nurture first class skilled technical professionals: secondary level and tertiary level.

Secondary Level TVE is where TVE sets down roots. The MOE has been setting up regional career exploration and experiential demonstration centers in each county and city for the purpose of giving students in junior high school an initial understanding of the skills that different industries and jobs call for. At the senior secondary school stage, there are two broad categories of schools that offer TVE:

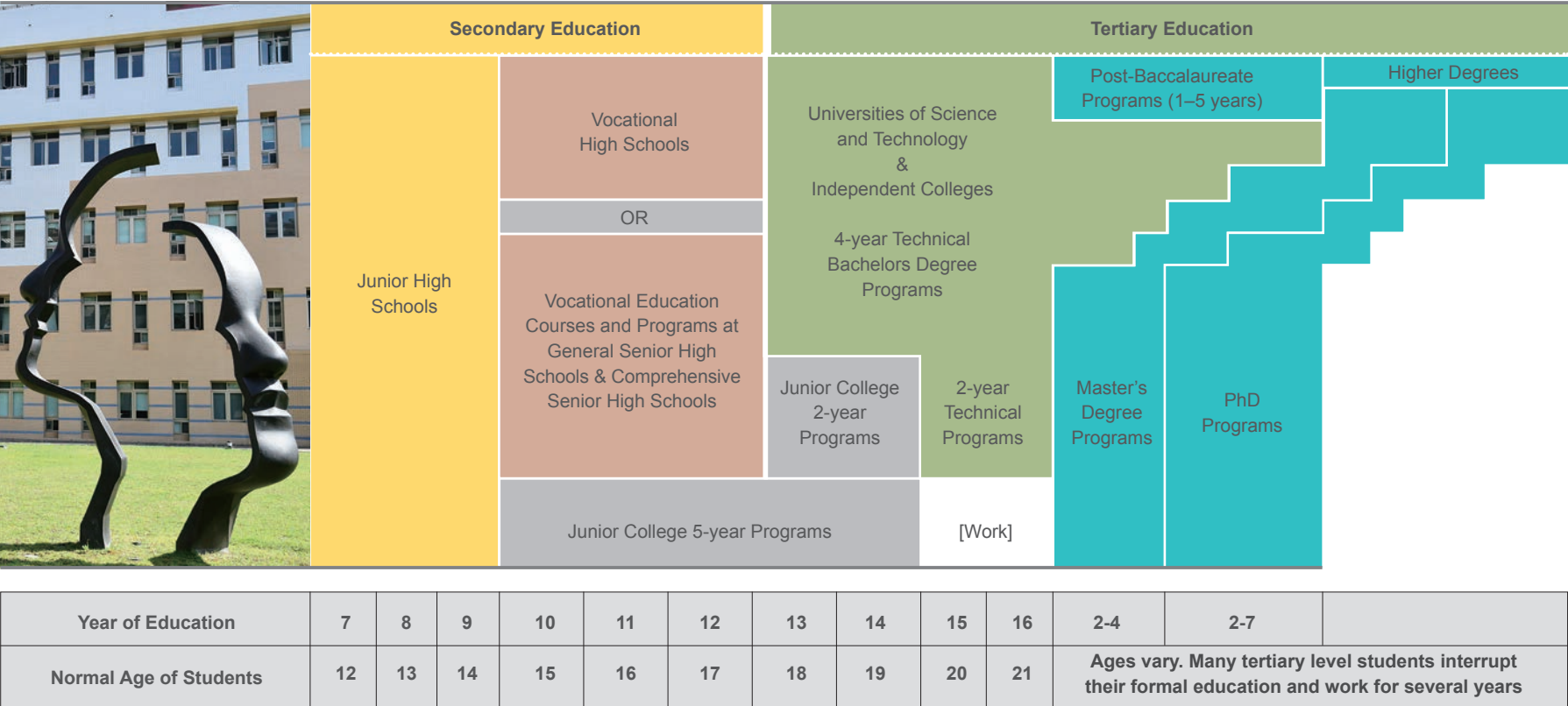
- 1. Vocational senior high schools (usually simply called “vocational high schools”).
- 2. General, senior high schools and comprehensive senior high schools that have separate affiliated divisions or departments offering that offer specialized vocational courses and programs.

Secondary Level TVE also includes technical arts education provided by junior high schools, and practical skills courses and cooperative education (work-study) programs provided by vocational high schools. The highly diverse spectrum of education programs available allows students to find courses that match their developing aptitudes and interests, and students are assisted to go onto higher education or begin working. The enormous range of programs also helps satisfy the need of the business world for an enormous variety of skilled personnel.

Tertiary Level TVE - the focus of TVE at this level is to provide knowledge-based training of first class professionals for Taiwan, and the rest of the world. This tertiary level education and training is provided by junior colleges, technical colleges, and universities of science and technology. Junior colleges offer two-year and five-year programs, while technical colleges and universities of science and technology offer associate degree, bachelor’s degree, master’s degree, and PhD programs.



FIGURE 2 SCHOOL SYSTEM



Chapter 1 says:
At the senior secondary school stage, there are two broad categories of schools that offer TVE : 1. vocational senior high schools (usually simply called “vocational high schools”), and 2. general senior high schools and comprehensive senior high schools that have separate affiliated divisions or departments offering that offer specialized vocational courses and programs.

TAIWAN'S TECHNICAL & VOCATIONAL STUDENTS SHINE IN INTERNATIONAL COMPETITIONS



Taiwan's MOE fully supports senior secondary level TVE students' participation in national and international competitions. It organizes five separate national competitions each year to test their skills in the areas of marine fisheries, everyday life matters, agriculture, commerce, and industry. Award winning students are selected to go overseas to undertake specialized study and research and enhance their global horizons. In the past 20 years, Taiwan's technical and vocational students have shone on the global stage time and time again, achieving excellent results at numerous major international competitions and demonstrating the quality of TVET and its robust ability to train outstanding people.

They compete, for example, in more than 50 skills categories of the biennial WorldSkills Competition—also called the Olympic Games of Skills—including electronics; polymechanics and automation; CNC lathe work; information network design; furniture carpentry; floristry; jewelry; and bricklaying. The WorldSkills Competition attracts thousands of top competitors from all over the world. Taiwan has sent a team of ten elite contestants to compete in every WorldSkills Competition since the 20th and won awards every time.

The results of the five most recent competitions show that the performances of Taiwan's technical and vocational students have continued to improve. The total number of medals won rose from 23 at the 41st WorldSkills Competition in 2011, to 38 at the 45th in 2019. These excellent achievements show that the skills of Taiwan's students have received international acclamation (Fig.3).

In the 41st to the 45th WorldSkills Competitions, Taiwan's technical and vocational students won 21 gold medals for skills ranging from mechatronics; information technology; breadmaking; electronics (commercial electronics); furniture carpentry; automobile technology; graphic design technology; door & window carpentry; clothing production; Western-style cooking; refrigeration and air conditioning; and sheet metal work. These results show that TVET is able to train people with world-class skills.

SYSTEMATICALLY NURTURING OUTSTANDING STUDENTS

The MOE launched the TVE Special Achievement Student Support Program in 2016 to ensure that competitors in international competitions and other outstanding technical students will be able to continue vigorously advancing their skills and knowledge after they enroll in vocational and technological college and universities (VTCUs). The

Project allows outstanding technical students to be able to strengthen their knowledge foundation in their respective professional disciplines, at the same time as they work hard preparing for international competitions.

