

# We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

185,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index  
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?  
Contact [book.department@intechopen.com](mailto:book.department@intechopen.com)

Numbers displayed above are based on latest data collected.  
For more information visit [www.intechopen.com](http://www.intechopen.com)



# Entrepreneurship Education for the Next Generation of Higher Education in Taiwan

*Jen-Chia Chang and Hsiao-Fang Shih*

## Abstract

2019/2020 The Global Entrepreneurship Monitor (GEM) analyzes the status of early entrepreneurship in various countries. Taiwan is higher than other countries' averages in the national entrepreneurial environment index, such as cultural and social norms, physical infrastructure, market entry control, and internal market vitality, business and legal infrastructure, transformation of research and development results, school-leaving entrepreneurship education and training, on-campus entrepreneurship education and training, government entrepreneurship plans, taxation and administrative systems, government policies and entrepreneurial financing, etc. Starting from 2020, the Ministry of Education has divided the innovation and entrepreneurship courses into two models, namely fundraising practical learning and training course modules and entrepreneurial management and action learning course modules. The themes and implementations of the courses include "Concepts and Practices in Entrepreneurship and Practice Simulation Learning Platform", "Concept Development and Practice-Business Operation-Company Establishment-Company Closure" and "Concept Proposal-Maker Practice-Business Model Briefing" and other aspects. This article will discuss, in the context of the development and current situation of entrepreneurship education in Taiwan, trends in entrepreneurship education for the next generation of Taiwan, and use examples from Taiwan's higher education system to promote entrepreneurship education to serve as a reference by education circles in other countries.

**Keywords:** entrepreneurship education, virtual fundraising, startups, higher education

## 1. Introduction

### 1.1 The importance of entrepreneurship education

According to the statistics of Taiwan's Ministry of Economic Affairs (MOEA) the number of small and medium enterprises (SMEs) in Taiwan in 2019 totaled 1,491,420, accounting for 97.65% of all the enterprises and a 1.72% increase compared to 2018. The number of employees in SMEs reached 9,054,000 people, accounting for 78.73% of the working population and a 0.99% increase compared to 2018. The number of SMEs and the number of employees have hit record highs in recent years. From 2009 to 2019, the total number of newly established companies

in Taiwan increased from 31,882 to 41,870, showing an upward trend [1] and indicating Taiwan's steady and prevalent entrepreneurship trends.

The comparison of national power in the new century is determined by national economic strength and educational empowerment. The fostering of national innovation and entrepreneurial capability have become important tasks in talent cultivation [2]. According to the 2019/2020 National Entrepreneurship Context Index (NECI) rating results of the Global Entrepreneurship Monitor (GEM), the world's top six countries are Switzerland, the Netherlands, Karta, China, the United Arab Emirates, and India. Taiwan ranks 7th, ahead of the United States (10th), South Korea (15th), and Japan (25th). Based on the rating results, Taiwan achieved the best performance in physical infrastructure, ranking second in the world. Taiwan also excelled in such aspects as entrepreneurial finance, government policies, taxes, administrative systems, R&D transfer, and internal market burdens [3]. Clearly, Taiwan provides entrepreneurs with a sound foundational environment for start-ups.

The United Nations Educational Scientific and Cultural Organization (UNESCO) convened the World Conference on Higher Education in Paris in 1998. In the "World Declaration on Higher Education for the Twenty-First Century: Vision and Action", it is clearly pointed out that "in order to assist graduates in getting a job, higher education should focus on the cultivation of entrepreneurial capability and an initiative spirit, and the entrepreneurial capability and entrepreneurial spirit should be the basic goals of higher education. In addition, graduates are no longer job seekers but will become creators of job positions" [4]. This shows that today's graduates should not limit themselves to being job seekers; instead, they should become entrepreneurs that create jobs for others. With the development of the Internet, variations in social network models, and the convenience of information acquisition, entrepreneurship is no longer a difficult task to achieve. With the rise of emerging industries such as Internet celebrities, E-commerce, cultural and creative industries, social enterprises, etc., it has been proven that creativity is all it takes to build a career of one's own.

The European Commission (2008) believes that the development of an entrepreneurial spirit is the key to breaking away from the current economic recession. Higher education institutions that have the necessary infrastructure and professional knowledge play important roles [5]. In the past, innovation and entrepreneurship mostly refer to product innovation or process innovation, while traditional entrepreneurship education mainly emphasizes the creativity, economics, management and financial issues of new ventures [6], and cultivates students with the motivation, knowledge and skills to succeed in entrepreneurship [7].

In the modern society of communication convenience, information explosion, and rapid changes, the employment environment young people are faced with is unlike that of the past. Climbing unemployment rates and epidemic turmoil all affect young people's future work conditions. Entrepreneurship can perhaps lead young people towards a different future, enabling them to search their own direction and create a bright future in spite of the chaotic environment they are in. Zhang and Cain observed in their research that more than 50% of students receiving entrepreneurship education plan to start their own business after completing entrepreneurship education [8]. Kubberød and Pettersen also found in their study that most students who have received entrepreneurial training expressed proactive views on entrepreneurship [9]. Virginia & Carlos confirmed the important role of entrepreneurship education in the development of the entrepreneurial capabilities of engineers through their study on the entrepreneurial intention of future engineers [5]. Jena also found in their study on the entrepreneurial intention of students from India that entrepreneurship education has a positive impact on entrepreneurial intention [10]. Obviously, higher education shoulders a major responsibility in providing students with relevant knowledge and skills training.

