

TVET in Taiwan

Preliminary Report

Leping Mou, Eric Lavigne,
Ashley Rostamian, Gavin Moodie,
Leesa Wheelahan

University of Toronto,
Ontario Institute for Studies in Education

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Education International

Education International represents organisations of teachers and other education employees across the globe. It is the world's largest federation of unions and associations, representing thirty million education employees in about four hundred organisations in one hundred and seventy countries and territories, across the globe. Education International unites teachers and education employees.

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Case Study of TVET in Taiwan: Preliminary Report

This case study of Technical and Vocational Education and Training (TVET) in Taiwan is part of a project initiated and supported by Education International to research how TVET can contribute to social justice, social inclusion, and sustainable development in different countries. Education International, the global union federation that represents organisations of teachers and other education employees, regards TVET as crucial to global development. The aim of this project is to support Education International and its affiliates in developing strategies that will support strong, quality public TVET as the anchors of their local communities and industries in contributing to sustainable and socially just economic and social development.

This project builds on work undertaken by Education International in 2016, which resulted in the report *Global trends in TVET: a framework for social justice* (Wheeler and Moodie 2016).¹ The report provided a conceptual framework to understand how TVET is positioned in many countries, and the different ways in which the relationship between TVET and the structures of the labour market shape the different kinds of outcomes that graduates achieve. It demonstrated that there is unequal access to TVET in low-, medium- and high-income countries, particularly for women, and that TVET is generally positioned lower than higher education.

Global trends in TVET used the capabilities approach, as developed by Amartya Sen (1999) and Martha Nussbaum (2000), to underpin the notion of 'productive capabilities' in developing a conceptual basis for TVET that supports social justice. The capabilities approach focuses on ensuring that individuals have the capabilities they need to make choices about how they will live, and to live lives they have reason to value (Robeyns, 2016). The capabilities approach emphasizes the role of local institutions both in supporting individuals to develop the knowledge and skills to lead productive lives, and in building strong, resilient communities and workplaces that provide infrastructures to support socially just outcomes (Bonvin & Farvaque, 2006).

Education International has commissioned further work to explore the potential of 'productive capabilities' as a conceptual framework to underpin TVET. This includes in-depth case studies of high-, medium-, and low-income countries in different parts of the world. This report on Taiwan is part of that study. It consists of an analysis of TVET in Taiwan as the basis for exploring the extent to which 'productive capabilities' is a useful approach in understanding the way in which TVET can support social inclusion and social justice.

1 See: https://www.ei-ie.org/media_gallery/GlobalTrendsInTVET.pdf



The present report brings together three separate studies. The first study relied on public documents, such as official reports and scholarly papers, to develop an understanding of Taiwan's TVET within its broader context. To complement its findings, the report includes the results of a web-based survey of 1,757 Taiwanese vocational education actors. The survey used multiple-choice items and open-ended questions. In addition, the report also relies on the perspectives of 20 teachers and professors, whose interviews provided context and clarifications.

The report begins with a broad overview of Taiwan's economic, political, and social context, then concentrates on its educational system, describing its recent enrolment figures and the relation between regular and vocational streams, and public and private institutions. An exploration of Taiwan's TVET system follows. In it, the report examines Taiwan's dual-stream system, the role played by holistic education, the recent expansion and privatisation of Taiwan's TVET, and its recent challenges. Finally, the report turns to its actors, teachers, professors, administrators, and students from private and public education, to clarify how actors perceive the system's goals, accomplishments, outcomes, and challenges.

Overview of the Taiwanese Context

Taiwan is an island located in Eastern Asia and bordered by the East China Sea, the South China Sea, and the Taiwan Strait. Its neighbours include the People's Republic of China, South Korea, Japan, and the Philippines. Taiwan's government is a semi-presidential republic organised as a multiparty democracy (Executive Yuan, 2016). Taiwan's current government, the Republic of China, was originally formed in China in 1912. During the civil war taking place in the aftermath of the Second World War, the seat of the Republic of China moved to Taiwan, while the mainland became the People's Republic of China. To this day, tensions between Taiwan's Republic of China and China's People's Republic of China remain, as the People's Republic of China considers Taiwan to be a part of their territory and not an independent country (People's Republic of China, 2007).

Taiwan's population counts 24 million people (Central Intelligence Agency, 2017), 87% of which reside in urban areas (Executive Yuan, 2017b). The main languages spoken in Taiwan are Mandarin Chinese (official), Taiwanese (Min), and Hakka dialects (Central Intelligence Agency, 2017). Taiwan's major religions include Buddhism (35.3%), Taoism (33.2%), and Christianity (3.9%) (Central Intelligence Agency, 2017; Executive Yuan, 2016). The population is strongly homogeneous: 97% Han Chinese, 2% indigenous people from 16 different ethnic groups, and 1% minorities (Executive Yuan, 2016). Taiwan's birth rate of 8.3 births per 1,000 people is ranked 219th in the world, with a fertility rate of 1.13 children born per woman, and is considered low. As a result, Taiwan is becoming an aging society and the number of people over 65 is expected to rise to 20% of its population by 2025 (Central Intelligence Agency, 2017).

The traditional values of Taiwanese are based on Confucian ethics. They include piety toward parents, ancestor worship, a strong emphasis on education and work, and the importance of 'face' (Commisceo Global, 2017). However, in recent years, industrialisation and its accompanying values, for example emancipation, social status, creativity, and materialism, have challenged Taiwan's more traditional values (Commisceo Global, 2017).

In 2016, Taiwan's GDP was 528.6 billion US dollars, or about 22,000 US dollars per capita, and ranked 22nd in the world (Central Intelligence Agency, 2017). The majority of the GDP is generated by services (62.80%), industry (35.41%), and manufacturing (30.34%). Interestingly, only 1.77% of Taiwan's GDP results from agriculture (Executive Yuan, 2016). The main industries for which Taiwan is recognised worldwide include electronics, communications and information technology products, petroleum refining, chemicals, textiles, iron and steel, machinery, cement, food processing, vehicles, consumer products, and pharmaceuticals (Central Intelligence Agency, 2017).

Exports and imports play a crucial role for Taiwan. In 2015, according to the World Trade Organisation (WTO), Taiwan ranked 17th and 18th in merchandise exports and



imports, and 23rd and 28th in commercial services exports and imports (Executive Yuan, 2016). Also, the economy of Taiwan is heavily dependent on industrial manufacturing, particularly electronics, machinery, and petrochemical exports. As a result, Taiwan's economy is sensitive to economic and political fluctuations in global trade. Furthermore, China has become a major trade partner for Taiwan. Given the People's Republic of China's position regarding Taiwan's sovereignty, the two countries' close proximity proves an economic asset, but, so long as the political differences between the two partners remain unresolved, their economic partnership lies on shifting grounds (Central Intelligence Agency, 2017).

Taiwan's Education System

Taiwan's education administration falls under the jurisdiction of three levels of government: national, overseen by the Ministry of Education; provincial, overseen by the county and city governments; and local, overseen by the municipalities. All educational institutions are supervised by the Ministry of Education, yet enjoy some autonomy at the provincial and local levels, resulting in some differences across jurisdictions (Ministry of Education, 2017).

Taiwan's 2016 education budget was 19 million US dollars (Ministry of Education, 2017). This represents 5.05% of its GDP: 3.78% to public institutions and 1.27% to private ones (Executive Yuan, 2017a; Ministry of Education, 2017).

Compulsory education includes six years of elementary school and three years of junior high school. Its seven major learning areas are language arts, health and physical education, social studies, arts and humanities, mathematics, science and technology, and integration (Executive Yuan, 2016). The early years, preschool, are home- and community-based and not part of compulsory education (Ministry of Education, 2017). Taking place after junior high school, senior high school includes a variety of institutions: regular, skill-based, comprehensive, and specialty-based (Ministry of Education, 2017). Senior high school programs include general, vocational, comprehensive, and practical technical ([Ministry of Education](#), 2017).