The program gives VTCUs that admit outstanding technical students directly, or after a screening review, more flexibility planning courses and undergraduate programs, employing the three strategic approaches outlined below. The range of support programs are designed to boost the number of Taiwan's outstanding international competitors who become a new driving force for industrial upgrading in Taiwan and the entire world.

① Study Guidance

All colleges and universities place emphasis on having a system of academic advisors as part of their education plans. Advisors interact one-on-one with students for a period of from several months to several years. As well as assisting outstanding technical students adapt to university education, they answer students' questions about careers, life, and examinations. The colleges and universities also offer one-on-one or small-group mentoring sessions every semester to strengthen outstanding technical students' academic abilities.

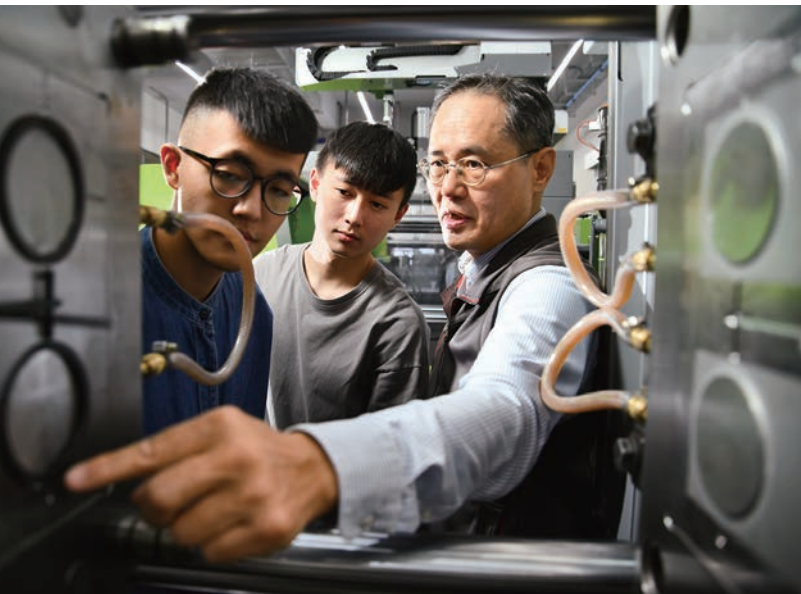


② Advanced Skill Training

Advanced training is offered to outstanding technical students in their respective skill areas, and colleges and universities that have admitted a high number of outstanding technical students are encouraged to establish advanced training programs for them. Examples include a mechatronics program for outstanding technical students at National Taiwan University of Science and Technology, a design program for outstanding technical students at National Yunlin University of Science and Technology, and a beauty care related program for outstanding technical students at National Taichung University of Science and Technology. These programs are not confined to using the existing departmental planning approaches and this is strengthening practical learning methods at both the course and the undergraduate degree levels.

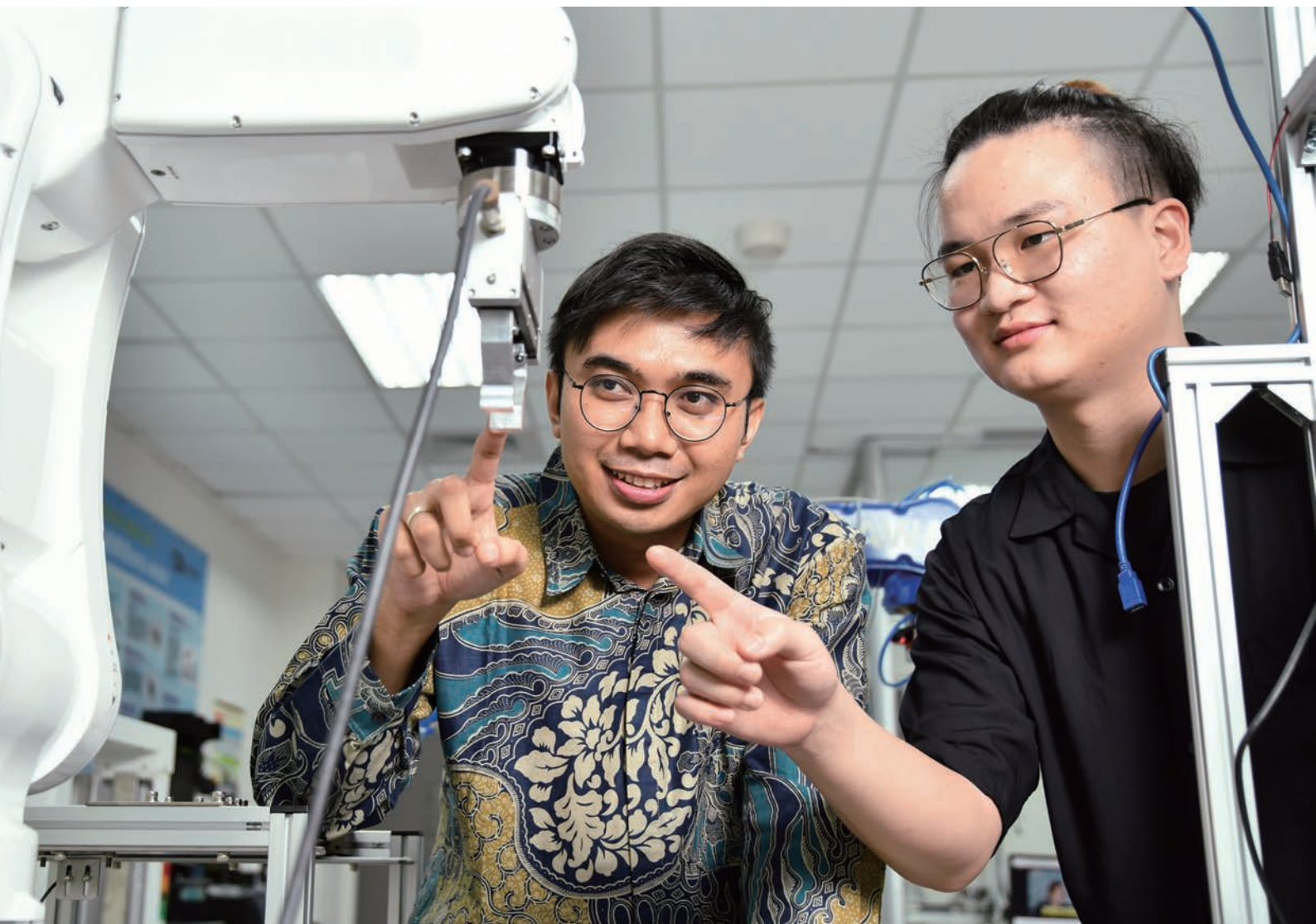
③ Employment Links

Assisting young people to find employment is an important national policy in Taiwan and Taiwan's VTCUs place importance on including compulsory internships in their programs, to prepare students to be job ready and able to find employment when they graduate. Colleges and universities all also actively work with industries and companies to open up more pathways to employment. They assist outstanding students to upgrade their technical skills and their



academic abilities, and at the same time provide further support measures to help those students find employment.