## 2. The implication of the entrepreneurial spirit

Entrepreneurship is an adventurous action that creates value, a realization of self-accomplishment, and a dynamic process rather than a static state. Entrepreneurs must be clear about their own intentions, have adequate relevant knowledge, be emotionally involved and focused in order to create the value of innovative entrepreneurship [11]. According to the viewpoint of the ethical subject of the French philosopher Michael Foucault on practices of the self, entrepreneurship can be regarded as the entrepreneur's understanding of the self, a reflection of life situations, and an understanding of valuable viewpoints. It is also a process of connecting with group society. Schumpeter believes that entrepreneurship is the realization of a combination of innovative activities [12]. They include the development of new products, the launch of new production methods, the expansion of new markets, the acquisition of new supply sources, the development of new forms of organization, and other activities. Entrepreneurs can be seen as innovators who transfer economic resources from places of lower productivity to regions of higher productivity [13], which can be seen as an innovative entrepreneurial activity. With the changes in economic activities, the types of entrepreneurship are also different, and the essence of entrepreneurship comes from changes in employment types, such as the current gig economy or the conversion of digital work methods [14], and even the emergence of social media applications and their use in business activities have changed personal behavior patterns [15], which in turn changed the activity patterns of entrepreneurship.

The Australian school economist Kirzner was the first to propose the "theory of the entrepreneurial spirit". He believes that the core of an entrepreneurial spirit lies in a "sensitivity towards undiscovered opportunities". He also believes that entrepreneurs have a keen sensitivity towards the market environment, able to perceptively seek any market opportunities [16]. Knight believes that the entrepreneurial spirit is a concept whereby one shoulders risks and uncertainties in order to obtain profits [17]. Lumpkin and Dess believe that the entrepreneurial spirit may cover autonomy, risk taking, innovativeness, proactiveness, and competitive activeness [18]. In view of the above, the entrepreneurial spirit is expressed as a keen sensitivity towards unknown opportunities in the market environment, demonstrating the spirit and concept of innovativeness, adventurousness, competitiveness, and the courage to take risks, to be able to seek opportunities in the market undetected by others and to actively create profits.

British financial institution Hiscox conducted a survey targeting 500 successful entrepreneurs in 2011. The survey results showed that 53% of successful entrepreneurs believe that they were born with entrepreneurial capability and 13% believe that entrepreneurial capability can be obtained through education or learning. In the hearts of these entrepreneurs, the intrinsic conditions for the establishment of a successful business can be ranked in the following order: 81% of entrepreneurs believe it is analytical ability, 73% believe it is creativity, 66% believe it is strong motivation, and 63% believe it is excellent community skill [19]. Fitzsimmons & Douglas pointed out that on the level of skills, entrepreneurial capability can be acquired through training [20]. It can be seen that in addition to entrepreneurial capability having inherent characteristics, entrepreneurial skills can also be acquired through cultivation.

Entrepreneurial spirit does not just refer to the action of starting a whole new business, but widely means "solving various problems in an original way that has never been learned before (including "the problem that cannot find a suitable job in existing vacancies")" [21]. A white paper on creative education by Taiwan's Ministry of Education (2002) states: "In a broad sense, innovative capability

comprises creativity, innovative mechanisms and entrepreneurial spirit. The concrete results are the creative performances of the general public in various fields. Entrepreneurial capability is an important indicator in the knowledge economy and in social development, while creativity is an educational indicator of learning effectiveness. In a narrow sense, creativity is the basis of innovative knowledge, and innovation is the concrete implementation of creativity. 'Creativity' and 'innovation' can be described as two sides of the same coin, complementing each other. The generation of creativity relies on the demonstration of creativity and intelligence; The performance of creativity depends on the demonstration of innovative results." [22]. Drucker believe that innovation can see change as a new opportunity, which is used to develop different new businesses or provide different services [13]. The entrepreneurial spirit can be regarded as the expression of innovation [23]. The entrepreneurial spirit is an activity that requires the proper mentality and entrepreneurship education. Through appropriate training, students can acquire the necessary knowledge, skills, and practical experiences of the entrepreneurial process, thereby improving their entrepreneurial inclination [10]. Innovative capability applied in entrepreneurship is the entrepreneurial spirit; entrepreneurial spirit is not just the practical activity of entrepreneurship, but more importantly, it is the spirit of entrepreneurship. This spirit can be regarded as the integration of such concepts as innovation, creativity, and willingness to try new things, which is displayed at work or in creating a career. Therefore, higher education should focus on fostering the entrepreneurial spirit of students, enabling them to strive for innovation and change in setting up start-ups or during practical work in the workplace [24]. With the rapid development of technology and the high penetration of communication technology to promote the interconnection of the global economy, economic competition has become more intense, and this phenomenon will increase the speed of innovation [25]. Entrepreneurship not only requires an entrepreneurial spirit, but also needs to follow the trend of the times and develop a suitable business model based on the current situation.