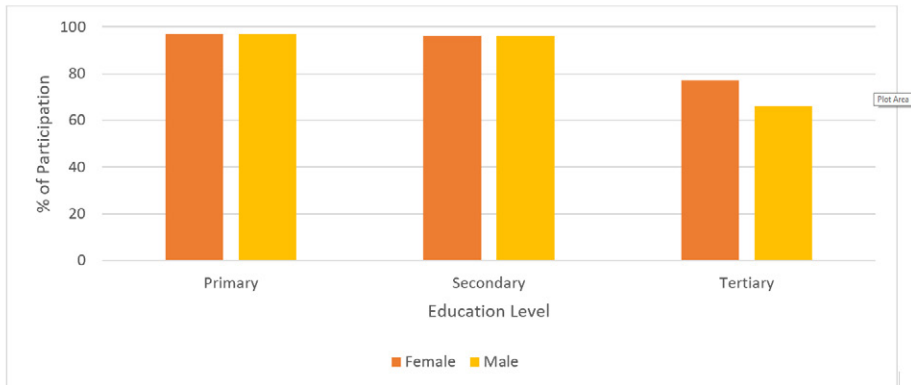
Currently, the majority of junior high school graduates continue on to further studies following two streams: the academic track, by way of regular senior high school programs, and the vocational education track, taking place in skill-based senior high schools and in five-year vocational junior colleges. These five-year colleges combine three years of high school and two years of college. Also, some junior high schools offer technical courses in their third year, which allows enrolment in skill-based senior high schools or five-year junior colleges (Executive Yuan, 2016). Finally, higher education is provided by colleges, universities, and graduate schools, with vocational education being delivered by junior colleges and colleges and universities of science and technology.

As Table 1. 2016-2017 Net Enrolment Rates for Female and Male Students by Education Level and Figure 1 show, enrolment rates in primary and secondary education rise above 95%, indicating high access to compulsory education. These rates are understandably lower for pre-primary and tertiary education, which are not compulsory. That being said, enrolment rates for tertiary education are nonetheless high. Finally, little differences were observed between female and male student enrolments, except for tertiary education where female students were more prominent.

Table 1. 2016-2017 Net Enrolment Rates for Female and Male Students by Education Level

	Female %	Male %	Total %
Pre-primary	58.55	59.79	59.19
Primary	97.29	97.45	97.37
Secondary	96.33	95.59	95.94
Tertiary	76.76	66.13	71.24

Note. Ministry of Education (2017).

Figure 1. Percentage of Participation for Female and Male Students, by Education Level


Secondary education is split between general and vocational streams. Table 2. Enrolments in Secondary Education for Female and Male Students by Level and Track shows the net enrolment of female and male students for lower and upper secondary and for each track. For enrolments by level and orientation of education, the numbers show a balance between general and vocational education in the senior high school levels, but in the junior high school levels, judging from the data available for males, vocational enrolments are only about half of those of general education (Ministry of Education, 2017).

Table 2. Enrolments in Secondary Education for Female and Male Students by Level and Track

	Female n	Male n	Total n
Junior high school general	327,260	359,944	687,204
Junior high school vocational	N/A	188,194	N/A
Senior high school general	154,812	156,274	311,086
Senior high school vocational	144,008	188,194	332,202

Note. Ministry of Education (2017). Enrolments for female students were absent.

Table 3. Net Enrolments in Tertiary Education for Female and Male Students by ISCED Program shows tertiary education enrolment figures based on International Standard

Classification of Education (ISCED)² figures. The majority of students enrolled were in bachelor programs. Also, more female than male students were enrolled in short-cycle programs, while more male than female students were in doctorate ones. These differences may be the result of cultural and normative pressures, where Taiwanese women are expected to work and marry at a younger age than men.

Table 3. Net Enrolments in Tertiary Education for Female and Male Students by ISCED Program

	<i>Female n</i>	<i>Male n</i>	<i>Total n</i>
<i>Short-cycle</i>	70,071	25,613	95,684
<i>Bachelor</i>	507,192	508,206	1,015,398
<i>Master's</i>	75,955	93,583	169,538
<i>Doctorate</i>	9,357	19,464	28,821

Note. Ministry of Education (2017).

Overall, Taiwan's education system gives similar opportunities to female and male students. Its participation rates are very high and remain so from primary to tertiary education, suggesting a strong political and cultural recognition of the importance and value of knowledge and its role in economic performance.

² ISCED refers to the International Standard Classification of Education, an educational reference system providing a framework for comparing similar levels of education in different countries. Level 5 refers to short-cycle tertiary education, level 6 to bachelor's level programs, level 7 to Master's level programs, and level 8 to doctoral level programs. (<http://uis.unesco.org/en/topic/international-standard-classification-education-isced>)

Taiwan's Higher Education System

Taiwan attaches a great importance to higher education, which it links to its economic prosperity, along with stated goals emphasising advanced knowledge and expertise geared towards national development (Mok, 2000). Accordingly, technical and vocational education is of paramount importance for Taiwan, as manufacturing and services, which require a highly qualified labour force, account for about 90 percent of its GDP. Technical and vocational education is structured parallel to regular education, all the way to the highest levels of credentials (Chang, 1991; International Affairs Office, 2016; T. Lin, Zhang, & Chai, 2005; R. Wu & Liu, 2014). More specifically, TVET is overseen by the Department of Technological and Vocational Education (DTVE), which is responsible for making and implementing national policies and providing supervision for public and private technical and vocational institutions in the areas of planning, financing, research, and international cooperation (Yu & Hsu, 2003).

Prior to 1945, Taiwan had but a single university, the Taipei Imperial University, and expansion only started in the 1960s (W.-H. Wu, Chen, & Wu, 1989). For the purpose of increasing competitiveness, Taiwan began to expand its higher education system and allow private institutions to open tertiary institutions (Mok, 2000; R.-J. Wang, 2003) with the purpose of alleviating the state responsibility in meeting increased demand (Law, 2003; Mok, 2000, 2003). Multiple strategies were implemented: increased tuition, decreased funding, and strengthened links between universities and industry (Mok, 2000). This resulted in a rapid expansion and privatisation of Taiwan's higher education system. As well, universities enjoyed greater autonomy with regards to finance, regulation, and management (Law, 2003; Mok, 2003; Weng, 2001).

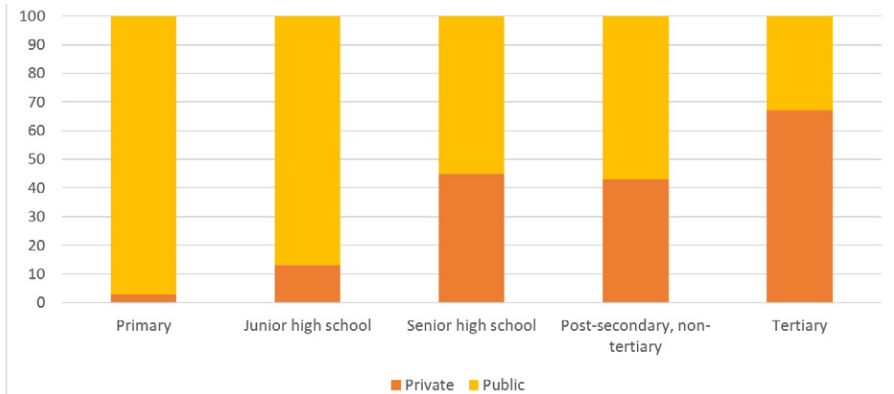
Alongside this rapid expansion, Taiwan encouraged universities to develop links and academic exchanges with universities overseas (Mok, 2003). In 2016, there were 116,416 international students in Taiwan, accounting for 8.9% of the student population. Meanwhile, 57,956 Taiwanese studied abroad, of which 36.5% studied in the US, 23.4% in Australia, and 14.6% in Japan (Ministry of Education, 2017). This high number of Taiwanese studying abroad did not result in brain drain (Ministry of Education, 2017). To the contrary, a great number of them returned, and with this returning of many highly qualified students, the perceived value of local credentials suffered (R.-J. Wang, 2003).

Though privatisation reached beyond tertiary education (Chang, 1991; International Affairs Office, 2016; T. Lin et al., 2005; R. Wu & Liu, 2014), the proportion of students attending private institutions remained highest for tertiary education, as Table 4. Student Enrolment Proportions in Private Institutions by Level of Education and Figure 2 show. The lowest proportion is found for primary institutions (3.00%) and increases steadily to 66.58% for tertiary institutions (Ministry of Education, 2017).

Table 4. Student Enrolment Proportions in Private Institutions by Level of Education

	Private institution enrolments %
Early childhood	N/A
Primary	3.00
Junior high school	12.97
Senior high school	44.73
Post-secondary, non-tertiary	43.47
Tertiary education	66.58

Note. Ministry of Education (2017).