FORGING LINKS BETWEEN INDUSTRY AND ACADEMIA TO TRAIN PERSONNEL WITH THE KNOWLEDGE AND SKILLS NEEDED IN THE WORKPLACE



TVET is the most distinctive part of Taiwan's entire education system. It provides the greatest support for industry development and its graduates are the mainstay of Taiwan's industries. TVET is characterized by "learning by doing" and being "practical and useful" and hands-on practical teaching and learning, and nurturing students' practical skills and innovative abilities are at the heart of its mission. It promotes a wide range of industry-academia collaborative training measures to train outstanding professional and technical personnel with the knowledge, skillsets and ability to innovate that industries require. They will play an important part in giving impetus to industrial development and enhancing the innovation of industry R&D.



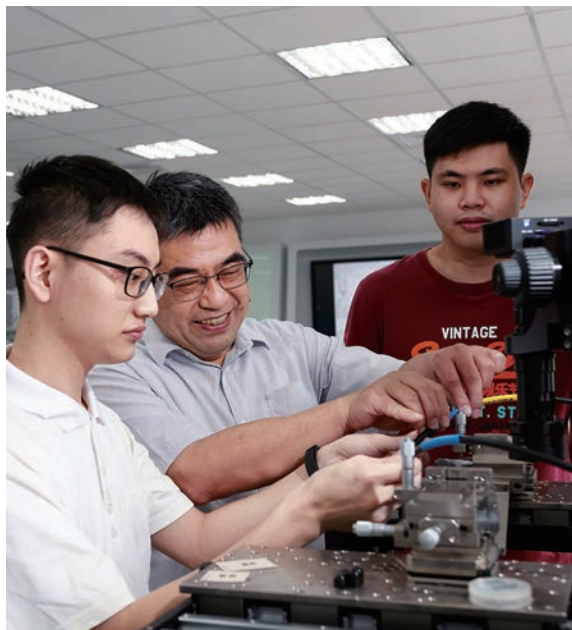
PROMOTING INDUSTRY-ACADEMIA COLLABORATION TO TRAIN PROFESSIONAL TECHNICAL PERSONNEL

The MOE promotes many different forms of Industry-Academia Collaboration (IAC) to train a skilled workforce in concert with social development and Taiwan's industrial upgrading. They include specialized training programs set up under the IAC Project and under the Industry College Plan. The university and enterprise partners jointly select the students, and plan internships, and other practical training for the courses, such as manufacturing projects to be completed. Such programs enhance the employability of students after they graduate and train personnel who are reliably equipped with the professional and technical skills needed by industries.

THE INDUSTRY-ACADEMIA COLLABORATION AND TALENT CULTIVATION PROMOTION PLATFORM, BOOSTING INDUSTRY-ACADEMIA INTERACTION

The MOE launched the Industry-Academia Cooperation and Talent Cultivation Promotion Platform (IACP) in 2018 in order to better understand industry development trends; analyze human resources requirements; promote industry working with VTCUs to provide practical teaching and hands-on learning; and establish customized models for training skilled personnel. It also set up 10 industry-academia networks in strategic industry fields: optoelectronic semiconductors, IT

and communications, plastics and rubber, the digital economy, smart machinery, smart textiles, green energy and wind power, steel and metal, marine technology, and new agriculture. The Ministry also organizes cross-ministry workshops on skilled personnel training for industry, collects data on the skilled workforce requirements of industries, and matches up industry and academia partners to work together to jointly train outstanding professional technical personnel.



INDUSTRIAL ACADEMIC COLLEGE PROJECT 2.0 ENHANCES EFFECTIVE INDUSTRY-ACADEMIA TALENT CULTIVATION COOPERATION

The MOE launched the Industry College Plan in 2014 to help VTCU students confirm their future career choices and what they involve before they graduate. It encourages VTCUs to collaborate with industries and offer professional training courses and programs that target those industries' specific human resource needs. Such courses and programs help students to find employment immediately after they graduate.

In 2020, the MOE launched Industrial Academic College Project 2.0 in response to structural adjustments of key industries and industry needs. It uses the IACP to match individual VTCUs with excellent companies to jointly create customized practical training programs for specific industries.

These collaboratively designed professional training programs include practical work with the collaborative industry partner and they assist students to obtain professional certifications, and to understand and adapt to workplace environments before they graduate. Students who take the professional training programs who are offered employment with the partner company after they graduate have better salaries and work benefits than other new employees working in the same positions in the same field. The companies can also appoint students as employees even before they graduate, effectively alleviating the difficulties that companies face recruiting suitably skilled workers.

Between the launch of the Industrial Academic College Project 2.0 in September 2020 and July 2021, 13 universities had offered 16 professional training programs. These programs that attracted 86 excellent companies to participate and jointly trained 526 students. After the students graduated more than 60 percent were retained by the collaborating company where they worked as part of their training. The following are examples of two programs that achieved outstanding results.



MARINE TECHNOLOGY INDUSTRY – TURBINE PROGRAM



Companies: Yang Ming Marine Transport Corporation,
U-Ming Marine Transport Corporation
University: National Kaohsiung University of Science and
Technology

Features:

- Planned propulsion modules required for power plant components such as thermal cycle knowledge and component equipment.
- Introduced industry resources, integrated these with the university's marine engineering talent training base, and conducts practical teaching of marine turbine engineers.
- Assists students to obtain STCW, IMO, and BST certificates.
- Trains highly skilled R&D and design professionals for the machinery, electric machine control, and propulsion systems required for sea and land transportation.

OPTOELECTRONIC SEMICONDUCTOR INDUSTRY – SEMICONDUCTOR PACKAGING & TESTING PROGRAM

Companies: Sigurd Microelectronics Corporation, Ardentec Corporation
Universities: Minghsin University of Science and Technology, Chien
Hsin University of Science and Technology, China
University of Technology

Features:

- A semiconductor packaging and testing industry-level training base serves as the core of the program.
- Carrying out IC packaging and testing simulations, teaching students to operate testing machinery.
- Assisting students prepare for examinations to obtain professional certificates for semiconductor packaging and testing engineers, and vacuum technicians.
- Trains high-quality technical management personnel required by the packaging and testing industry.



TALENT CULTIVATION

CULTIVATING PRACTICAL & PROBLEM-SOLVING SKILLS

Learning the knowledge and skills needed in the workplace is a global trend in secondary and higher education, and “learning by doing” has become one of the core ideas informing education. For many years, Taiwan’s MOE has been actively responding to students’ developing needs to be able to find employment by vigorously promoting a system of educating and training skilled workers that includes internships with enterprises. This helps students to expand their off-campus learning experience.

At the same time, the MOE is assisting VTCUs and tertiary colleges to upgrade their educational facilities and environments to implement “learning by doing” on campuses. Learning by doing allows students to develop practical and problem-solving skills from the very beginning and ensures that students have solid basic skills before they walk out the campus door for internships, and to bridge the gap between what students learn on-campus and the knowledge and skills needed in the workplace.

TVET puts great emphasis on teaching practical knowledge and skills that are used in today’s workplaces. In 2017, the MOE launched the project of the refined environment for technical practices in technical and vocational colleges, in conjunction with the government policy to train skilled workers for key industries, in particular for the 5+2 Innovative Industries. The project incorporates three major approaches to optimizing practical learning environments, to create practical training environments for teachers and students



that are in step with what’s happening in industries.