### **3. The development of entrepreneurship education in Taiwan**

The goal of entrepreneurship education is for students to substantially interact and have a dialog with the environment they are in through concrete experiences in the social environment and within an interactive environment perceive realistic problems. They can think about, respond to, and solve problems, while at the same time they must reflect on their subjective awareness and explore their entrepreneurial intention and value concepts, and perceive their subject position throughout the entrepreneurial action [26]. Innovative entrepreneurship courses not only impart entrepreneurial knowledge to students, but also affect their non-cognitive ability. Through the learning process, students are assisted in cultivating the integration of thoughts and knowledge [27], thus shaping their entrepreneurship, adventurousness, willingness to take risks, and positive ambition when engaging in activities related to entrepreneurship.

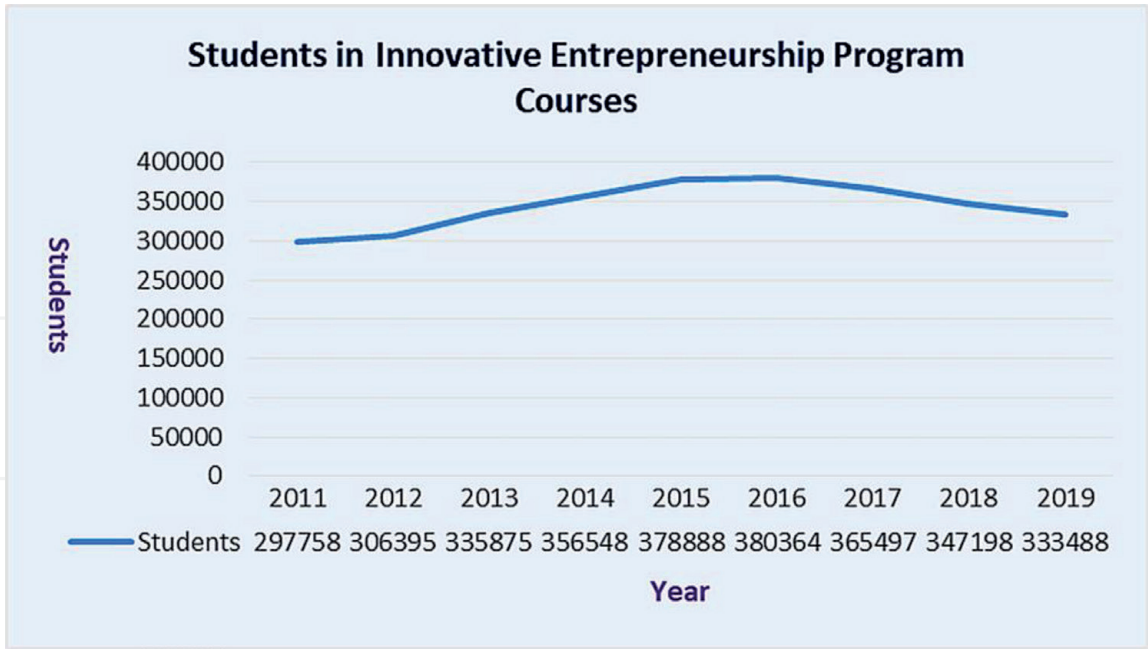
In November 1989, the United Nations Educational, Scientific and Cultural Organization, UNESCO discussed the educational philosophy in the Report to UNESCO of the International Commission on Education for the Twenty-first century. Entrepreneurship education was listed as the "third education passport" of learning; entrepreneurial capacity, academic and vocational education were elevated to the same status; entrepreneurship education was defined as cultivating innovative individuals, which is equally important for wage earners. Since most enterprises at present value the inventions, innovativeness, and adventure spirit

of wage earners, including technology, entrepreneurship, and independent work ability [4], enterprise employers hope to create new products, marketing models, and innovative operational models for the company through the wage earner's innovative entrepreneurial capability. Clearly, entrepreneurship is not only applied in entrepreneurial actions, but it is also displayed in employment-based work.

In the past, the main goal of entrepreneurship education is to encourage individuals to discover business opportunities that lead to enterprise development. Through appropriate learning processes, independent and autonomous entrepreneurship and attitudes can be developed [28]. Entrepreneurship education now emphasizes changes in attitudes, changes in knowledge and skills, feasibility, entrepreneurial intentions, socio-economic impact, entrepreneurial rate and corporate performance [29]. Emphasize that the core ability of entrepreneurship education is to cultivate students' entrepreneurial spirit and entrepreneurial ability [30]. Entrepreneurship is a manifestation of innovation. Hence, some scholars have proposed the extension of entrepreneurship education - "innovation education" — hoping to identify, develop, and transform children's talents through various educational practices, turning students into future creators [31]. "Business start-up" or "entrepreneurial spirit" may be implemented at various stages in education, but they are most extensively covered in higher education [32], because students who enter society and the work environment after higher education are have to face a new phase and challenges, whether they seek employment or start their own business. Therefore, entrepreneurship education imparted in higher education can better enable students to apply their knowledge in the future. Entrepreneurship education from the previous classroom theory courses to the current combination of extracurricular activities, using life labs, internships, and internships to strengthen the knowledge learned in the classroom [14], or let students operate and simulate The process of starting a business allows students to truly experience the complete experience of starting a company. From Babson College's Entrepreneurship Program, Cambridge University's Graduate Entrepreneurship Program, Massachusetts Institute of Technology's Entrepreneurship Education Program, Ireland's Kerry County Young Entrepreneur Program, and Renmin University of China's Entrepreneurship Program. In the content of the development plan, it can be found that the courses are all emphasizing the cultivation of students' entrepreneurial thinking, entrepreneurial spirit, and practical entrepreneurial practice [33].