Figure 2. Distribution of Student Enrolments in Private and Public Institutions, by Education Level

Reduced funding brought Taiwan's funding of public universities' expenditures to about 80% of what it used to be, with the remaining 20% to be obtained through external funding (Mok, 2000). This shift towards marketisation and competition mechanisms was done not only to promote expansion, but also with the aim of to increasing performance and effectiveness (Weng, 2001). However, it also raised valid concerns regarding quality assurance (Law, 2003; Mok, 2003; Weng, 2001) and credential inflation (R.-J. Wang, 2003).

That being said, from the students' perspective, the financial gap between public and private tertiary education is relatively small, as Table 5. Average Tuition and Fees for Taiwan's Public and Private Tertiary Education Institutions by Education Track, Compared to GDP per Capita illustrates, where average tuition and fees of private institutions are about twice those of public ones. However, given that Taiwan's GDP per capita is only about \$24,000, the difference between public and private tuition and fees remains substantial.

Table 5. Average Tuition and Fees for Taiwan's Public and Private Tertiary Education Institutions by Education Track, Compared to GDP per Capita

	Average tuition and fees		GDP per capita USD
	Public USD	Private USD	
<i>Regular tertiary</i>	\$1,947.14	\$3,645.36	\$24,131.90
<i>Vocational tertiary</i>	\$1,629.94	\$3,277.52	

Note. Ministry of Education (2017).

Regardless, the expansion and privatisation of Taiwan's tertiary education may have gone too far. In recent years, enrolments have decreased due to lower birth rates, which in turn led the Ministry of Education to reduce the number of higher education institutions by merging universities and combining resources (Z. Wang, 2017). Private institutions with low enrollment rates were encouraged to close down (Li, 2017; Zhang, 2017) and procedures for close down were developed (Executive Yuan, 2017a). These measures will likely move the proportion of students enrolled in public institutions, compared to private, upwards from its current 27% to a more balanced ratio (Shi, 2016).

Taiwan's TVET System

As mentioned above, Taiwan recognises the important role played by education, in particular TVET, in its economy's success (Chen & Shih, 1989; Yuen, 1993). Its education system provides several opportunities for students to choose technical and vocational education and arranges its vocational and regular education systems as parallel streams and provides students with several ways to move between them (Ministry of Education, 2017). In this way, students enjoy more freedom in their future career choice no matter which trajectory they choose in high school (C. Wu, 2012).

This dual system emerged in the 1950s as part of the Industrial Vocational Education Cooperative Project launched jointly by the U.S. and Taiwanese governments (Chang, 1991). The project involved parallel institutions, general and technical and vocational, for each level of education, starting from the secondary level (T. Lin et al., 2005; R. Wu & Liu, 2014). This system of two parallel trajectories constitutes a distinctive feature of Taiwan's education system (Chang, 1991; International Affairs Office, 2016; T. Lin et al., 2005; R. Wu & Liu, 2014).

Initially, the Industrial Vocational Education Cooperative Project received funding and advisory support from the U.S. government to review Taiwan's previous industrial education system, redesign its curriculum, update its teaching facilities, and provide training for its teachers, with the stated goal of supporting Taiwan's economic growth (Chang, 1991; Hanushek, 2013). Taiwan's private sector was also involved and contributed to funding the reform (Yuen, 1993).

Prior to 1950, Taiwan's industry was labour-intensive and schools were providing a basic and unspecialised labour force (T. Lin et al., 2005). However, during the 1950s and 1970s, Taiwan's industry became technology-intensive, which led to the creation, in 1974, of the first college of technology, the National Taiwan University of Science and Technology (T. Lin et al., 2005). In the following years, the number of junior colleges of technology and colleges of technology increased rapidly and, in the 1990s, research institutes and universities of technology were created (Yuan, 2005). As science and technology, particularly research and innovation, played an increasing role in Taiwan's economic performance, research centers were founded. Taipei Tech, a prestigious technical and vocational university, was the first university in Taiwan to offer graduate programs, including doctorates, in vocational education (L. Lin, 2012) Taiwan. After the recent world economic meltdown, many industries could not find the qualified workforces. Ironically, highly educated graduates were jobless. Globalization of current world economy requires more skillful and practical workforces. In order to meet the demand, diverse and well-rounded Technical and Vocational Education and Training (TVET).

Consistent with these changes, the programs offered also evolved. In the past, there were seven areas for vocational training: agriculture, industry, commerce, marine

products, nursing and midwifery, opera and arts, and home economics (Yuen, 1993). Today, vocational education includes electronics, biotechnology, agriculture technology, hospitality and tourism, navigation technology, and design innovation (International Affairs Office, 2016). Though these areas of training echo those of the past, Taiwan's intent to provide a highly skilled and current work force is clear.

To provide this highly skilled work force, Taiwan's vocational education offers a mechanism to closely link institutions, academic research, and industry (R. Wu & Liu, 2014) and offer a comprehensive formation that, interestingly, aims far beyond short-term productivity gains. Students receive a practical and an academic education ([International Affairs Office, 2016](#); [L. Lin, 2012](#)) with an emphasis on skills development, onsite operation, practice, and internship (Yuan, 2005). Furthermore, institutions cultivate research and innovation competencies (R. Wu & Liu, 2014; Yuan, 2005). For example, students are encouraged to participate in various vocational skill competitions held every year, and the winners are further encouraged to attend international competitions. These competitions and their results are often used in lieu or in addition to regular assessment, which increases their importance (C. Wu, 2012).

Taiwan's parallel system of education involves two distinct sets of institutions offering parallel programs in general and vocational education. General education includes four levels of institutions starting from senior high schools: high schools, colleges, universities, and research and academic centers, which provide masters' and doctorates. In parallel, technical and vocational education includes four equivalent levels: vocational schools (senior high school), junior colleges of technology (2-year and 5-year programs), colleges of technology (2-year bachelors with service extensions, 4-year bachelors, masters', and doctorates), and universities of technology (bachelors, masters', and doctorates) (International Affairs Office, 2016; T. Lin et al., 2005; Yuan, 2005). In technical and vocational education, a lot of importance is attached to practise and internships and there is a strong link between academic research and industry (R. Wu & Liu, 2014), but also, interestingly, to whole-person education (C. Wu, 2012; Yuan, 2005).

Taiwan's institutions, including TVET ones, have included whole-person education in their educational mission and practices (International Affairs Office, 2016). Whole-person education has been advocated by educators, researchers, and policymakers since the 1980s, both in western countries and in Taiwan and Hong Kong. In this approach, the final purpose of education is the cultivation of a full person who knows how to appreciate life and pursue happiness, and who understands that professional skills are but one part of a whole person. Humanities and the arts are also indispensable components of individuals' competencies. Accordingly, technical and vocational institutions include studies in the humanities, arts, languages, and education in their curriculum (Yu & Hsu, 2003). As well, educators attach more importance to whole-person education than to professional skills development (C. Wu, 2012). Finally, campus's physical and cultural environments are also considered and used to foster and promote virtue (C. Wu, 2012), and virtue and moral action are key elements in the evaluation of students (Yuan, 2005).

Vocational education is now free for a greater number of students. In 2014, Taiwan expanded free education to 12 years (C. Wu, 2012). This policy change, in addition to easy transfers between regular and vocational education, has helped raised the status of Taiwan's vocational education, whose students are treated with more honour and respect (C. Wu, 2012). This further attracted international students from Southeast Asia (C. Wu, 2012), which contributed towards the internationalisation of Taiwan's higher education (International Affairs Office, 2016).

That being said, in recent years, several concerns were raised related to increased access and increased enrolments in vocational education. With the expansion of higher education, many vocational schools were upgraded into colleges and universities, yet their qualifications, resources, and facilities did not entirely meet university standards, which raised quality concerns (Tang, 2012) and reduced the differences between vocational colleges and universities (T. Lin et al., 2005). As well, increased enrolments led to lower admission requirements, which in turn diminished the perceived value of higher education credentials (Tang, 2012). Finally, several institutions turned to graduates from North American institutions to fill their faculty ranks, despite these new faculty members often lacking industry experience (Tang, 2012). Together, these issues suggest that higher credentials do not necessarily equate to higher capabilities.

Actors' Perceptions of Taiwan's TVET

The following section moves further from official reports and scholarly explorations of Taiwan's vocational education and explores instead the perceptions of actors involved in Taiwan's vocational education system. To do so, the present study draws from a web-based survey, which included multiple choice and open-ended questions, and twenty interviews conducted in Taiwan, to explore how TVET's actors perceived its goals, achievements, resources, and challenges.

