

Technical and Vocational Education in Taiwan Republic of China







In this era of globalization and informationization, students urgently need the professional and practical ability to acquire and analyze information and to have language skills that will give them global mobility and help them to adapt to changes across different industries and careers. This will enable them to adapt in response to the rise and fall of different industries, and professions, and move freely and find employment anywhere in the world. To this end, the vision of Taiwan's technical and vocational education (TVE) is to "train skilled professionals and technicians with hands-on skills, the ability to innovate, and employability". We hope that our TVE students will go on to

become important drivers of our national economic development, social integration, technological progress, and industrial innovation.

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Development of Technical and Vocational Education

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Development of Technical and Vocational Education

Taiwan's technical and vocational education (TVE) has developed and advanced in tandem with national economic development, and it is an important factor in the country's economic development.

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- Promotion of "5 plus 2" industries
- Promotion of 10 major service industries
- Promotion of 4 key smart industries
- Promotion of 6 key emerging industries

Development of Two-Trillion and Twin-Star Industries

2000s

Ratio of Students at Vocational High Schools, and at other Senior Secondary Schools 5:5

 Promotion of industrial cooperation

 Internationalization of technical and vocational education 2010s Ratio of Students at Vocational High Schools, and at other Senior Secondary Schools 6:4

 Industry cooperation to develop professional and technical talents with the appropriate skills and temperament

Implementation of 12-year basic education for citizens



According to the latest statistics, Taiwan has 342 TVE institutions, comprising vocational high schools, and vocational and technological colleges and universities: 39% in northern Taiwan; 26% in central Taiwan; 29% in southern Taiwan; and 5% in eastern Taiwan, or on outlying islands.

In the last five years, the average population of vocationa land general senior high school students has stood around 262,281, with vocational high school students making up 55% of the total number of senior secondary school students. Over the same period, the average population of vocational and technological college and university students has stood around 247,283, with vocational and technological college and university students making up 47% of university level students. Overall, students at vocational and technological colleges and universities and universities account for 53% of the student population at the post-secondary education level.



Vocational high school students : general senior high school students Students from vocational and technological colleges and universities : students from general universities



Ratio of students from vocational and technological colleges and universities to the student population at the postsecondary education level





53%





TVE can be divided into two major stages: secondary school level TVE, and post-secondary TVE. Secondary school level TVE is provided by technical education courses at junior high schools (also called "practical arts program"), vocational high schools, vocational education divisions at general senior high schools, and vocational area programs at comprehensive high schools .Postsecondary TVE is comprehensively catered to by junior colleges, technical colleges (also called "institutes of technology"), and universities of technology. (See diagram below)

School System





Drawing





IQV range hood

Closed loop

wind tunnel

The admission mechanisms to undertake TVE emphasize students' aptitude, interests, preferences, and natural abilities. At the senior secondary level and for five-year junior college programs, admission is non exam-based. Admission to some programs requires students to have particular skills or aptitude.

For two-year junior college programs and four-year programs at technical colleges, there is a range of different pathways for admission to two-year junior college programs and four-year programs at technical colleges. The learning content covered by TVE is closely related to the relevant industries. TVE stays in step with the rapid development of emerging industries, and provides a mechanism for continuing education that offers flexibility and diversity, as well as more learning opportunities for workers and individuals undergoing career transitions. Furthermore, TVE also allows for work experience, licenses, and other forms of knowledge to be acquired at our senior high schools and universities, and consequently, facilitates the development of transversal competencies.





First aid hands-

on training

 Information on provision of continuing education by continuing
education institutions



Fishbone experiments

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TVE provides basic and specialized programs designed to meet the demands of the industrial, commerce, agriculture, domestic life, marine fisheries, arts, and nursing industry sectors for skilled personnel by training people with the professional skill sets required by each industry and field.

3D printing lessons



Department of aquaculture facility-based farming practice







Department of tropical agriculture internship



Department of food & Beverage Management internship





A professor at a high-speed 3D printing research center explaining the operation of 3D printing



Department of animal science intership





Source: Department of Statistics, Ministry of Education

Software coaching course



Department of nursing-First aid drills





Department of nursing students learning about artificial blood vessel caring



Long-term care program



Department of nursing CPR students program



Long-term care program





A automated machinery operation class



A Biotech class



Culinary arts students



Source: Department of Statistics, Ministry of Education

Humanities and Art 13.8%

Social Sciences, and Law

Sciences 6.4%



Department of aquaculture Students learning about fry screening





Aroma differentiation & evaluation classroom



Students discussing their finished 3D printing projects with a teacher at a high-speed 3D printing research center



Department of nursing-First aid drills





Industry experts can be engaged to work together team teaching with teachers in the TVE sector, to meet industry demands for technical education. Such collaborative teaching, and jointly planning the teaching of specialized practical topics, boosts the connections between TVE and industry. Between 2014 and 2018, senior secondary school teachers undertook business or industry related study a cumulative total of 4,877 times. In the same period, 15,631 full-time teachers of professional or technical subjects at vocational and technological colleges and universities were required to undertake industry related study or research. At the end 2017, 9,377 teachers, approximately 60% of the total number required to do so, had completed or were currently undertaking appropriate industry related study or research.