The number of students taking up innovative entrepreneurship programs in higher education in Taiwan has increased every year since 2011. Although the number of people enrolled in courses has declined slightly since 2017, the number of people enrolled still stood at more than 300,000, and in 2019 there were still 333,488 people enrolled. From 2011 to 2019, although the number of innovative entrepreneurship courses offered by technical colleges decreased from 11,846 to 8,671, the figure stabilized after 2013, with 8,000 to 9,000 courses set up. In 2020, 82 technical colleges in Taiwan offered business entrepreneurship related courses, such as entrepreneurship talent cultivation, cultural and creative industry experiential planning, entrepreneurs' experience sharing and practices, creativity, innovation, entrepreneurship, and other micro-courses (**Figure 1**) [34].

The main objectives of innovative entrepreneurship courses promoted by the Ministry of Education (MOE) have changed and improved every year. The innovative entrepreneurship promoted from 2012 to 2014 aimed to lay the foundation for setting up innovative entrepreneurship courses in universities. From 2015 to 2016, with guiding changes in the campus entrepreneurship teaching environment as the main subject, entrepreneurship education was put into practice. In 2017,



**Figure 1.**  
*Trend diagram of innovative entrepreneurship program courses in Taiwan’s higher education from 2011 to 2019 [34].*

the companionship guidance by teams of coaches strengthened the continuity of conceptualization. From 2018 to 2019, entrepreneurship education on campus was deepened in order to cultivate students’ problem-solving abilities. The “entrepreneurial management and action learning plan” and “fundraising practical learning program” were allotted. Through practical exercises, the rapid correction by student teams of innovative concepts was deepened, and the resource integration and problem-solving abilities of students were cultivated. The learning programs included formal school system inter-disciplinary curriculum module planning and non-credit short-term training courses. The course themes and hands-on activities included aspects such as “simulated learning platform of concept implementation combined with entrepreneurship practice”, “concept implementation - business operation - company establishment - company closedown”, and “concept proposal - maker implementation - business model” [35].

In order to improve the overall quality of courses and establish an innovative entrepreneurship talent cultivation system on campus, the MOE promoted EC-SOS in 2020. In addition to continuing the “entrepreneurial management and action learning” and “fundraising practical learning” course modules from 2018 and 2019 and with the teachers’ innovative teaching quality as a starting point, the capabilities of teachers have been linked with intensive course module training, and resources have been invested in the sites where teaching takes place, hoping to achieve complementary effects. This can also achieve the cultivation of talented people with entrepreneurship, start-up, and practical industrial experience, links between school R&D results and industrial needs, the enhancement of technical transfer and industry-academia cooperation opportunities, the creation of a virtuous circle of innovation and entrepreneurship, and consistency among innovative entrepreneurship campus policies, teaching imparted by teachers, and learning by students. The objectives and focuses of innovative entrepreneurship course promotion can be improved on the basis of generational changes and differences in the environment [35]. The objective of EC-SOS is to strengthen links among schools, industries, academia, and incubation organizations, thereby promoting key technology R&D in universities and colleges in line with industrial needs; campus innovation entrepreneurship course modules can also be promoted to convert

innovative knowledge and provide school funds, courses, and consultation to student entrepreneurship teams and innovative enterprises, thereby putting innovative incubation mechanisms into practice. An innovative start-up ecosystem can also gradually be constructed and activated on campus, thus encouraging students to have the courage to try new things.

In addition to the promotion of entrepreneurship education courses, in order to create opportunities for inter-school exchanges and paradigmatic teaching curriculum demonstrations, Taiwan’s Ministry of Education has since 2016 promoted SOS-IPO. Using virtual fundraising means, a virtual entrepreneurial environment was created. Through courses conducted in stages, assistance is provided to teams, from concept development, prototype practice, to market model and market verification. The schools’ maker spaces were combined to guide the course results through market verification and putting the start-up into practice, gradually implementing “entrepreneurship education” and prompting students to move towards “actual entrepreneurship”. As of 2020, SOS-IPO has offered training to 64,129 students. There are 2,820 start-up teams in campuses leading to the establishment of 331 spin-off companies. The spin-off teams registered on actual fundraising platforms have raised NT\$22.18 million in total [2].

In order to create a better entrepreneurial learning environment for university and college students of innovation and entrepreneurship, the MOE has since 2020 established Taiwan’s largest start-up platform Startup Terrace. As the starting point of experimental innovation and entrepreneurship applications, the platform has linked Taiwan’s enterprise ecosystem, industries, and global markets. Startup Terrace has attracted at least 132 domestic and foreign teams to participate. This platform has established a bridge for contact between Taiwan and the world, making Taiwanese entrepreneurs seen by the world [1].