Actors' Perceptions of TVET's Goals

The survey asked participants to rate goals using a Likert scale to determine relative importance. As Table 6. Average Level of Perceived Importance of Taiwan's Vocational Education Goals shows, all vocational education goals were rated as quite important. Specifically, participants on average believed that the development and preparation of students were the most important goals: vocational education should develop students as active citizens who participate in society ($M = 3.59$), as well as preparing them for their roles as workers ($M = 3.55$). Conversely, although still rated quite important, participants believed that meeting the educational needs of disadvantaged communities was rated on average as the least important goal ($M = 3.11$).

Table 6. Average Level of Perceived Importance of Taiwan's Vocational Education Goals

	Scale maximum	Participants ($n = 1124$)	
		M	(SD)
<i>Developing students as active citizens who participate in their community and society</i>	4	3.59	(0.67)
<i>Preparing students for their roles as workers</i>	4	3.55	(0.66)
<i>Meeting employers' current needs</i>	4	3.12	(0.75)
<i>Meeting employers' future needs</i>	4	3.18	(0.76)
<i>Researching the future needs of workplaces</i>	4	3.33	(0.75)
<i>Meeting the educational needs of disadvantaged communities</i>	4	3.11	(0.79)
<i>Supporting individuals from disadvantaged communities to get good jobs</i>	4	3.16	(0.79)
<i>Supporting economic growth</i>	4	3.33	(0.74)

	Scale maximum	Participants (n = 1124)	
		M	(SD)
<i>Supporting sustainability</i>	4	3.49	(0.68)
<i>Supporting social inclusion</i>	4	3.38	(0.72)
<i>Supporting gender equality</i>	4	3.31	(0.80)
<i>Offering students opportunities to progress to higher-level study</i>	4	3.06	(0.87)
<i>Offering students opportunities to progress to higher-level work</i>	4	3.17	(0.82)

Note. n = Minimum number of participants for this set of questions, 1 = Not important, 2 = Somewhat important, 3 = Quite important; 4 = Very important.

Related to Table 6. Average Level of Perceived Importance of Taiwan's Vocational Education Goals, Table 7. Number and Percentage of Participants Selecting One of Taiwan's Vocational Education Goals Among Their Top Three captures participants' thoughts on goals of vocational education but ask them instead to prioritise three goals. The three most prioritised goals were developing students as active citizens (43.7%), preparing students for their roles as workers (44.3%), and researching the future needs of workplaces (17.5%). In contrast, supporting gender equality (3.1%), meeting the educational needs of disadvantaged communities (5.1%), and supporting individuals from disadvantaged communities (5.4%) were the three least prioritised goals.

Table 7. Number and Percentage of Participants Selecting One of Taiwan's Vocational Education Goals Among Their Top Three

	Participants (n = 1757)	
	n	%
<i>Developing students as active citizens who participate in their community and society</i>	768	43.7
<i>Preparing students for their roles as workers</i>	778	44.3
<i>Meeting employers' current needs</i>	196	11.2
<i>Meeting employers' future needs</i>	159	9.0
<i>Researching the future needs of workplaces</i>	308	17.5
<i>Meeting the educational needs of disadvantaged communities</i>	89	5.1
<i>Supporting individuals from disadvantaged communities to get good jobs</i>	94	5.4
<i>Supporting economic growth</i>	224	12.7
<i>Supporting sustainability</i>	213	12.1
<i>Supporting social inclusion</i>	121	6.9
<i>Supporting gender equality</i>	55	3.1
<i>Offering students opportunities to progress to higher-level study</i>	125	7.1
<i>Offering students opportunities to progress to higher-level work</i>	215	12.2

The interviews provided further insights into the perceived goals of Taiwan's TVET. When asked, interview participants were of the mind that its goals were, primarily, to cultivate practical skills, provide a seamless transition to work, cultivate comprehensive capabilities, and serve as a pathway to higher education. These seem to be echoed by the survey results presented above. Most interviewees stated that the primary and most important goal was to cultivate skilled workers with practical skills for economic development so that graduates could have seamless transitions into the workplace. Specifically, some interviewees pointed out that the professional skills cultivated in TVET institutions were mainly low- and medium-level.

However, for other interviewees, goals should be broader, namely to cultivate students with various capabilities according to their characters and interests in a broader perspective. To reach this goal, interviewees added that internships and cooperation between schools and enterprises played an important role, particularly because, in internships, students acquire real work experience and correct potential misunderstandings. Internships also help students develop critical thinking skills and judgment based on practical experience. In particular, one interviewee mentioned that internship experience is different from apprenticeship, which involves on-site practice with the guidance of a master, because in internships students learn the knowledge systematically in class and then test what they have learned on site. Students can make their own judgment independently because they are not following the practice of a master in the workplace.

That being said, several interviewees reminded us that TVET also serves as a pathway to higher education, as a majority of graduates from technical high school pursue their studies in universities instead of entering the labour market.

Survey participants made additional comments on TVET's goals, which tend to echo those made by the interview participants. While most respondents confirmed that cultivating practical skills and making a contribution to society are important goals, some had a contrasting opinion, emphasising the importance of capabilities, such as working attitude, cooperation spirit, character formation, innovation, independent thinking, and positive values towards life instead of skills training. These participants reflected that sustainable capabilities, such as social ethics, cooperation, and attitude are more important than skills in the workplace, and that these are crucial for long-term development. For example, one respondent argued that education is not only for imparting knowledge, but also for cultivating problem solving, a spirit of serving, and contributions to both household and country, and for facilitating social mobility. Another respondent summarised TVET's goals thus: "On one hand, it is important to cultivate the capabilities such as critical thinking, problem solving, and lifelong learning. On the other hand, helping students to find their own interests and find a career fitting them well is equally important."

The comments from the interview participants suggest that these goals have not been achieved to a great extent, particularly in the decades following higher education expansion, where many technical colleges became technology universities. Currently,

according to the participants, technical high schools are serving as pathways to higher education instead of cultivating graduates for the labour market. Technical high schools' teachers mentioned that nearly 99% of their graduates went to university. They also mentioned that internships in technical high schools were very cursory and not as fruitful as intended. They further added that, due to the fast expansion of higher education and the lack of qualified teachers, TVET was losing some of its key features, in particular the development of strong practical skills. Such changes blur the line between vocational and regular education and suggest a gap between what is taught in class and what is needed in the workplace.

That being said, according to our interview participants, new policies are being put in place to strengthen practical training, for example a new curriculum, starting in 2019, will emphasise practical skills training. Several interviewees mentioned another new policy issued recently, this one stipulating that TVET teachers should spend six months in industry settings, over a period of six years to develop practical experience and renew their skills, though this period need not be continuous. Moreover, some interviewees mentioned that requirements for new TVET teachers have become more demanding. Teacher applicants must now have practical working experience in appropriate work settings. Also, colleges and universities no longer recruit newly graduated PhD students to teach in their technical education programs, and candidates now need work experience to teach practical courses.

Actors' Perceptions of TVET's Achievements

The survey compared goals with perceived success to determine whether Taiwan's TVET was successful, but also whether it was successful where it mattered. Overall, participants on average believed that vocational education in Taiwan is successful to a limited extent in promoting student success and societal growth as evidenced in Table 8. Average Level of Perceived Success of Taiwan's Vocational Education, by Goal. Indeed, only vocational education is successful in developing students for their roles as workers in their occupation, was deemed successful to a moderate extent ($M = 3.07$).

Table 8. Average Level of Perceived Success of Taiwan's Vocational Education, by Goal

	Scale maximum	Participants ($n = 1005$)	
		M	(SD)
<i>Vocational education is successful in developing students as active citizens</i>	4	2.81	(0.92)
<i>Vocational education is successful in developing students for their roles as workers in their occupation</i>	4	3.07	(0.83)
<i>Vocational education is successful in meeting employers' current needs</i>	4	2.73	(0.82)

	Scale maximum	Participants (<i>n</i> = 1005)	
		<i>M</i>	(<i>SD</i>)
<i>Vocational education is able to meet the educational needs of disadvantaged communities</i>	4	2.68	(0.83)
<i>Vocational education is successful in supporting students' learning</i>	4	2.88	(0.83)
<i>Vocational education is successful in supporting economic growth</i>	4	2.97	(0.86)
<i>Vocational education is successful in supporting sustainability</i>	4	2.86	(0.89)
<i>Vocational education is successful in supporting student inclusion</i>	4	2.76	(0.85)
<i>Vocational education is successful in supporting gender equality</i>	4	2.69	(0.86)
<i>Vocational education is successful in supporting students to progress to higher-level study</i>	4	2.90	(0.84)
<i>Vocational education is successful in supporting students to progress to higher-level work</i>	4	2.73	(0.87)

Note. *n* = Minimum number of participants for this set of questions, 1 = Not at all, 2 = To a limited extent, 3 = To a moderate extent; 4 = To a great extent.

