

Higher Education



Taiwan enjoys excellent global competitiveness in spite of limited land and natural resources. According to the World Competitiveness Yearbook 2013 published by

the International Institute for Management Development (IMD) in Switzerland, Taiwan ranked eleventh overall in global competitiveness among 60 countries, and was notably

outstanding in “Economic Performance” and “Business Efficiency.”

One reason for Taiwan’s economic prowess is its quality human resources, an accomplishment closely tied to the issue of higher education. In the Global Competitiveness Report published by World Economic Forum (WEF) published in 2013, Taiwan ranked eleventh in “Higher Education and Training.” Taiwan’s human resources provide highly-qualified workers in sufficient supply to the labor market and bring positive benefits for industry innovation.

Universities, Colleges and Junior Colleges

Higher education institutions in Taiwan include 2-year junior colleges, 5-year junior colleges, and universities. Like most countries, the study period is 4 years for an undergraduate university degree, 1 to 4 years for a master degree, and 2 to 7 years for a doctoral degree.

The popularization of education has led to a rapid increase in universities, colleges and student enrollment numbers, although the figure has leveled off in recent decades. In SY2013, there were 161 universities and colleges and 1,345,973 students.

Reforms in teacher training have played an important part in the expansion of higher education. Significant improvements in teacher quality can be attributed to policy adaptations and the newly implemented evaluation system. Currently, Ph.D. degree holders account for over 80% of faculty in universities, the figure having increased by 15% in the past 10 years. Professors account for one-third of all teaching personnel.

To maintain competitiveness, Taiwan’s government has invested more than US\$400 million in higher education annually in the last five years to encourage universities to enhance their standards for research and teaching, and the results have been remarkable.

Although Taiwan’s higher education system has gained recognition for its achievements in many areas, tuition still remains very reasonable. Tuition is about NT\$58,720 (US\$1,924) dollars per year at public universities, and about NT\$109,944 (US\$3,552) dollars at private universities. College tuition stands at only 10~20% of the national per capita GDP, considerably lower than that of many other countries, which in some cases is over 30%.

The Ministry of Education and several universities have jointly established the Higher Education Evaluation and Accreditation Council of Taiwan in the year 2005 to conduct evaluations of universities. This evaluation consists of Institutional Evaluation and Program Evaluation. The former is held every 6 years to examine whether schools have achieved their strategic goals, while the latter is also conducted once every 6 years to examine the quality

of faculty, teaching, research, and service. The Ministry also encourages universities to obtain international certification. The Higher Education Evaluation and Accreditation Council of Taiwan, for example, is a member of several international organizations, such as the Asia-Pacific Quality Network (APQN) and the International Network for Quality Assurance Agencies in Higher Education (INQAAHE).

Another of Taiwan’s significant achievements is in the area of “Innovation”. In a report from the World Economic Forum (WEF), Taiwan ranked eighth among 148 countries in innovation in 2013. To encourage students to unleash their creativity, the Ministry screens and selects outstanding students to study abroad under sponsorship by the government. In recent years, students from Taiwan have been making their mark in international design competitions such as Germany’s iF Awards and Red Dot Award every year.



More Signs of Progress in Education

Everywhere around the world competition is getting fiercer and more talent is migrating across borders. How can Taiwan's higher education industry face up to these challenges so as to promote commercial innovation while strengthening Taiwan's international competitiveness?

Knowledge and innovation is the only way to

increase global competitiveness. Countries the world over spare no effort in investing in the cultivation of innovation and talent by improving their higher education systems. Thus since 2006, the Ministry of Education has been promoting a plan to develop world-class universities and research centers. The program was renamed "Heading toward Top Universities" and has been in place since April 2011. After 7 years, we are now reaping the rewards:

A Taiwan is Reaching Out to the World

Seven years after the plan started, 11 of the universities that have been subsidized by this plan as of the end of 2013 are ranked in the world's top 500 universities as well as the world's top 100 universities in the global university rankings (UK's The Times and Quacquarelli Symonds, QS). In addition, night schools are ranked among the 500 schools in Shanghai Jiao Tong University's Academic Ranking of World Universities and their ranks improved year by year. In 2013, 9 schools made the list. This is a sign that the subsidized schools have inspired themselves to meet international benchmarks and rise up to international competition with the top schools in the world.