The three approaches are setting up:

- ① Cross-disciplinary learning environments.
- ② Hands-on training bases for training elite workers for industry.
- ③ Production lines replicating actual industry environments.

INDUSTRY-LEVEL PRODUCTION LINE BASES TRAINING WORLD-CLASS TECHNICAL PROFESSIONALS

INDUSTRY-LEVEL PRODUCTION LINE BASES

By November 2020, the project had resulted in the setting up of 91 cross-disciplinary, hands-on learning environments, 26 industry talent training bases, and 19 industry-level production line environments. The work procedures and the specifications of the equipment used in all these environments are exactly the same as those used in industry work sites, and they are being used to equip technical and vocational students with highly practical skillsets during their education and turn them into highly sought-after professionally skilled employees.

The following four examples of training programs incorporate industry-level production line environments and achieve outstanding results training skilled personnel for the railway, aerospace, intelligent production, and water reclamation technology industries.



EX. 1 A CRADLE FOR AEROSPACE MAINTENANCE TALENT



NATIONAL FORMOSA UNIVERSITY(NFU): INDUSTRY-LEVEL AEROSPACE MAINTENANCE HANGAR

NFU built a replica aircraft maintenance hangar based in its Department of Aeronautical Engineering, which was established over 20 years ago. The training area hangar meets the European Union's European Aviation Safety Agency (EASA) specifications and is used to train high-level skilled technical professionals, by upgrading students' aerospace industry skills and providing mentoring to help them prepare to take the examinations to obtain civil aircraft maintenance certificates.

The replica hangar is just like the maintenance and repair hangars of aerospace companies. It can be used to conduct regular maintenance of Ae270 aircraft and pre-flight, daily, 360-degree, and A, B, C, and D checks in accordance with the maintenance plan stipulations. Dismantling, inspection, installation, functional testing, and quality assurance verification work can also be carried out in accordance with inspection work checklists and Airplane Maintenance Manuals (AMMs) so students are able to fully participate in actual aircraft repair and maintenance work.

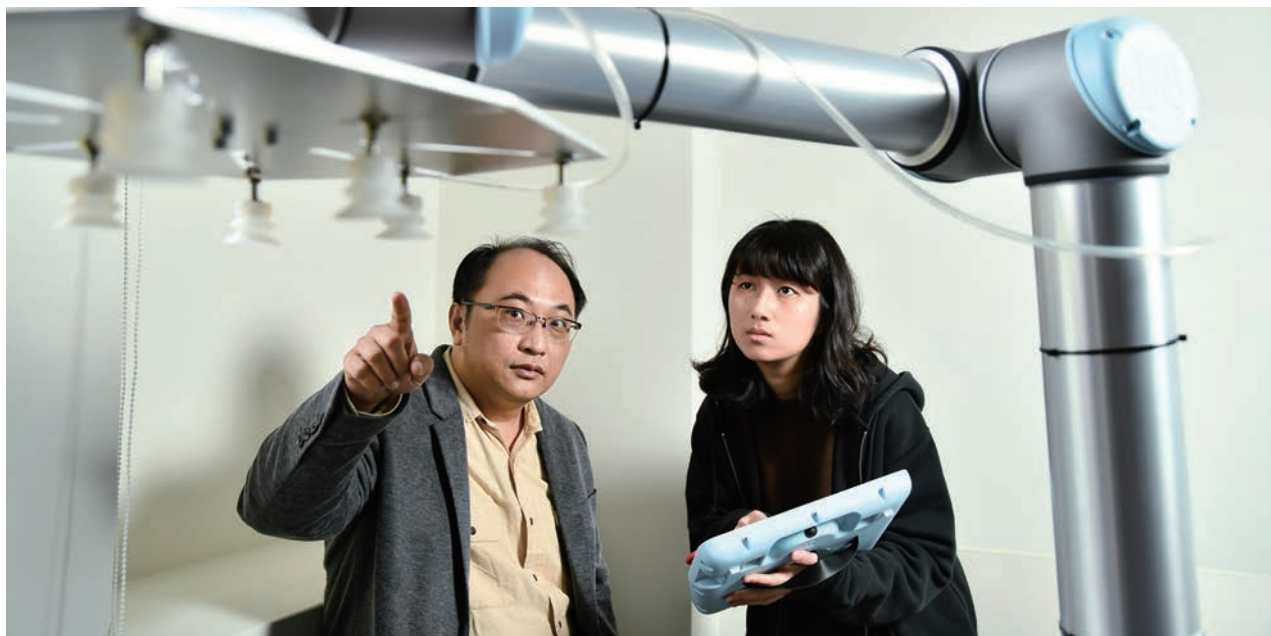


EX. 2 NEW ELITE RAILWAY PROFESSIONALS TRAINING PROGRAM

NATIONAL KAOHSIUNG UNIVERSITY OF SCIENCE AND TECHNOLOGY(NKUST): FORWARD-LOOKING RAILWAY ELECTROMECHANICAL TECHNOLOGY TALENT TRAINING BASE

NKUST established Taiwan's first Forward-Looking Railway Electromechanical Technology Talent Training Base with funding from the MOE to train professional technical workers for the railway industry. This fully equipped base is currently the most complete of any at a university or junior college in Taiwan for training railway testing and maintenance management and electromechanical engineering personnel. The education program covers four principal axes: railway signaling, railway electrification systems, vehicle practical work, and railway interlocking communications. The base also provides a practical learning environment for railway track work.

The university also established an integrated mechanism for training skilled workers. It links the resources of railway-related industries, government, and academia, and professionals from Taiwan High Speed Rail, Kaohsiung Rapid Transit Corporation, Kaohsiung Mass Rapid Transit Bureau, and Taiwan Railways Administration are invited to give lectures and teach. The university also offers courses jointly with partner universities and colleges, helping students develop professional core competencies and practical skills. In addition, it assists students prepare to take the examinations to obtain relevant professional proficiency certification, and to find employment, helping them to seamlessly become part of Taiwan's rail industry.



EX. 3 TALENT CULTIVATION FOR INDUSTRY 4.0

MING CHI UNIVERSITY OF TECHNOLOGY(MCUT): ADVANCED INTELLIGENT REAL-TIME FACTORY

MCUT has built an advanced intelligent real-time factory based on an iOS platform. Observation followed by emulation, demonstrations, games, drills, practical exercises, and internships are used to teach students to understand how to think about problems and develop the skills to solve them. In this way students who will be the future talent for Industry 4.0 are being steadily trained and nurtured.

The advanced intelligent real-time factory is just like the processing plant of a small- or medium-sized enterprise. It uses an iOS-based mobile integrated management system (MIMS). Mobile phones and tablets can be used to see the actual production status, environmental conditions, and cost data in real time. The environment also allows students to operate standalone equipment such as automated guided vehicles (AGVs), robotic arms (Universal Robots), and automated warehousing.

The factory integrates training to help students obtain the iPAS (Industry Professional Assessment System) certifications required by smart production and operations professionals, to enhance their competitiveness finding employment.