As well as developing students' professional and practical skills, TVE programs encourage the students to and participate in international competitions with their ideas and innovative creations, and showcase what they have learnt. At the 2017 WorldSkills Competition—often called the "vocational skills Olympics"—competitors from Taiwan won four gold, one silver, and five bronze medals, and 27 medallions of excellence, an overall award rate of 88%. Their outstanding performance was achieved in the face of strong competition from other countries.

In the 2017 iF Design Award, four universities of technology in Taiwan were named among the top 25 in the world, and the same year, three universities of technology in Taiwan were named among the top 15 in Asia in the internationally renowned Red Dot Award: Communication Design, also known as the "Olympics of Design". These rankings are wonderful achievements.



Students gold medals winners at the International Invention, Innovation & Technology Exhibition



Outstanding Technical and Vocational Education Award winners



The 8th Outstanding Technical and Vocational Education Award winners





NT\$16 billion is being invested in TVE equipment and facilities to maintain close connections between TVE and current business and industry realities: vocational high schools are receiving NT\$8 billion, and vocational and technological colleges and universities are receiving the other NT\$8 billion, to establish regional technology development centers that integrate the industry, government, academic, and research sectors, and join forces to set up teaching facilities and share practical work programs.







The Industry 4.0 Center



nformation on national senior secondary school skills competitions



Plan for optimizing hands-on learning environments at TVE institutions





TVE places importance on facilitating students in educational institutions doing internships in industry settings to help them acquire practical work skills, and on cooperation between the government, businesses, and the university sector to provide practical technical internships and industryuniversity collaborative professional training programs. These help students to develop good working attitudes, enhance their adaptability, and improve their professional skills and employability. By 2017, the business sector had invested a total of approximately NT\$1.9 billion into industry-university cooperation. Between 2004 and 2018, vocational high school students participated in an annual average of 4,152 industry internships. Between 2000 and 2016, the number of off-campus internships undertaken by students from vocational and technological colleges and universities increased by 2,000 every year, reaching 480,000 in 2016, a substantial result.





Fine-turned

Comprehensive

regional network

teaching facilities

skills gap

Information on ndustry master's orograms



nformation on promotion of special employment oriented courses





In order to create future industries and future business opportunities, and to boost the capacity of people in the TVE sector to think innovatively and practically integrate ideas across different disciplines, fab labs have been established in 24 senior secondary schools. These fab labs provide a comprehensive range of advanced digital fabrication hardware equipment and software resources that give students the ability to put their ideas into tangible operation. More fab labs will continue being set up, and in future, emerging technologies and AR, VR, and MR will be incorporated and cooperation will be established with logistics networks to make these resources available to elementary and junior high schools.

Innovative fabrication education and promotion bases have been established in five national vocational and technological colleges and universities. Each base takes advantage of its institution's abundant technical capabilities and establishes links with educational institutions and local communities in its surrounding area. In addition to providing students and members of the public with the space and equipment to unleash their creativity and engage in handson activities, the bases also organize various promotional activities that teachers and students at all education levels can personally participate in.



Students researching and learning emerging AR, VR, and MR technologies at the Research Center for Information Technology Innovation







Information on promotion of 3D printing in senior secondary schools by the K-12 Education Administration of the Ministry of Education





Integration of international students into Taiwan's learning environment



Taiwan is located in the eastern part of Asia, at the junction of Northeast Asia and Southeast Asia, and our educational institutions have set up educational exchanges with similar institutions in other countries, guided by the core objectives of "focusing on people, engaging in bilateral exchanges, and sharing resources". By 2016, 40% of our vocational and technological colleges and universities had established joint dualdegree programs with an overseas counterpart institution, and 73% were offering courses fully taught in English, creating a bilingual campus environment. About 27% of the total number of foreign students from 18 countries-comprising 10 ASEAN countries (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Thailand, Singapore, the Philippines, and Vietnam), six South Asian countries (Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka), New Zealand, and Australia-who are studying overseas are studying or engaged in research or training in our universities. These figures clearly indicate that our international exchanges with New Southbound countries are flourishing.



University Entrance Committee for Overseas Chinese Students



New Southbound Policy Website





TVE in Taiwan has been developing for more than half a century. It has trained and educated an enormous number of outstanding highly skilled professionals and technicians and laid an important foundation for Taiwan's economic development. Our future efforts will continue to go into training highly-skilled people who have interdisciplinary competencies and globally mobility, to thereby transform Taiwan's skilled technical personnel into members of the international skilled workforce, who can play their role anywhere in the world.







Department of International and Cross-strait Education



Lighting the Way for Technical and Vocational Education

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