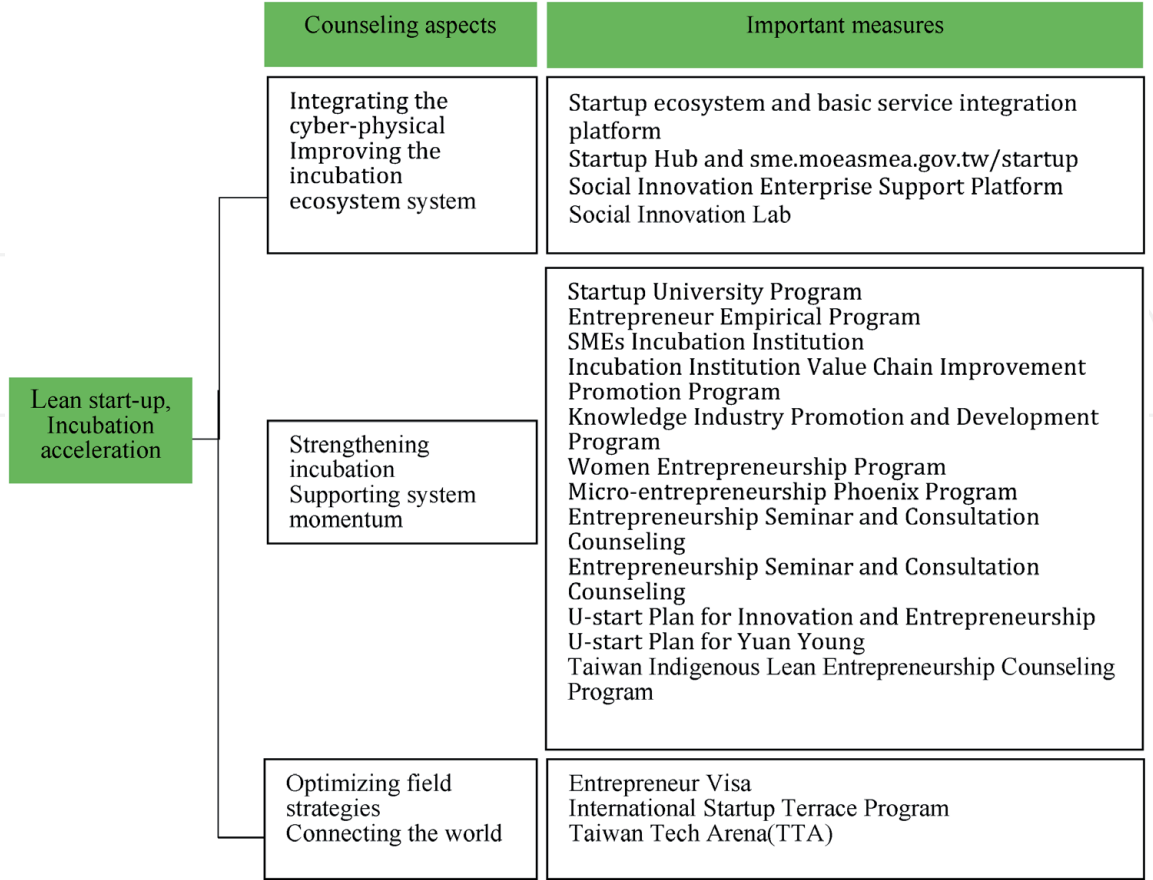


Figure 2.  
The framework of SME entrepreneurship incubation measures [37].

Under the impact of global competition, innovative transformation, and industrial upgrade, tertiary institutions in Taiwan are acclaimed for having shifted from independence and autonomy to collaboration with three sides, namely, society, industry and government. Innovation and entrepreneurship have been promoted in universities, more closely integrating the technology and knowledge of universities with industry [36]. The government has not only promoted entrepreneurship education at the tertiary education level, but has also continued to improve Taiwan's start-up services and environment. Promotional programs for counseling (the framework of entrepreneurship and incubation measures is as shown in **Figure 2**), assisting young people or women with business start-ups, or proposing relevant policies, this is all intended to optimize Taiwan's start-up environment. In order to assist entrepreneurial teams to develop and connect with the world, two programs were implemented at the Taiwan Tech Arena in 2020. The first was to domestically manage the Taiwan Tech Arena by importing world-class accelerators and domestic and foreign technology and innovation enterprises to set up bases in Taiwan and link with the supply chain resources of large enterprises; the second was to internationally connect with innovative and ecological international resources such as Silicon Valley. Teams were selected for training overseas and to participate in the InnoVex [37]. In addition to innovation and entrepreneurship education, Taiwan's government attaches importance to the business start-up situation of young graduates and provides related resources, supports start-up companies, and continues to promote the establishment of the most advantageous technology start-ups in Taiwan.

## 4. Examples of entrepreneurship education

Through the promotion of EC-SOS, the MOE has since 2012 adhered by the objective of improving innovation and entrepreneurship course quality in public and private universities, in hopes of establishing industrial links, linking industry-academia cooperation momentum, and promoting the startup trend. In order for readers to gain a better insight into the current situation of entrepreneurship education in Taiwan's higher education, the innovation and entrepreneurship promotion strategies promoted by two well-known universities in Taiwan are introduced below:

### 4.1 National Yang Ming-Chiao Tung University

The "Innovation and Entrepreneurship Base" established by the National Yang Ming-Chiao Tung University is the incubation center of cross-departmental integrative school entrepreneurship and the development center of industrial accelerators and patent strategies [38]. In addition to offering entrepreneurship courses, one-stop services are created for start-up student teams. From the discovering of original technology on campus, seeking capital input, applying for government guidance, providing an entrepreneurial space, to entering domestic and overseas markets, the school assists in the commercialization of campus research results and assists students in moving towards commercialization through students' entrepreneurial ideas and innovative products. The school's entrepreneurship education courses include four aspects: basic courses, start-up initiation, team establishment, and resource expansion, as follows:

#### 4.1.1 Basic courses

Entrepreneurship and innovation courses are linked to the unique strengths of alumni, EMBA, and technology, thereby connecting the Hsinchu Science Park,

Industrial Technology Research Institute, and other industrial networks for industrial cultivation, in order to cultivate entrepreneurial leaders.