B The Quality of Students Continues to Improve

Top universities in Taiwan have instigated reforms in their general education systems and interdisciplinary programs. Currently, there are 109,397 students enrolled in interdisciplinary programs as of the end of 2013. The universities are also fulfilling their social responsibilities, as seen in actions like support of disadvantaged students. Between 2006 and 2013, a total of 21,622 disadvantaged students enrolled in colleges and universities, a figure growing at an average rate of 139% annually.

In addition, the top universities have also responded to public outcry at poor higher education quality, promising to improve the learning environment and boost student motivation to enhance the quality of university students.

C The University is Becoming a Place for Innovation in Business

Taiwan's innovative ability has been recognized in the World Competitiveness Yearbook published by IMD. In recent years, the number of patents and new breeds developed by Taiwanese universities has grown by 161%, and income from intellectual property rights has increased by 240%. This momentum will in turn stimulate more innovations and increase contributions to society.

D Campuses Play Host to the World

"Internationalization" is the key to global visibility. Whether the universities in a country are attractive to foreigners is also a criterion in evaluating national power. More than 60,000 foreign scholars have visited Taiwan, and nearly 55,079 foreign students are studying in Taiwan's top universities. In addition, 15,189 students received the opportunity to be exchange students overseas. On average, almost 473 international conferences are held in top Taiwanese universities each year, thereby broadening the horizons of Taiwanese students.

Vocational and Technological Colleges and Universities

The institutions in this category include junior colleges, technical colleges, and universities of technology, accounting for a total of 91 schools. Junior colleges are divided into 2-year programs and 5-year programs. Technical colleges and universities of technology can admit students for

associate degrees, bachelor degrees, and master degrees, while universities of technology can also accept Ph.D. students.

In accordance with government policy, the key points for development in these schools are:

A Implement Multiple-Route Admissions

Vocational and technological colleges and universities recruit students through separate examination and enrollment systems:

① **5-year junior colleges recruit graduates of junior high schools. Entrance methods include examination-free entrance and special examination admission.**

② **The 4-year colleges/universities and the 2-year junior colleges employ the following methods:** 1. screening by skill; 2. recommendation; 3. registration and placement; 4. The Star Plan, which is designed to balance the gap between urban and rural areas and support disadvantaged students in remote areas; 5. application using the Subject Competence Test for a given year and other written reviews that may be beneficial for the review.

③ **2-year colleges accept the graduates of 5-year and 2-year vocational schools**



through several methods: 1. recommendations of students with outstanding skills; 2. registration and placement; 3. individual recruitment.

B Enhance Teaching Quality

Promotion of government programs, enhancement of teaching quality, and adoption of a practical approach towards teaching

① **Implement the Program for Promoting Teaching Excellence for vocational and technological colleges and universities, the goals of which are:** 1. Enhance professional teaching skills; 2. Strengthen curriculum design; 3. Strengthen student motivation; 4. Set up teaching evaluation systems; 5. Implement and/or improve all areas related to teaching quality.

② **Strengthen teaching and learning abilities:** 1. Offer subsidies for instructors to gain work experience in public and private firms; 2. Recruit from industry to enhance teaching; 3. Promote off-campus internships.

③ **Encourage students to participate in various competitions:** Outstanding students have been able to apply for airfare and accommodation subsidies to take part in international competitions and exhibitions.

④ **Encourage professional certification:** Instructors and students are encouraged to obtain professional certification to improve teaching

quality and enhance students' competitiveness in the job market.

C Promote Evaluations of Vocational and Technological Colleges and Universities

Each school is evaluated as an integral unit every 5 years to improve quality of education.

D Promote Cooperation Between the Industry and Academia to Cultivate Talent

Encourage interaction between academia and industry; design specific courses or curricula to meet the needs of industry personnel.

① **Collaboration between industry and academia** : develop vertical education systems, i.e., 3 in 1 (vocational high schools + vocational colleges + enterprises) and 4 in 1



(vocational high schools + vocational colleges + enterprises + employment training centers) programs in various combinations of education plans:

3+2 (3 years in vocational high school and 2 years in 2-year junior college);

3+2+2 (3 years in vocational high school, 2 years in 2-year junior college, and 2 years in a 2-year technical college/university completion program);

3+4 (3 years in vocational high school and 4 years in a technical college/university);

5+2 (5 years of junior college plus 2 years in a technical college/university completion program)

② Masters Degree Program for Industry Professionals

③ **Industrial colleges**: The academy offers customized training courses that focus on the specific recruitment needs of industry and are oriented toward student employment.