Interview participants were of the mind that the last few decades had seen Taiwan's technical and vocational education make great achievements: contributing to employment, supporting higher education, providing versatile talents' training, granting certificates and competition awards, promoting social justice, exploring broader interests, and obtaining good feedback for workplaces. Though the survey results do not sound as positive as the interviewees, let us go over each of these in turn.

First, a majority of interviewees agreed that TVET has contributed greatly to workplace employment by cultivating workers with practical skills. This was due to TVET's work-oriented and very practical training model. As Taiwan's economy is based on small and medium enterprises, it relies on TVET institutions for its supply of skilled workers. Moreover, some interviewees mentioned that past graduates have climbed up the career ladder and become bosses or leaders in many enterprises. TVET institutions are seen as cradles for future bosses of small and medium enterprises. Because of its practice-based pedagogy and work preparation, graduates experience very few difficulties in finding a job. Smooth and easy transition is a distinctive feature of Taiwan's TVET.

Second, interviewees saw TVET high schools as supporting higher education because most graduates go on to university. Because of the parallel structure of Taiwan's education system, students from TVET high schools can transfer to the academic higher education track and vice versa. Within this parallel structure, although there are opportunities for transition from one side to the other, many interviewees mentioned that opportunities for transition are not equivalent. Students graduating from general high school have plenty of opportunities to transfer to TVET colleges and universities, while only a few positions are kept in general higher education institutions for TVET high school graduates wishing

to transfer. One interviewee estimated that the ratio was close to 10:1. As for graduate educations, there are no quotas set and students have equal chances to transfer in one direction or the other.

A third achievement mentioned by interviewees was preparing students with versatile capabilities as well as cultivating attitude and character. The curriculum allows students to enrol in humanities and arts courses alongside applied courses. Furthermore, teachers observe and assess students' behaviour, and guide them with good moral standards. Also, cooperation and teamwork spirit are developed and emphasised through experiments or activities requiring group work. As a result, students develop down-to-earth attitudes along good practical problem-solving skills. Regarding this point, several interviewees maintained that TVET graduates had good attitude and discipline, which made them good employees and loyal to their workplaces and roles.

Fourth, many interviewees considered a valuable achievement the professional skills certificates obtained before graduation and the national and international professional skills competitions. Many certificates are available, which help graduates secure employment. Two interviewees even mentioned the vocational track as a double-win strategy, meaning students can go further for academic research or they can stick to applied professions. Another interviewee, a dean in a private TVET college, shared his experience, starting from working as a technical staff after college, continuing to study to obtain a university degree while working, then getting a masters' degree and going abroad for doctoral education. For this participant, there are always chances for TVET students to go further in their studies if they want.

TVET also contributed to social justice, according to interviewees, by promoting social justice through providing social mobility for students from low-economic status families. Interviewees maintained that government policy and funding offered good support in this respect. In contrast with tertiary education institutions (Table 5. Average Tuition and Fees for Taiwan's Public and Private Tertiary Education Institutions by Education Track, Compared to GDP per Capita), secondary-level TVET institutions, both public and private, are tuition free. Taiwan pays tuition for students to encourage them towards TVET streams. Funding also comes from enterprises, with many kinds of cooperation between institutions and industry. For example, some TVET programmes' tuition are funded by enterprises on the condition that students work for the companies funding them after graduation as part of their funding contracts. Mentioning social justice, a technical high school teacher said that the evening class cohort is designed to benefit students who are working days because of the financial burden, which helps them getting certificates for future professional positions, rather than continuing in low-salary labour work. The teacher's school also offered free lunch for students from low-income families. The teacher considered this the only chance for students from disadvantaged families to make a change in their lives and climb up the social ladder.

In addition, interviewees mentioned TVET students having opportunities to explore their interests and future career options by taking a major or enrolling in applied courses.

Students can thus gain a broader view of available careers and professions, which helps them make preparations earlier than general high school students, who are only focusing more strongly on academic study.

Last, but not least, four interviewees, professors from a prestigious technological university, were happy to admit that their graduates ranked among the best in a national survey of employers' satisfaction and job market competitiveness. They said that employers prefer to recruit their graduates because of the practical skills and capabilities, which implies that TVET universities' education and training is as highly regarded as that of regular education institutions.

With regards to graduates' outcomes, the perspectives of the interview participants were not greatly echoed by the survey participants, whose ratings were more modest, though not negative per se. Participants thought that, on average, there was some degree of preparation of graduates from vocational education programmes for a variety of skills and knowledge in entering the labour market, as seen in Table 9. Outcomes of Taiwan's TVET Graduates. Participants stated that graduates were most prepared to contribute to the aims and goals of their teams ($M = 3.55$), influence how work is organised at their workplaces ($M = 3.53$), and have input into the aims and goals of their workplace ($M = 3.54$).

Table 9. Outcomes of Taiwan's TVET Graduates

	Scale maximum	Participants ($n = 725$)	
		<i>M</i>	<i>(SD)</i>
<i>Influence how their work is organised in your country</i>	5	3.39	(0.85)
<i>Influence how work is organised at their workplace</i>	5	3.53	(0.81)
<i>Exercise judgment about their own work, set their own goals, and how they will achieve their goals</i>	5	3.41	(0.90)
<i>Have input into the aims and goals of their work team</i>	5	3.55	(0.83)
<i>Have input into the aims and goals of their workplace</i>	5	3.54	(0.85)
<i>Have access to and be able to undertake on-the-job training</i>	5	3.53	(0.84)
<i>Have access to and be able to undertake off-the-job training</i>	5	3.31	(0.93)
<i>Have variety in the type of work that they do</i>	5	3.31	(0.94)
<i>Transfer to different roles at the same level</i>	5	3.20	(0.91)
<i>Be promoted to higher-level roles</i>	5	3.17	(0.94)
<i>Be a member of a union</i>	5	3.20	(0.99)

Note. n = Minimum number of participants for this set of questions, 1 = Not at all, 2 = Very little, 3 = Somewhat, 4 = Quite a lot, 5 = To a great extent.

With regards to the link between education and occupation (Table 10. Links between Taiwan's Vocational Education and Occupation Qualifications), participants believed that qualifications were neither too tightly nor too loosely linked to occupations which were at the same level as the qualification.

Table 10. Links between Taiwan's Vocational Education and Occupation Qualifications

	Scale maximum	Participants (n = 721)	
		M	(SD)
<i>how vocational education qualifications link to occupations which are at the same level as the qualification</i>	3	1.95	(0.80)

Note. n = Minimum number of participants for this set of questions, 1 = Too broad, 2 = About right, 3 = Too narrow.

Table 11. Average Perspective on Taiwan's Vocational Education Qualifications presents participants' perspectives on the opportunities afforded by vocational education qualifications. Overall, participants believed that there were moderate opportunities for students to both progress from lower to higher level vocational education qualifications and from vocational education qualifications to higher education qualifications. However, participants believed that there were limited to moderate opportunities for students to progress to higher-skilled occupations.

Table 11. Average Perspective on Taiwan's Vocational Education Qualifications

	Scale maximum	Participants (n = 764)	
		M	(SD)
<i>What opportunities are there for students to progress from lower to higher level vocational education qualifications</i>	3	2.13	(0.74)
<i>What opportunities are there for students to progress from vocational education qualifications to higher education qualifications?</i>	3	2.24	(0.75)
<i>What opportunities are there for students to progress to higher-skilled occupations?</i>	3	1.90	(0.72)

Note. n = Minimum number of participants for this set of questions, 1 = Limited, 2 = Moderate, 3 = Extensive.

To sum, though their ratings were modestly encouraging, survey participants were not as celebratory as interview participants with regards to Taiwan's TVET achievements. This gap between their perceptions nevertheless comes down to a positive, if not enthusiastic, perception of vocational education's achievements and suggests an untapped potential for greatness. What is perhaps more striking is that survey results remain so close to one another, with few themes emerging as either in need of praise or in need of policy attention. As such, the results point to a general satisfaction, though perhaps a guarded one.