#### *4.1.2 Start-up initiation*

Entrepreneurship lab planning consists of three core parts: courses, incubation, and entrepreneurship. From the period of students' course selection to innovation and entrepreneurship initiation, start-up seminars and visits are regularly conducted with well-known foreign universities such as Stanford University.

#### *4.1.3 Team establishment*

Targeting entrepreneurship teams stationed on campus, entrepreneurial training, practical courses, and start-up seminars have been planned and imparted by successful international entrepreneurs, international angel investors, and domestic and foreign practitioners throughout. The courses are diverse and rich.

#### *4.1.4 Resource expansion*

Students were guided to expand their innovative global outlook and meet entrepreneurs from the United States, India, Japan, China, and European countries for a period of three months. The youth entrepreneurs were assisted in cultivating their international entrepreneurship.

One of the greatest features of entrepreneurship education at National Yang Ming-Chiao Tung University is one-stop service. From the development and implementation of students' initial creative idea to the final start-up actions, the school provides students with relevant consultations and services to increase students' chances of start-up success. Additionally, the school is located next to the Hsinchu Science Park. Due to the accessible location, both enterprise resources or manpower resources can be conveniently acquired, which further enable students to smoothly achieve relevant start-up success.

### **4.2 National Kaohsiung University of science and technology**

The school has set up the Center for Entrepreneurship Education to promote innovation and entrepreneurship courses and activities [39]. Its entrepreneurship education can be divided into two parts. One is innovation and entrepreneurship courses; the other is innovation and entrepreneurship resources. The contents are as follows:

#### *4.2.1 Innovation and entrepreneurship courses*

Providing secondary expertise courses related to innovation management and entrepreneurship practice, creative innovation and entrepreneurship credit programs, maker micro-credits, inter-disciplinary practical projects, entrepreneurship practice – practical projects, innovation and entrepreneurship materials, and other innovation and entrepreneurship courses for students to take up.

#### *4.2.2 Innovation and entrepreneurship resources*

Campus Creative Idea Development Contests, Creative Star Class, Entrepreneurship Contest Scholarships and Grants, Practical Projects on Commercialized Value-Adding for University Students, Incentives for Postgraduates, Entrepreneurship Incubation Office, Micro Start-up Trials, and other activities are held for students.

#### *4.2.2.1 Creative idea development contests*

In order to create a creative vibe on campus, the center conducts two creative idea development contests every year to encourage inter-departmental students to form teams to elicit more diverse inter-disciplinary creativity.

#### *4.2.2.2 Creative star class*

Through training in the Creative Star Class and by guiding students through design thinking, business briefings, simulated exercises, and professional mentor guidance, the teams in the Creative Idea Development Contest can re-examine their implementation ability and strengthen the contents of proposals.

#### *4.2.2.3 Entrepreneurship competition award subsidy*

Entrepreneurship Contest Scholarships and Subsidies Cash prizes awarded at each contest are subsidies with amounts of NT\$10,000 to NT\$20,000.

#### *4.2.2.4 Practical project on commercialized value-adding for university students*

University students and practical projects are integrated to implement product or technology commercialization. A subsidy of up to NT\$40,000 shall be awarded for each case, provided a written business proposal is reviewed and approved.

#### *4.2.2.5 Incentives for postgraduates*

A postgraduate student shall serve as a host. A subsidy of up to NT\$80,000 shall be awarded for each case, provided the postgraduate joins and is chosen as a finalist in an innovation and entrepreneurship contest designated by the school.

#### *4.2.2.6 Entrepreneurship incubation office*

The center has set up seven incubation offices for potential start-up teams made up of teachers and students to apply for entry into the start-up preparatory office. Each team has an instructor and professional manager who offer companionship and guidance. They are fully supportive of the start-up team and assist in achieving start-up success.

#### *4.2.2.7 Micro start-up trials*

Students and alumni are provided with a start-up space to have a chance to experience being an employer. Students will be able to creatively market products, engage in start-up trials, and directly face consumers reactions, thereby keeping abreast of current market situations.

A feature of entrepreneurship education at the school is the coordination of courses and practices. The school also provides start-up funds for students to substantively realize their start-up intention.

## **5. The next generation of entrepreneurship education in Taiwan**

According to the 2019/2020 research survey results of the Global Entrepreneurship Monitor (GEM) Taiwan's National Entrepreneurship Context

Index (NECI) is higher than that of the average of different countries. Cultural and social norms, physical infrastructure, market access control, internal market vitality, commercial and legal infrastructure, R&D result transformation, off-campus entrepreneurship education and training, school entrepreneurship education and training, government start-up plans, taxation, and administrative systems, government policies and entrepreneurial finance are some examples. In addition, the NES ranking reflects the technical transfer capability of academic and research institutions in Taiwan [1]. Taiwan ranks second in the world ranking, indicating that the government has provided many resources to support the practice of emerging and growing companies to commercialize. However, despite Taiwan's higher score in off-campus entrepreneurship education and training and in entrepreneurship education and training compared to the average score, there is still much room for improvement. This shows that more effort should be put in planning entrepreneurship education, cultivating the entrepreneurial spirit of students, willingness to engage in innovation and entrepreneurship, or applying innovation and creativity at work. This will in turn lead to the creation of win-win benefits for oneself and companies.