MCUT works together with other universities of technology in northern Taiwan—National Taiwan University of Science and Technology, National Taipei University of Technology, Lунghwa University of Science and Technology, Tungnan University, Hsing Wu University, Asia Eastern University of Science and Technology, and Lee-Ming Institute of Technology—to allow students from all of these universities to participate in practical courses and practical training offered at the factory. They are jointly creating an environment training skilled workers for Taiwan's Industry 4.0.

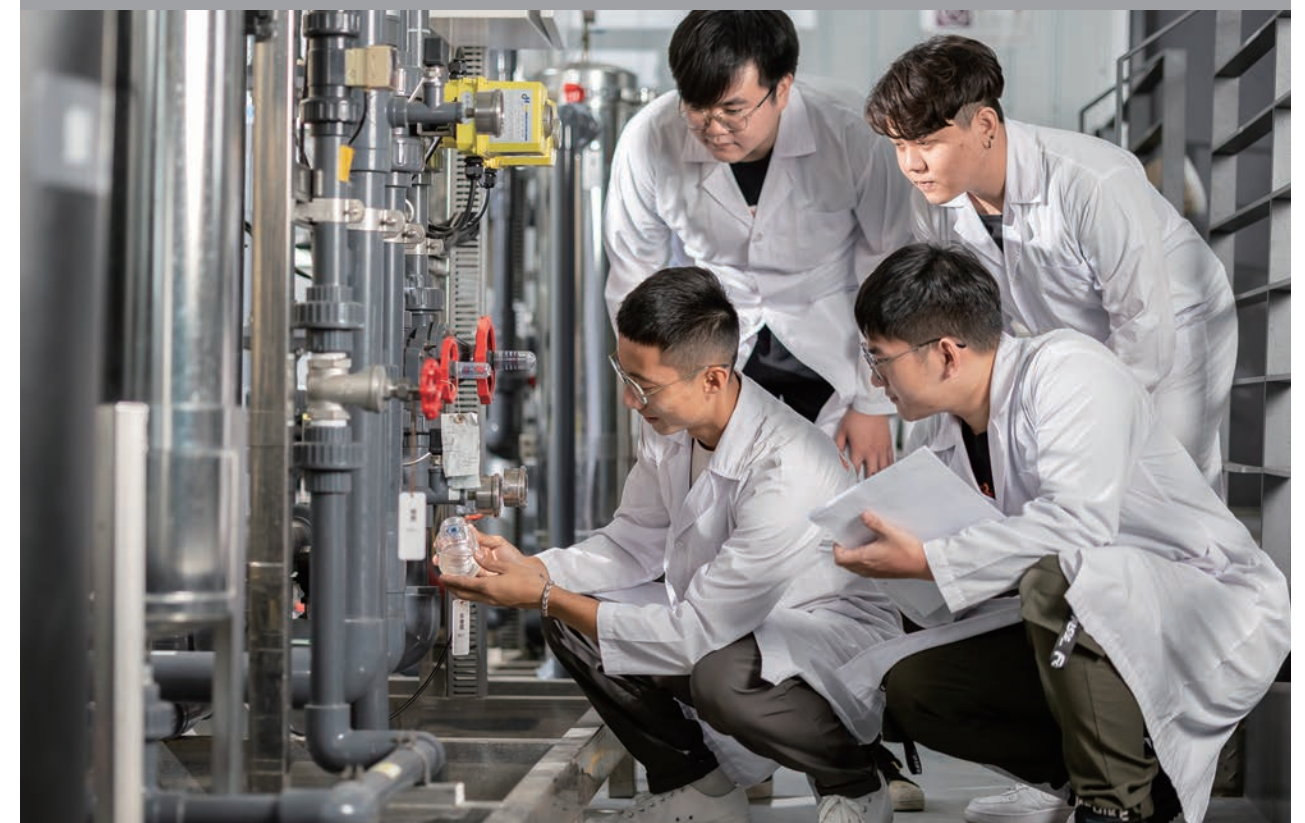
CHIA NAN UNIVERSITY OF PHARMACY & SCIENCE(CNU): INDUSTRY-LEVEL RECLAIMED WATER PLANT FACILITIES & TALENT TRAINING BASE

Reclaimed water, also called recycled water, refers to waste water that has undergone treatment and can then be reused. The advantage it offers is a stable water supply that is not affected by periods of high and low water supply, or by the seasons, and the reclaimed water industry can generate hundreds of billions of NT dollars. To train skilled professionals for this industry, CNU set up a talent training base incorporating industry-level water reclamation plant facilities. The training base has four facilities for hands-on learning: an industry-level water reclamation plant; a reclaimed water resources IoT system and monitoring center; an electromechanical equipment practical learning

plant; and a piping and wiring fitting practical learning plant.

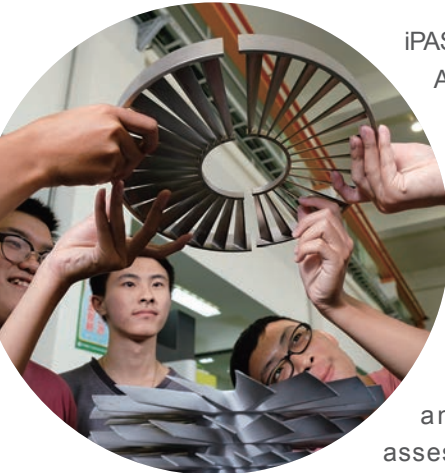
The base is linked with the university's five waste water treatment plants; an artificial wetland; water supply facilities for using reclaimed water for toilet flushing and irrigation; a unit operation and water quality testing laboratory; and sewerage operations and maintenance technical skills assessment examination areas. The result is a talent training base with a fully articulated set of industry-level plants, from upstream sewage works to downstream reclaimed water use.

EX. 4 WATER RECLAMATION TECHNOLOGY TALENT CULTIVATION



DESIGNING TRAINING TO MEET INDUSTRY SPECIFICATIONS

The development of widespread higher education has seen having specialized skillsets become a key requirement for finding employment. To upgrade the evaluated technical skills of students, Taiwan’s MOE assisted ten technical & vocational universities and colleges to establish 39 iPAS practical skills assessment areas and teaching facilities (Fig. 4) that target six specialized sectors: digital communication, information, intelligent machinery, green energy, biomedicine, and interdisciplinary fields.



iPAS - the Industry Professional Assessment System - was established by the Industrial Development Bureau of the Ministry of Economic Affairs to assess the and certify the knowledge and skills proficiency of professionals who will work in industry. Having an iPAS practical skills assessment area on-campus

allows universities to offer practical courses based on the certification assessment test requirements and to purchase equipment that meets iPAS specifications and is widely used in industry settings. This ensures that the technical training offered by the universities is consistent with industry needs. These facilities can also become bases where cultivation of future talent can take root.

TVET puts great emphasis on students developing high level skills in their area of specialization, and integrating education with employability. The MOE is implementing a wide range of projects to progressively improve the practical teaching environments of universities, and boost matching the requirements of both industry and academia. It is also encouraging universities and colleges to share their educational resources with other nearby educational institutions to create an education system where learning resources are shared and teachers and students alike mutually stimulate and benefit each other. Taiwan’s technical & vocational colleges and universities are also collaborating with each other to create high quality TVE.