Actors' Perceptions of TVET's Resources

TVET achievements require the support of government and other partners. The following explores the perceptions of participants on its resources. Table 12. Average Level of Agreement with Taiwan's Vocational Education Having Sufficient Resources, by Goal shows that survey participants had the highest level of agreement with Taiwan's vocational

education having the needed resources to develop students as workers ($M = 3.95$). In comparison, the lowest level of agreement related to vocational education having the needed resources to support individuals from disadvantaged communities to get good jobs ($M = 3.47$). That being said, overall, perceptions are modestly positive and even across the various themes.

Table 12. Average Level of Agreement with Taiwan's Vocational Education Having Sufficient Resources, by Goal

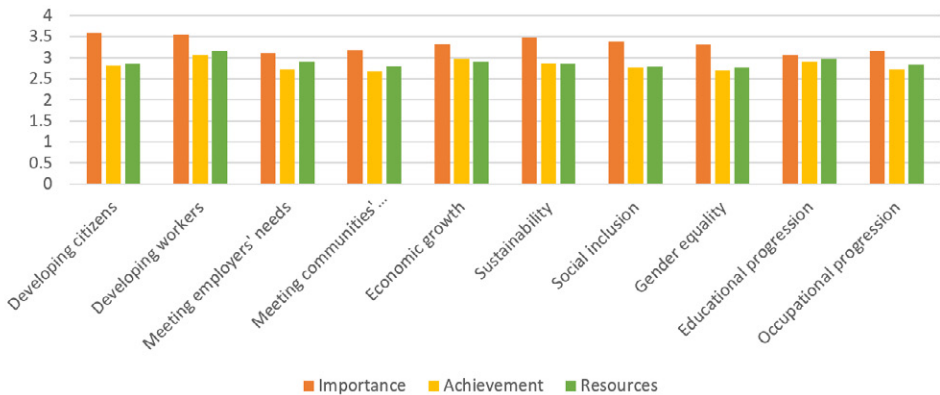
	Scale maximum	Participants ($n = 939$)	
		M	(SD)
<i>Vocational education has the resources it needs to develop students as active citizens</i>	5	3.56	(1.07)
<i>Vocational education has the resources it needs to develop students for their roles as workers in their occupation</i>	5	3.95	(0.95)
<i>Vocational education has the resources it needs to meet employers' current needs</i>	5	3.64	(0.93)
<i>Vocational education has the resources it needs to meet the educational needs of disadvantaged communities</i>	5	3.50	(0.97)
<i>Vocational education has the resources it needs to support individuals from disadvantaged communities to get good jobs</i>	5	3.45	(1.02)
<i>Vocational education has the resources it needs to support economic growth</i>	5	3.64	(1.01)
<i>Vocational education has the resources it needs to support sustainability</i>	5	3.56	(1.05)
<i>Vocational education has the resources it needs to support social inclusion</i>	5	3.47	(1.01)
<i>Vocational education has the resources it needs to support gender equality</i>	5	3.45	(0.99)
<i>Vocational education has the resources it needs to support students to progress to higher-level study</i>	5	3.71	(0.96)
<i>Vocational education has the resources it needs for students to progress to higher-level work</i>	5	3.54	(1.05)

Note. n = Minimum number of participants for this set of questions, 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree.

As perceptions regarding goals (see Table 6. Average Level of Perceived Importance of Taiwan's Vocational Education Goals), achievements (see Table 8. Average Level of Perceived Success of Taiwan's Vocational Education, by Goal), and resources (see Table 12. Average Level of Agreement with Taiwan's Vocational Education Having Sufficient Resources, by Goal) can sometimes be related, Figure 3. Level of Agreement on a 4-Point Likert Scale with Statements Describing Goal Importance, Level of Achievement, and Adequate Resources, by Goal Type presents the means obtained for related goal types for all three categories. Perceived importance is systematically rated higher than achievement, with perceptions of adequate resources closely matching those of perceived

achievements. These results suggest a modest level of satisfaction with both the system's achievements and its resources, and a lingering gap between what is and what should be, with room for improvement.

Figure 3. Level of Agreement on a 4-Point Likert Scale with Statements Describing Goal Importance, Level of Achievement, and Adequate Resources, by Goal Type



Survey participants on average rated social justice goals as the least important in Taiwan's vocational education institutions. Specifically, supporting gender equality, meeting the educational needs of disadvantaged communities, and supporting individuals from disadvantaged communities, were the three least prioritised goals (Table 7. Number and Percentage of Participants Selecting One of Taiwan's Vocational Education Goals Among Their Top Three). Indeed, participants on average at least agreed with the statement that vocational education had the needed resources to support individuals from disadvantaged communities to get good jobs (Table 12. Average Level of Agreement with Taiwan's Vocational Education Having Sufficient Resources, by Goal).

Survey participants also believed that vocational education graduates were somewhat prepared for their workplace. Moreover, participants believed that qualifications earned in vocational education typically linked to occupations at the same level, with moderate opportunities to progress from lower levels of education to higher levels of education, both vocationally and otherwise.

Finally, as indicated in Table 6. Average Level of Perceived Importance of Taiwan's Vocational Education Goals, participants believed that the development and preparation of students were the most important goals: vocational education should develop students as active citizens who participate in society and prepare them for their roles as workers. Indeed, there was the highest degree of agreement from participants that Taiwan's vocational education had the needed resources to develop students as workers (Table 12. Average Level of Agreement with Taiwan's Vocational Education Having Sufficient Resources, by Goal). There was an equally strong level of agreement that Taiwan's vocational education was successful in doing so (Table 8. Average Level of Perceived Success of Taiwan's Vocational Education, by Goal). Therefore, there is an alignment in participants' beliefs between goals, resources, and ultimate success in preparing

graduates from vocational education for the workplace.

In relation to resources, interview participants focused on government policy, government funding, support and cooperation with enterprises, and support for teachers' development. We cover these in turn in what follows.

To start, many interviewees mentioned how TVET benefits from government administration and funding allocation. Under the supervision of the Ministry of Education, a special department is responsible for its policy, planning, finance, and administration. This administrative separation between vocational and higher education is beneficial for TVET's development, because its institutions do not compete with higher education institutions for funding. In addition, to support TVET development and encourage more students to choose vocational education, Taiwan's government made TVET high schools' tuition free, in both public and private institutions. However, some concerns remain. Survey respondents mentioned that resources for development are not enough, especially for private institutions. They also mentioned that industry funding is necessary.

Second, interviewees discussed how cooperation with companies or enterprises serves as a good resource for TVET development. Some programs are funded or co-designed in collaboration with industry. Some businesses take the initiative and entrust colleges or universities to provide a special class or program for a cohort. Tuition is paid by the employers and students have signed contracts which require work for a number of years after graduation.

Also, interviewees identified government resource allocation policy as a good resource for TVET. New policy, with emphasis on requiring practical experience for its teachers, has been issued with the goal of strengthening vocational education. Teachers are required to participate in practical work in industry for an accumulated period of six months for every six years of teaching. This program is deemed to help teachers make use of industry resources and bring practical experience to their classrooms. Moreover, a new recruitment policy now requires TVET teachers to have a practical working experience, in addition to their teaching qualifications.

Fourth, for several interview participants, adequate resources for teachers' development is necessary to support TVET in achieving its broader goals. Teachers are encouraged to attend seminars and obtain certificates or further higher degree programs, and government seminars and conferences are free for teachers. According to one technical high school teacher, teachers are supported by their schools if they wish to pursue flexible master or doctoral programs while fulfilling their teaching obligations. Colleagues are supportive and willing to shift time schedules with those doing their degree programmes. However, despite this support, several interviewees clarified that there is no monetary support for teachers' further education initiatives. Teachers need to pay for tuition.

Finally, regarding TVET resources, some survey respondents added that some vocational education teachers from industry, with many years of experience, are very important

for vocational education, even though they do not have high-level credentials. Some interviewees echoed those comments and mentioned that experienced personnel from industry are often employed as students' supervisors.

Regarding resources for teachers and education support workers, the survey asked participants several questions related specifically to their working conditions. With regards to the nature and conditions of work for vocational education teachers, Table 13. Average Level of Agreement with Statements Describing Taiwan's Vocational Education Teachers' Work Nature and Conditions shows that participants agreed foremost that teachers should have appropriate teaching qualifications ($M = 4.23$). The level of agreement was lowest regarding teachers having the needed time and resources to work with employers to define the necessary knowledge and skills for workers ($M = 2.90$). Again, on average, there was neither strong disagreement nor strong agreement with the statements.