In order to strengthen entrepreneurship education in higher education, the MOE has set up the SOS-IPO which provides a channel platform for students with innovative start-up ideas to raise funds in support of their start-up dream. In terms of off-campus entrepreneurship education, the MOE has planned the "U-start Plan for Innovation and Entrepreneurship" to encourage universities and colleges to optimize the innovation and entrepreneurship environment on campus, combine school incubation guidance resources, and provide youth with sites and resources to experiment with start-ups, cultivate entrepreneurship talents, and assist young students in start-up implementation [2]. This plan is promoted in two stages every year. In the first stage, off-campus youth groups file joint applications for start-up plans, while school incubation units file applications for guidance plans. Those that pass the selection will be subsidized with start-up funds in the amount of NT\$50,000. The subsidized teams will undergo 6-month start-up incubation counseling and training; for selected teams with excellent start-up performances in the second stage, the start-up teams that have passed subsidies in stage 1 and have completed company establishment and registration will file an application. Selected teams will receive a start-up scholarship/grant in the amount of NT\$250,000 to NT\$1,000,000. They will then receive counseling from the school incubation unit for one year. Furthermore, the MOE will carry out start-up consultation, counseling, and effectiveness tracking on start-up teams that have received subsidies and have achieved excellent performance [2].

The 2019/2020 Global Entrepreneurship Monitor (GEM) conducted an analysis on the conditions of entrepreneurs from different countries during the early start-up stage. Among them, the NES ranking reflects the technical transfer capability of academic and research institutions in Taiwan. According to the GEM's E06 index, "in Taiwan, engineers and scientists have abundant resources and support towards ideas put forth and the commercialization implementation of emerging and growing companies" [1]. This makes it clear that young people in Taiwan have a sound start-up environment and many resources to support their start-up and realize their creativity. In recent years, Taiwan's government has actively promoted school entrepreneurship education and off-campus entrepreneurship education and has established platforms to assist students in raising funds to realize their start-ups. Projects are also funded to guide young people through start-ups. These measures are all intended to encourage young people to start their own business, bring new life into old economic modes, and promote economic development.

## **Acknowledgements**

This study was partially funded by the Ministry of Science and Technology of Taiwan, with grant number MOST 110-2511-H-027-001.

IntechOpen

IntechOpen

### **Author details**

Jen-Chia Chang and Hsiao-Fang Shih\*  
Graduate Institute of Technological and Vocational Education, National Taipei  
University of Technology, Taiwan

\*Address all correspondence to: tch3214@goo.tyai.tyc.edu.tw

### **IntechOpen**

© 2021 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. 

## References

- [1] Ministry of Education. SOS-IPO. 2020. Available from: <https://ecsos.moe.edu.tw/plan> [Accessed: 2021-04-02]
- [2] Kuo Fu-Hung. Technology Innovation Center of Technical and Vocational Schools in Taiwan and Innovative Talent Cultivation Model. *Business Education Quarterly* December. 2017;141:21-25.
- [3] Bosma, N., Ionescu-Somers, A., Kelley, D., Levie, J., & Tarnawa., A. The Global Entrepreneurship Monitor 2019/2020 Global Report. 2020. Available from: <https://www.gemconsortium.org/file/open?fileId=50443> [Accessed: 2021-04-02]
- [4] Chang Jen-Chia. Exploring the Relationship between Entrepreneurship Education and Student's Entrepreneurial Abilities in Technological Colleges/Universities. *Research Center for Humanities and Social Sciences*. 2017;11(4):1-24.
- [5] Barba-Sánchez, V., & Atienza-Sahuquillo, C.. Entrepreneurial intention among engineering students: The role of entrepreneurship education. *European Research on Management and Business Economics*. 2018;24(1):53-61.
- [6] Hsu, J. L., & Pivec, M. Integration of Sustainability Awareness in Entrepreneurship Education. *Sustainability*. 2021;13:4934.
- [7] Cope, J. Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship theory and practice*. 2005;29(4):373-393.
- [8] Zhang, P., & Cain, K. W. Reassessing the link between risk aversion and entrepreneurial intention: The mediating role of the determinants of planned behavior. *International Journal of Entrepreneurial Behavior & Research*. 2017;23(5):793-811.
- [9] Kubberød, E., & Pettersen, I. B.. Exploring situated ambiguity in students' entrepreneurial learning. *Education and Training*. 2017;59(3): 265-279.
- [10] Jena, R. K. Measuring the impact of business management Student's attitude towards entrepreneurship education on entrepreneurial intention: A case study. *Computers in Human Behavior*. 2020;107:106-275.
- [11] Johannisson, B. Limits to and prospects of entrepreneurship education in the academic context. *An International Journal*. 2016;28:403-423.
- [12] Schumpeter, J. A. The theory of economic development. MA: Harvard Business Press. 1934.
- [13] Drucker, P. F. Innovation and entrepreneurship: Practice and Principles. New York: Harper & Row. 1985.
- [14] Ratten, V., & Usmanij, P.. Entrepreneurship education: Time for a change in research direction?. *The International Journal of Management Education*. 2021;19(1): 100367.
- [15] Erkut, Burak. Hayek on product innovation and market shaping: opening the black box. *Liberal Düşünce Dergisi*. 2020;25.100:169-189.
- [16] Kirzner, I. M. Competition and entrepreneurship. Chicago: University of Chicago Press. 1973.
- [17] Knight, F. Risk, uncertainty and profit. Boston: Houghton Mifflin. 1921.
- [18] Lumpkin, G. T. & Dess, G. G.. Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*. 1996;21(1):135-172.