CULTIVATING INNOVATIVE THINKING BY TAKING SOCIAL RESPONSIBILITY IN LOCAL SETTINGS

The MOE actively encourages universities to practice University Social Responsibility (USR) and university teachers and students to put their intellectual assets and personal resources to good use. They can do this by leaving the campus and collaborating with local communities to solve local social and economic development problems, and construct local innovation and development ecosystems. It launched the University Social Responsibility Program in 2017 and began formally implementing Stage 1 (2018–2019) the following year.

Core tasks of USR Program projects are to build local connections and train skilled workers. The universities conducting projects should start by addressing local needs, with a people-oriented approach. The expectation is that universities will integrate their relevant knowledge, expertise, and resources and focus on what is required for local development that suits the local situation; strengthen local connections; attract skilled people who can work together, and use innovative thinking to spur local development. The USR Program also encourages universities to more actively take the initiative to link the resources of the schools, colleges, and universities in each region, boost local industry-academia talent cultivation and local employment, give impetus to industrial upgrading and social sustainability, balance urban and rural development, and boost universities’ contributions to regions and local areas.

Stage 2 of the USR Program (2020–2022) fully incorporates the important international social responsibility practices of the United Nations’ Sustainable Development Goals. It also continues to enhance university students’ awareness of public issues; guides university teachers and students to show care and enthusiasm for the cultural, social, and economic environments that they live in; and encourages universities to share planning that had excellent practical outcomes in Taiwan with other countries through collaborations with foreign universities and international organizations. This will enhance Taiwan’s contributions to global sustainable development and raise the international reputation of Taiwan’s higher education. Bilateral and multilateral cooperation will also bring in excellent international resources for higher education and professional organizations.

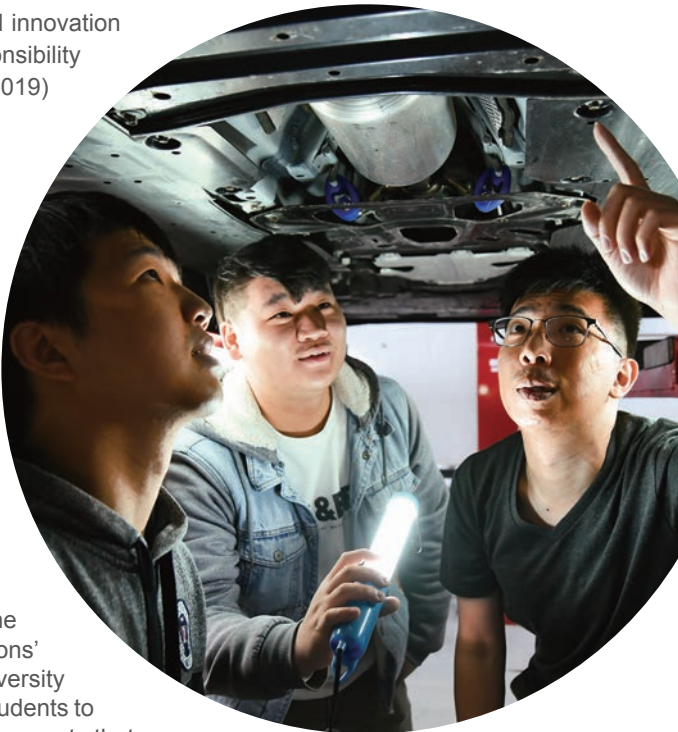


FIGURE 4 39 iPAS PRACTICAL SKILLS ASSESSMENT AREAS FOR DIFFERENT PROFESSIONS AT 10 SCIENCE AND TECHNOLOGY UNIVERSITIES

University	National Kaohsiung University of Science and Technology	National Taiwan University of Science and Technology	National Taipei University of Technology	National Formosa University	National Yunlin University of Science and Technology	Cheng Shiu University	Kun Shan University	Lunghwa University of Science and Technology	Jinwen University of Science and Technology	National Penghu University of Science and Technology
Antenna Design Engineer	●	●			●			●	●	●
Electric Vehicle Mechanical and Electrical Integration Engineer	●		●	●						
Mobile App Developer	●	●			●					
Mobile Game Developer	●	●			●					
3D Printing Engineer	●	●	●	●						
Intelligent Manufacturing Engineer	●		●	●						
Printed Circuit Board Process Engineer	●		●	●				●		
Big Data Analyst	●	●		●						
Internet of Things Application Engineer	●		●		●					
Machine Learning and Application Engineer						●	●			
Sensor Systems Integration and Application Engineer						●	●			
Robotics Engineer						●	●	●		