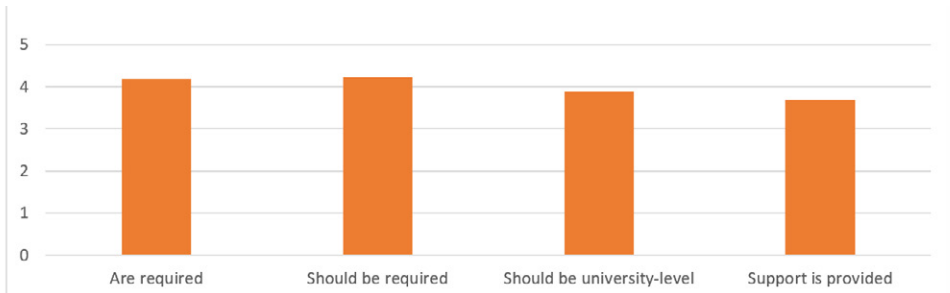
Table 13. Average Level of Agreement with Statements Describing Taiwan's Vocational Education Teachers' Work Nature and Conditions

	Scale maximum	Participants ($n = 842$)	
		M	(SD)
<i>Vocational education teachers are valued in my institution</i>	5	3.51	(1.15)
<i>Vocational education teachers have the resources they need to research the future needs of workplaces</i>	5	3.22	(1.14)
<i>Vocational education teachers have the time and resources they need to work with employers in defining what workers will need to know and do</i>	5	2.90	(1.16)
<i>Vocational education teachers are currently required to have appropriate teaching qualifications</i>	5	4.19	(0.78)
<i>Vocational education teachers should be required to have specific teaching qualifications</i>	5	4.23	(0.75)
<i>Vocational education teachers should be required to have university level teaching qualifications</i>	5	3.89	(0.95)
<i>Vocational education teachers are provided with support to gain appropriate teaching qualifications</i>	5	3.69	(0.99)
<i>Vocational education teachers have sufficient opportunities to undertake professional development activities</i>	5	3.48	(1.12)
<i>Vocational education teachers have opportunities to progress in their career in vocational education</i>	5	3.53	(1.11)
<i>Vocational education teachers are provided with adequate resources to undertake their jobs</i>	5	3.36	(1.10)
<i>Vocational education teachers are involved in shaping the nature of their jobs</i>	5	3.43	(1.06)
<i>There are sufficient vocational education teachers on permanent contracts in my institution</i>	5	3.32	(1.17)

Note. n = Minimum number of participants for this set of questions, 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree.

Figure 4. Level of Agreement on a 5-Point Likert Scale with Statements Describing Teaching Qualifications for Vocational Education Teachers groups the statements from Table 13. Average Level of Agreement with Statements Describing Taiwan’s Vocational Education Teachers’ Work Nature and Conditions related to teaching qualifications. Overall, survey participants agree that vocational education teachers are and should be required to possess teaching qualifications and that this qualification should be of university-level. However, they are somewhat more guarded with there being adequate support for teachers to obtain these credentials.

Figure 4. Level of Agreement on a 5-Point Likert Scale with Statements Describing Teaching Qualifications for Vocational Education Teachers



With regards to the nature and conditions of work for vocational education support workers, Table 14. Average Level of Agreement with Statements Describing Taiwan’s Vocational Education Support Workers’ Work Nature and Conditions indicates that the greatest level of agreement was found for education support workers being valued ($M = 3.30$) and involved in shaping the nature of their jobs ($M = 3.25$). There was least agreement with education support workers having opportunities to become vocational education teachers ($M = 3.04$). Similar to previous questions, on average, there was neither strong disagreement nor strong agreement with the statements, suggesting an overall modest satisfaction with the system.

Table 14. Average Level of Agreement with Statements Describing Taiwan’s Vocational Education Support Workers’ Work Nature and Conditions

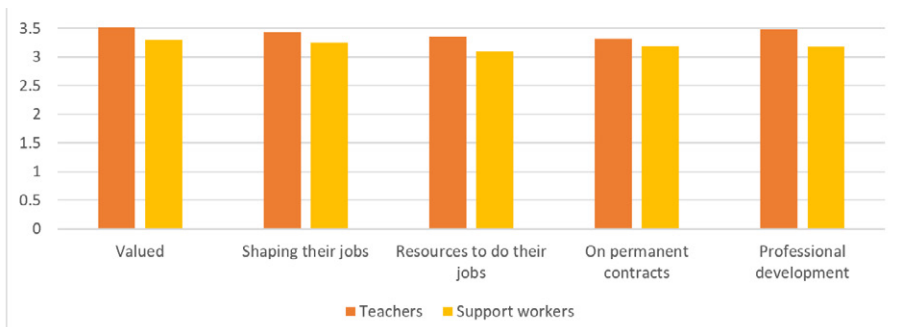
	Scale maximum	Participants ($n = 794$)	
		M	(SD)
<i>Education support workers are valued in my institution</i>	5	3.30	(1.05)
<i>Education support workers have good career structures</i>	5	3.05	(1.07)
<i>Education support workers are provided with adequate resources to undertake their jobs</i>	5	3.09	(1.09)
<i>Education support workers are involved in shaping the nature of their jobs</i>	5	3.25	(1.03)
<i>Education support workers have opportunities to become vocational education teachers</i>	5	3.04	(1.12)

	Scale maximum	Participants (n = 794)	
		M	(SD)
<i>There are sufficient education support workers on permanent contracts in my institution</i>	5	3.19	(1.14)
<i>There are sufficient opportunities for education support workers to undertake higher level qualifications</i>	5	3.16	(1.08)
<i>There are sufficient opportunities for education support workers to undertake professional development activities</i>	5	3.18	(1.05)

Note. n = Minimum number of participants for this set of questions, 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree.

Figure 5. Level of Agreement on a 5-Point Likert Scale with Statements Describing Working Conditions of Vocational Education Teachers and Support Workers, by Job Type groups and compares statements from Table 13. Average Level of Agreement with Statements Describing Taiwan's Vocational Education Teachers' Work Nature and Conditions and Table 14. Average Level of Agreement with Statements Describing Taiwan's Vocational Education Support Workers' Work Nature and Conditions describing the perceived working conditions of vocational education teachers and support workers. The results for each category are similar, though support workers' scores are systematically lower, suggesting a slight overall difference between working conditions, though these do not seem to be related to a specific issue.

Figure 5. Level of Agreement on a 5-Point Likert Scale with Statements Describing Working Conditions of Vocational Education Teachers and Support Workers, by Job Type



The perceptions of Taiwan's TVET actors, with regards to resources are, as for achievements, mildly positive and even across the various themes. The interviews suggest that the state's efforts make sense to participants and are well received. That being said, the most salient points emerging from the results point to increasing teaching workloads, which can have important repercussions on the quality of teaching. As policy seems to move towards having teachers with stronger ties to industry, increased attention needs to be shifted towards reducing the various demands being piled on teachers and maintaining a healthy balance between teaching and practical qualifications.

Actors' Perceptions of TVET's Challenges

Despite TVET's great contributions to Taiwan's economy, it faces several challenges. In presenting the context of vocational education in Taiwan, the report emphasised several challenges, in particular the issues related to the rapid expansion and privatisation of TVET followed by declining enrolments. Also mentioned were issues related to the academisation of vocational education linked to its perceived lower status.

Related, Table 15. Average Level of Agreement with Statements Describing the State of Taiwan's Vocational Education presents data on participants' degree of agreement or disagreement to general statements about Taiwan's vocational education. Among the statements, participants expressed the strongest degree of agreement to the statement "quality and standards of vocational education qualifications are under pressure" ($M = 3.74$) and the strongest degree of disagreement to "senior secondary school students should not do vocational education until after they finish school" ($M = 2.24$). Again, like in previous questions, on average, there was neither strong disagreement nor strong agreement with the statements.