④ Second-Baccalaureate Program

E Emphasize Innovation and Research / Development

To encourage collaboration between schools and industry, the government offers subsidies to six schools that establish regional cooperative work-study centers and promotes the "Industrial Region Work-Study Program", with the goal of improving the national economy and contributing to society.

F Launch International Partnerships and Exchanges

To cultivate international talent, the government encourages schools to establish an international environment, including internationalized campuses,



curricula, and administration systems, and promote global cooperation and exchanges, including international collaboration in research and teaching, teacher and student exchanges and other collaborative programs.

G Developing Technological University Paradigms

Guide technological universities to build the research and development environment for industry and academic innovations and bring about the cultivation of talent and intellectual properties in this area. Establish diverse paradigms for the characteristic development of vocational and technological colleges and universities to encourage seamless collaboration between the schools and industry and strengthen the foundation of industry and technology. ●



Smart Device Turns Rehab into a Fun Game

National Cheng Kung University



Chiang Wei-chun, 29, PhD Program, Department of Electrical Engineering. Chou Te-feng, 23, 6th-year student, Department of Medicine. Chi Yi-chun, 20, 1st-year student, Department of Medicine. Yang Tsung-han, 22, Graduate School of Electrical Engineering

A system developed by a SMART Crew from National Cheng Kung University that integrates the Internet cloud to quantify the degree of rehabilitation of patients has outclassed other competitors at the Microsoft Imagine Cup in Taiwan and will represent Taiwan in the global finals in July.

The Ubiquitous Smart Rehabilitation Network System (Usens) enables doctors to determine a patient's condition in real time and is helpful in setting improvement goals, while in the meantime empowering patients to be optimistic and positive about their treatment.

Seeing so many stroke patients suffering pain, the team was motivated to combine clinical experience and their abilities in

engineering system development to create a cloud rehab system. Usens is installed together with a series of games that feature motions frequently used in rehab treatment, making rehab more fun for patients while at the same time automatically recording motions and statistics incurred in the process.

“Our hope is that real-time statistics that show patients' improvement will enhance their courage and positive attitude,” said the team. Doctors and therapists can also observe patients' condition and give feedback accordingly.

Led by Dr. Lin Yu-ching, Professor in the Department of Electrical Engineering, and Wang Jeen-shing, an Assistant

Researcher in the Department of Electrical Engineering, Hsu Yu-liang, the team consists of members from both fields. The cross-field collaboration inevitably encountered considerable “field shock” during the research and development process. Nevertheless, the SMART Crew eventually overcame all obstacles by thinking from the opposite angle and brainstorming to find practical solutions.

“A successful research team must have members from different fields. In our case, medical professionals detected clinical problems which could be solved by electrical engineering scholars using technology,” said team member Chou Te-feng, a sixth-year student in the Department of Medicine.

The SMART Crew believe they have an advantage in the upcoming finals held in July, as they can integrate cross-field team members to solve problems and make Usens even more complete.

Origami Unfolds Concepts in Animal Conservation

Shu-Te University



Lu Kuan-ling, 23,
Sun Yu-tian, 23,
Cho Hsun-yang, 24,
Lyou Ying-ting, 23,
Kuo Tian-yu, 23,
Kuo Yu-chen, 23,
Lin Tai-hsin, 22,

Senior,
Department of Visual
Communication Design,
Shu-Te University



Origami animals in various colors and shapes captured the attention of viewers and won their seven joint creators the Best of the Best title in the Communication Design category in the red dot design award 2013.

The designs were originally a graduation project for the seven college students which sought to introduce the diversity of species in Taiwan through the popular craft origami. Each of the team members shouldered one specific task such as structure, visual, and layout design, and they discussed details to finally come up with the final product.

“Seeing other outstanding works made us realize that there are still lots of details that need to be considered when it comes

to design,” said the team. And through these creations we have seen diverse viewpoints and concepts.

“Design can convey messages and emotions through different forms, and this is why our passion for design continues to grow,” said the young artists. Most of them are keen observers of life and love to experiences different things that turn out to nourish their artistic abilities. They have also broadened their horizons through wider get access to lots of art or design-related publications and works.

“We have been inspired to put more effort into forging our skills,” said the team after winning the award.

They consider their status as students enrolled in the vocational education system to be an advantage as it provides a longer training period for techniques and practices that lay a well-grounded foundation for all the skills required for their art work. One slight drawback, on the other hand, might be that they receive less training in thinking, reading, and design theory as hands-on practice is emphasized more. ●