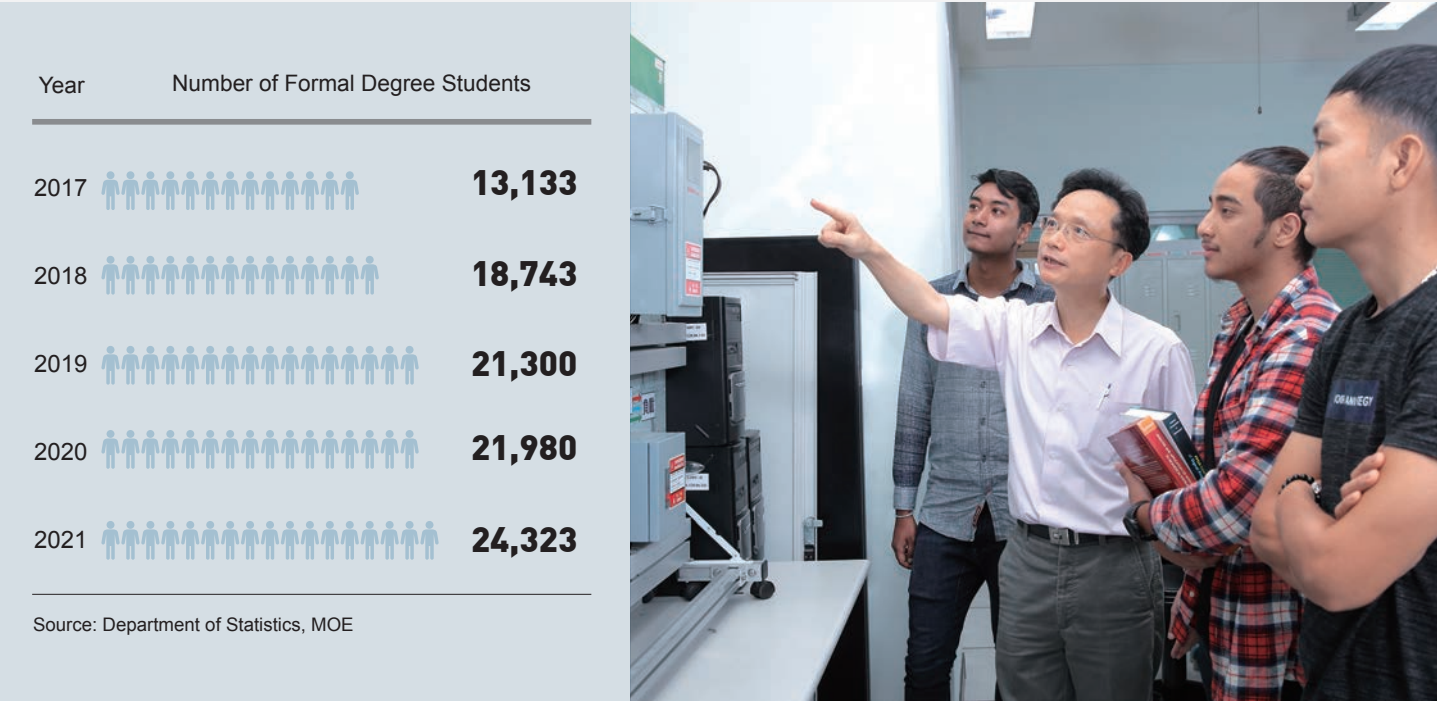
INTERNATIONALIZING CAMPUSES

BUILDING INTERNATIONAL CAMPUSES, ENROLLING STUDENTS FROM ALL OVER THE WORLD

Taiwan's society is multicultural and inclusive, and its university campuses are the same. Taiwan's teachers and students warmly embrace the world and students from all countries. The Bilingual Nation 2030 Policy is providing support to many VTCUs to construct bilingual campuses that are user-friendly for foreign students. This will also encourage local students to study abroad and contribute to TVET continuing its dynamic engagement in international exchanges.

As Figure 5 shows, the number of international students undertaking degree programs in Taiwan's VTCUs has been growing year by year. The number grew by 46 percent from 13,133 students in 2017 to 24,323 students in 2021, and it continues to climb.

FIGURE 5 THE NUMBER OF INTERNATIONAL STUDENTS IN VTCUs IN TAIWAN IN THE PAST 5 YEARS



PROMOTING EMI

In recent years Taiwan's higher education system has been a core driving force promoting the government's bilingual nation policy, designed to help Taiwan engage more fully in international society. Taiwan's MOE is working hard implementing measures set out in the Program on Bilingual Education for Students in College (BEST), building bilingual campuses that are user-friendly for foreign students. The focus of the program is on strengthening students' English-language proficiency, promoting English as a medium of instruction (EMI), providing more opportunities for students to go overseas to study or on exchanges, and enhancing the international competitiveness of Taiwan's higher education. It is hoped these measures will help attract more foreign students to study in Taiwan.

The focus is on learning and on enhancing students' international mobility. In conjunction with the national policy, TVET is developing EMI support systems for teachers and increasing the recruitment of international teachers with EMI teaching experience overseas. In order to create sound EMI learning environments.

Education incorporating EMI is being progressively implemented. Under the BEST, selected key training colleges and universities will have a minimum of 25 percent of their second-year undergraduate students having English listening, speaking, reading, and writing proficiency levels of at least CEFR B2 (upper intermediate level) within the next two years. In addition, 20 percent of the course credits earned by a minimum of 20 percent of second-year undergraduate students and first-year master's degree students will be for courses taught in English. Incorporating English into teaching the content of specialized professional training courses will be gradually promoted, and the proportion of EMI courses will be increased. These measures will also help foreign students fully assimilate into campuses in Taiwan.

The seeds of international exchanges are blossoming on Taiwan's technical and vocational campuses. Every VTCU has thrown its doors open to the world and extends welcoming arms to the people of the world.

Taiwan's VTCUs have opened their doors to students from all over the world, and they actively collaborate with foreign universities. By 2020, 81 VTCUs in Taiwan had established 160 joint degree programs with universities overseas. These enable students to enjoy access to the learning resources of two universities and will enhance their international mobility (Fig. 6)

FIGURE 6 VTCU INTERNATIONAL COOPERATION IN 2020

Year	Countries Involved	VCTUs with Overseas & Cross-strait Sister-Schools	Current transnational joint degree programs	Academic cooperation & exchange projects with international & cross-strait universities
2020	50	1,036	160	210

Source: University and College School Affairs Open Data Platform, MOE



TALENT CULTIVATION FOR NEW SOUTHBOUND POLICY COUNTRIES LINKING TAIWAN'S INDUSTRIES WITH THE WORLD



Taiwan is a major higher education center in Asia. For the past 10 years, Taiwan's MOE has been actively expanding the range of foreign student enrollment programs, to train more highly skilled professionals to work in industries around the world. These include programs targeting students from countries in Southeast Asia, South Asia, and Oceania where the economy is taking off.

According to statistics from the Office of Trade Negotiations of the Executive Yuan, in 2020 the total trade between Taiwan and New Southbound Policy (NSP) countries was US\$108.4 billion, representing an increase of 12.9 percent over the previous five years. In that total trade figure, investment by NSP countries in Taiwan amounted to US\$380 million, an increase of 58.3 percent over the previous five years, while Taiwan's investment in NSP countries amounted to US\$2.83 billion, an increase of 19 percent compared to 2016.



In the context of this high degree of economic interaction, the MOE launched the New Southbound Talent Development Program in 2017. The program provides grants and scholarships, and customized courses and programs. More and more outstanding people from NSP countries are coming to Taiwan to study using different pathways, and the number of such students has been increasing every year with the exception of 2020. The number of students from NSP countries studying in Taiwan in 2020 was 55,482. This was lower than the number in 2019 because of the COVID-19 pandemic. The number of these students grew 34 percent in the four-year period from 2017 to 2020(Fig.7).The highest number came from Vietnam, followed by the number from Malaysia, and from Indonesia (Fig. 8).

NEW SOUTHBOUND POLICY INDUSTRY-ACADEMIA COLLABORATION PROGRAM FOR INTERNATIONAL STUDENTS



Taiwan's MOE is making Taiwan's excellent TVE more widely available by providing funding and subsidies to encourage VTCUs to actively recruit students from NSP countries. It has, for example, set up the IAC Program, the Short-term Program of Technical Training for Foreign Youths, and the Short-term Program for Mid- and High-level Technical Personnel. Students from NSP countries have access to customized courses, and internship programs jointly planned with partner companies, and a whole set of support measures are available when they come to Taiwan. TVET takes hands-on 'learning by doing' as its starting

point for comprehensively training the professionals needed by industry, ensuring that they develop the appropriate specialized skillsets.

The main focus of the New Southbound IAC Programs for international students is to train the skilled professionals needed by local industries and Taiwanese enterprises. The fields taught include mechanical engineering, electrical and electronic engineering, information management, tourism management, and long-term care. Between 2017 and 2021, 48 VTCUs offered a total of 332 such programs for international students, and 9,858 students came to Taiwan to take one. A further 93 programs with a target enrollment of 3,661 were approved in 2021. So far, 39 of these programs are now underway with 1,461 students. Launching of the other programs was postponed until February 2022.

By April 2021, 527 of the 779 students who enrolled in 2017 — the first year that these programs became available — stayed in Taiwan to work after graduating. The majority are working in the fields of architecture, engineering, business, and IT, contributing to effective international interaction.

FIGURE 7 THE NUMBER OF STUDENTS FROM NSP COUNTRIES COMING TO TAIWAN IN THE PAST 4 YEARS

Year	2017	2018	2019	2020
Number of Students	41,379	51,970	59,720	55,482

Source: Department of Statistics, MOE

The New Southbound IAC International Program offers both degree programs and non-degree programs, and each of these categories offers a range of different courses. People from NSP countries can find a suitable program that matches their learning needs and current skill level(Fig. 9).