- [19] Hung Yi-Yen. Innovation, a Talent? Cheers Happy Worker Magazine. 2011;127. Available from: <http://www.cheers.com.tw/article/article.action?id=5027853> [Accessed: 2021-04-29]
- [20] Fitzsimmons, J. R., & Douglas, E. J. Entrepreneurial attitudes and entrepreneurial Intentions: A cross-cultural study of potential entrepreneurs in India, China, Thailand and Australia. Paper presented at Babson-Kauffman entrepreneurial research conference, Wellesley, MA. 2005.
- [21] Chen Wan-Chih. Book Review: World Class Learners: Educating Creative and Entrepreneurial Students. Bulletin of Educational Research. 2016;62(1):117-127.
- [22] Ministry of Education. White Paper on Creative Education. Taipei: Ministry of Education. 2002.
- [23] Timmons, J. & Spinlli, S.. New venture creation (6th ed). NY: McGraw-Hill/Irwin. 2004.
- [24] Chang Jen-Chia. Developing the Future of Technological and Vocational Education: An Analysis of the Direction that Vocational Education Should Take. Secondary Education Quarterly. 2014;65(2):21-31.
- [25] Kaya, T., Erkut, B., & Thierbach, N. Entrepreneurial intentions of business and economics students in Germany and Cyprus: a cross-cultural comparison. Sustainability. 2019;11(5):1437.
- [26] Yang Shi-Chi, Wu Meng-Chen. Between “Philosophy” and “Business start-up”: Entrepreneurship practice education and foucault’s ethical subject theory. Sun Yat-Sen Management Review. 2018;26(1):35-53.
- [27] Cavanaugh, J. M., Giapponi, C. C., & Golden, T. D. Digital technology and student cognitive development: The neuroscience of the university classroom. Journal of Management Education. 2016;40(4):374-397.
- [28] Garavna, T. N. & O'Cimmeide, B. Entrepreneurship education and training programmes: a review and evaluation, Journal of European Industrial Training. 1994;18(8):3-12.
- [29] Nabi, G., Liñán, F., Fayolle, A., Krueger, N., & Walmsley, A. The impact of entrepreneurship education in higher education: A systematic review and research agenda. Academy of Management Learning & Education. 2017;16(2):277-299.
- [30] Fu, H. Research on the integration of entrepreneurship education and professional education curriculum system. Frontiers in Economics and Management. 2020;1(6):34-37.
- [31] Shavinina, L. V. Innovation education - The emergence of a new discipline. the routledge international handbook of innovation education. Oxon: Routledge. 2013:1-13.
- [32] Fretschner, M., & Weber, S. Measuring and understanding the effects of entrepreneurial awareness education. Journal of Small Business Management. 2013;51(3):410-428.
- [33] Abdullah, S. H., Rahim, M. S., & Zakaria N.. Riding the practice of technopreneur development: Innovative entrepreneurial teaching and learning in institutes of higher learning. International Journal of Economic Research. 2017;14:213-225.
- [34] Course Information Website. Search results of innovation and entrepreneurship courses established by technical colleges. 2020. Available from: <http://course-tvc.yuntech.edu.tw/Web/index.aspx> [Accessed: 2021-04-08]

[35] Ministry of Education. U-start Innovative Entrepreneurial Program. 2020. Available from: [https://www.edu.tw/News\\_Plan\\_Content.aspx?n=D33B55D537402BAA&sms=954974C68391B710&s=ADADA312F9FC69A2](https://www.edu.tw/News_Plan_Content.aspx?n=D33B55D537402BAA&sms=954974C68391B710&s=ADADA312F9FC69A2) [Accessed: 2021-04-25]

[36] Hsu Wen-Jui. The Revelation of the Policy of “University Spin-offs” in Major Countries on the Innovative Transformation of Higher Education in Taiwan. National Academy for Educational Research Educational Pulse E-Journal. 2018; 13:1-14.

[37] Small and Medium Enterprise administration, Ministry of Economic Affairs. 2020 White Paper on Small and Medium Enterprises. Taipei City: Ministry of Economic Affairs. 2020.

[38] National Yang Ming Chiao Tung University. NYMCTU Innovation and Entrepreneurship Base. 2021. Available from: <https://rd.nctu.edu.tw/tron4> [Accessed: 2021-04-30]

[39] National Kaohsiung University of Science and Technology. Center for Innovation and Entrepreneurship Education. 2021. Available from: <https://ciee.nkust.edu.tw/> [Accessed: 2021-04-30]