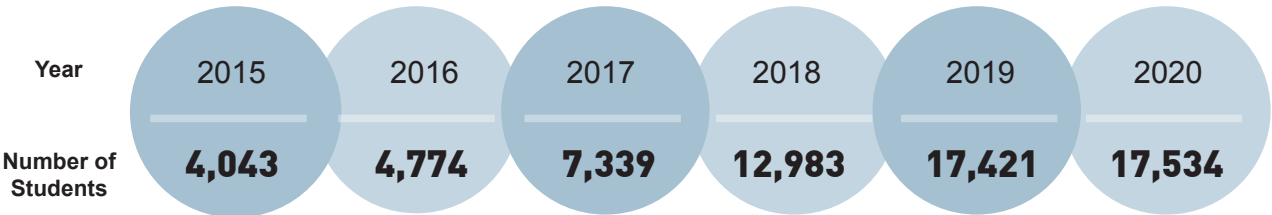


FIGURE 8 NUMBER OF STUDENTS FROM NSP COUNTRIES IN TAIWAN IN 2020

Rank	Country	Number of Students
1	Vietnam	17,534
2	Malaysia	13,964
3	Indonesia	13,804
4	Thailand	2,803
5	Philippines	2,241
6	India	2,239

Source: Department of Statistics, MOE

FIGURE 8.1 NUMBER OF VIETNAMESE STUDENTS IN TAIWAN REACHES A NEW HIGH



Source: Department of Statistics, MOE

INDONESIA AND TAIWAN COLLABORATE TO CULTIVATE TALENT

Indonesia is an important NSP country which Taiwan helps with talent cultivation. In recent years, Indonesia has been actively improving its technical and vocational education and offering more opportunities for students to do internships in factories, with the aim of training highly skilled technical workers for industry. In May 2018, a delegation of high-ranking government officials from Indonesia’s Ministry of Technology, Research and Higher Education including the Director-General of Higher Education and presidents of national technical and vocational institutions visited Taiwan. The Indonesian officials assessed Taiwan’s technical and vocational higher education as being of high quality and decided to work with Taiwan to train and educate skilled professionals.

Taiwan and Indonesia jointly launched the 2+i Industry-Academia Collaboration Program, a G2G—government to government—talent development collaboration model, in 2018. The Indonesian government designates industry fields and then selects outstanding students to take part in selections for admission to universities in Taiwan, to undertake degree programs. The number of Indonesian students coming to Taiwan has been dramatically larger since 2018 (Fig. 10). Taiwan’s MOE is planning to use a similar model for future G2G collaborations with other NSP countries.

As the total trade and bilateral investments between Taiwan and NSP countries continue to grow, the need for Taiwan to collaborate with NSP countries to jointly train and retain skilled workers will continue to escalate. VTCUs will continue to expand the range of New Southbound IAC Program



that they offer for international students, and work with NSP countries to jointly train the skilled workers needed by their respective industries. Taiwan’s government agencies will integrate their resources to encourage more of the students that take these programs to remain in Taiwan to work after they graduate.

VOCATIONAL EDUCATION PROGRAM FOR OVERSEAS COMPATRIOT STUDENTS

The Vocational Education Program for Overseas Compatriot Students, promoted by the Overseas Community Affairs Council and the MOE since 2014, complements Taiwan’s New Southbound Policy and addresses talent cultivation and industrial development needs. Under this program, overseas Chinese students from seven countries in Southeast Asia—Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam—who have graduated from junior high school can come to Taiwan to complete a three-year program at a senior secondary school. After they graduate, they receive course counseling advice before enrolling in a four-year program at a university of science and technology. Industry-academia cooperative education includes numerous courses that combine learning theory and knowledge at senior secondary school and university, with practical training, workplace visits and internships with one or more industry partners that provide many hands-on experiences. This teaching approach that places equal importance on hands-on learning gives the students a solid foundation for future employment.

FIGURE 9 NEW SOUTHBOUND POLICY INDUSTRY-ACADEMIA COLLABORATION INTERNATIONAL PROGRAM

 Degree programs	IAC Program for International Students	EX. Yuanpei University of Medical Technology addresses the needs of Malaysia’s health care industry →Collaboration with Prince Pharmaceutical Co. Ltd →The Department of Biotechnology and Pharmaceutical Technology Pharmaceutical Production Program →Training pharmaceutical industry professionals
	Short-term Professional Skills Enhancement Program for Foreign Youth	EX. National Kaohsiung University of Science and Technology addresses the business management needs of Vietnam, Cambodia, and Laos → Collaboration with Cathay United Bank → Department of Finance Short-term Training Courses for Teachers → Training business administration personnel
 Non-degree programs	Short-term Technical Training for Foreign Youth Program	EX. Shu-Te University addresses the needs of Vietnam’s service industry sector →Collaboration with E-DA Royal Hotel & E-DA Skylark Hotel →The Department of Hospitality and Baking Management Short-term Training Courses for Foreign Youth →Training catering service personnel

FIGURE 10 LARGER NUMBERS OF INDONESIAN STUDENTS IN TAIWAN SINCE 2018

Year	2015	2016	2017	2018	2019	2020
Number of Formal Degree Students	4,394	5,074	6,453	11,812	13,907	13,804

Source: Department of Statistics, MOE

WELCOME TO TAIWAN

INFORMATION ABOUT STUDYING & LIVING IN TAIWAN

DIVERSITY & INCLUSION

Taiwan's society is diverse and inclusive: democracy and freedom are highly valued and people's different values and life styles are widely accepted. The cultures of Europe, America, Southeast Asia, and East Asia integrate well with Taiwan's local culture, and Buddhism, Taoism, Christianity, Islam and other religions coexist peacefully.



A COMFORTABLE LIVING ENVIRONMENT

Taiwan offers an enormous variety of fine foods, both its own local delicacies as well as a wide variety of international cuisines, so foreigners in Taiwan can easily find familiar dishes and a taste of home. There are convenience stores everywhere, open 24 hours a day. As well as selling foods and other everyday items, they provide bill payment, ticket-purchase, photocopying, and other services. Taiwan has an excellent extensive transport network, including High-Speed Railway, Mass Rapid Transit (MRT), Taiwan Railway, and long-distance buses, making almost everywhere easily accessible.

INFORMATION & ENQUIRY SERVICES

Ministry of the Interior National Immigration Agency, R.O.C. (Taiwan) provides a general enquiry service for foreigners living in Taiwan. They can ask questions and get helpful information about visas, residency, working, education and culture, taxation, National Health Insurance, transportation, seeking employment, medical treatment and health care, personal safety, social services, the law, and other matters.

Information Hotline: Domestic 1990, Overseas 886-800-024-111

Service Hours

- Mandarin, English, Japanese: 24-hour year-round service
- Vietnamese, Indonesian, Thai, Khmer : 9:00 AM – 5:00 PM Mon-Fri (except public holidays)

For More Information

- Study in Taiwan: <https://www.studyintaiwan.org/>
- Ministry of Education: <https://english.moe.gov.tw/mp-1.html>
- New Southbound Talent Development Program: <https://www.edunsbp.moe.gov.tw/>
- Ministry of the Interior National Immigration Agency: <https://www.immigration.gov.tw/>



Study in Taiwan



Ministry of
Education



New Southbound
Talent Development
Program



Ministry of the
Interior National
Immigration Agency

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