Table 15. Average Level of Agreement with Statements Describing the State of Taiwan's Vocational Education

	Scale maximum	Participants ($n = 800$)	
		M	(SD)
<i>Education support workers are valued in my institution</i>	5	3.30	(1.05)
<i>Education support workers have good career structures</i>	5	3.05	(1.07)
<i>Vocational education is highly valued in my country</i>	5	2.61	(1.15)
<i>Vocational education is as strongly valued as university in my country</i>	5	2.45	(1.10)
<i>Vocational education institutions are guaranteed stable funding</i>	5	2.66	(1.09)
<i>Public vocational education institutions are adequately funded</i>	5	3.24	(1.18)
<i>Privatisation in vocational education in my country is not a threat to public vocational education institutions</i>	5	3.25	(1.23)
<i>Quality and standards of vocational education qualifications are good</i>	5	3.19	(1.05)
<i>Quality and standards of vocational education qualifications are under pressure</i>	5	3.74	(0.87)
<i>Government values vocational education institutions in my country</i>	5	2.64	(1.16)
<i>Government includes vocational education institutions in planning the future of vocational education in my country</i>	5	3.21	(1.08)
<i>Vocational education institutions in my country have the autonomy they need to carry out their mission</i>	5	2.94	(1.07)
<i>Vocational education does not have to compete with universities for students</i>	5	2.42	(1.20)

	Scale maximum	Participants (n = 800)	
		M	(SD)
<i>Public vocational education institutions do not have to compete with private vocational education institutions for students</i>	5	2.87	(1.31)
<i>There are enough opportunities for students in senior secondary school to do vocational education</i>	5	3.34	(1.05)
<i>Senior secondary school students should not do vocational education until after they finish school</i>	5	2.24	(1.03)

Note. n = Minimum number of participants for this set of questions, 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree.

Figure 6. Level of Agreement on a 5-Point Likert Scale with Statements Describing the State of Vocational Education, Figure 7. Level of Agreement on a 5-Point Likert Scale with Statements Describing Governmental Support for Vocational Education, and Figure 8. Level of Agreement on a 5-Point Likert Scale with Statements Describing Competition Between Public and Private Vocational Education Institutions highlight some of the results from Table 15. Average Level of Agreement with Statements Describing the State of Taiwan's Vocational Education and groups them. Figure 6. Level of Agreement on a 5-Point Likert Scale with Statements Describing the State of Vocational Education groups statements describing the perceived value of Taiwan's vocational education system and its quality and standards. Survey participants did not feel that TVET was valued by society or even as valued as universities. They felt more strongly, however, about the system's quality and standards, though they agreed that these standards were under pressure.

Figure 6. Level of Agreement on a 5-Point Likert Scale with Statements Describing the State of Vocational Education

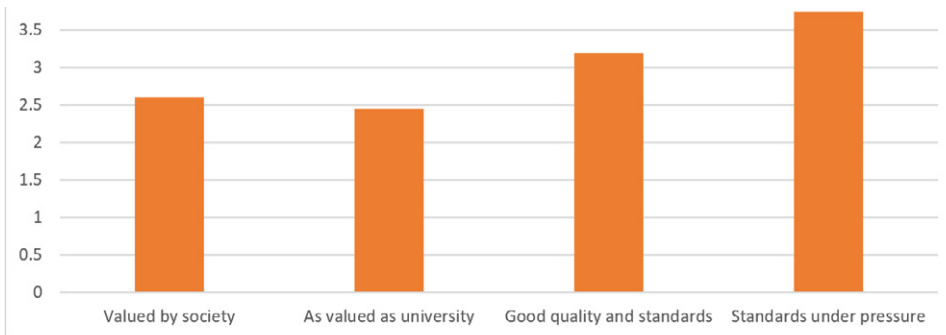


Figure 7. Level of Agreement on a 5-Point Likert Scale with Statements Describing Governmental Support for Vocational Education highlights statements from Table 15. Average Level of Agreement with Statements Describing the State of Taiwan's Vocational Education related to governmental support. Participants neither agreed nor disagreed that TVET was valued by government, included in planning decisions, adequately autonomous and funded, though they were more guarded as to whether this funding would remain stable.

Figure 7. Level of Agreement on a 5-Point Likert Scale with Statements Describing Governmental Support for Vocational Education

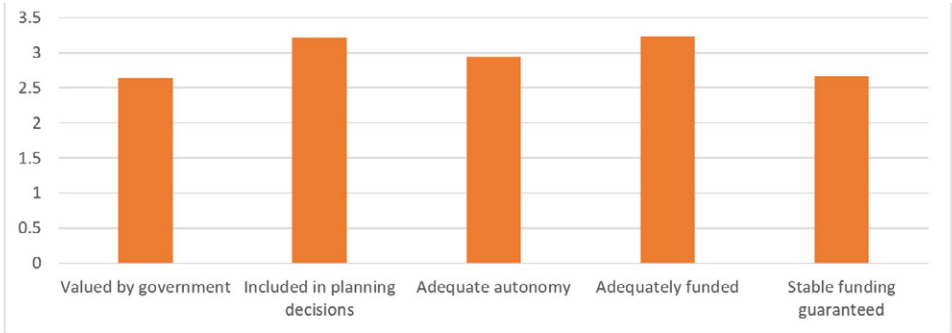
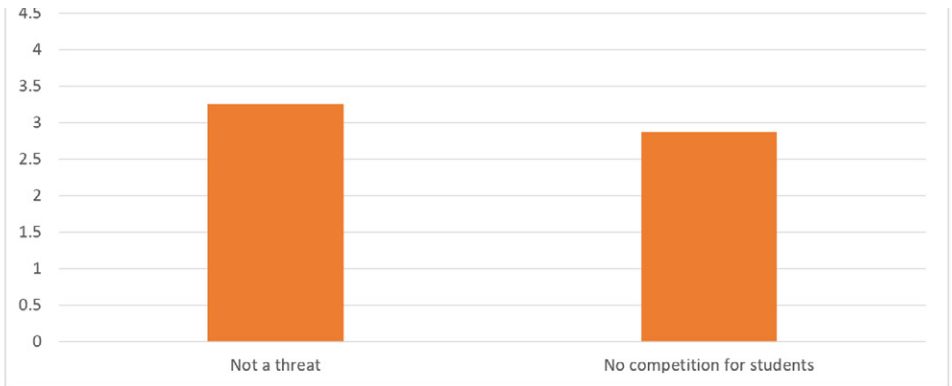


Figure 8. Level of Agreement on a 5-Point Likert Scale with Statements Describing Competition Between Public and Private Vocational Education Institutions looks at statement from Table 15. Average Level of Agreement with Statements Describing the State of Taiwan’s Vocational Education related to privatisation. The results show that survey participants neither agreed nor disagreed that privatisation was a threat or that public institutions had to compete with private ones for students.

Figure 8. Level of Agreement on a 5-Point Likert Scale with Statements Describing Competition Between Public and Private Vocational Education Institutions



Interviews with TVET actors brought further clarifications on its challenges. These included: lower student enrolments, study-work gaps, disappearing features such as its close links with industry, low status, unequal chances, unfavourable policy for private institutions, low salaries, and teachers’ and educational workers’ working conditions.

Foremost, all interviewees mentioned that low-birth rates have led to low student enrolments, which has been a great challenge for public and private and vocational and regular higher education institutions. The situation has been worse for private TVET institutions, because of their higher tuition fees. Some programs have been closed because of low enrolments.

Second, another challenge mentioned by interviewees is the noticeable capability or skills gap between what students learn in class and what they require in their workplaces. This comment is also mentioned in the survey's open-ended responses. In particular, one respondent mentioned that: "The curriculum at school does not match the requirements in the workplace. There has been no clear idea about how to reach smooth transition to the workplace." That being said, for some interviewees, seamless transition is impossible. Although internship opportunities do help students to practise what they learn in class in their workplaces and broaden their career choices, quality internship programs are not well organised and their outcomes are not as good as expected. In recent years, this gap has been noticed by government and addressed through policy. TVET teachers are now required to return to industry to gather practical experience for a period of half a year for every six years. As well, industry experience is highly valued in teacher recruitment.

A third challenge alluded to by interview participants is the disappearance of some of TVET's original strong features, in particular practical skills training. This happened after the higher education expansion of the 1990s. According to one National Teachers Association member, the upgrading of TVET colleges into technology universities blurred the distinction between vocational and regular streams, with vocational institutions losing a great measure of practical skills training. TVET high schools are focusing too strongly on transfer to higher educational levels and do not adequately prepare students for employment. Survey respondents also expressed critical opinions about these pathways to higher education: "There are extensive opportunities to higher education for TVET students. However, the higher education institutions are usually research-based, not practical skills-based. Students can only enhance their skills in the workplace through practical work. The master and doctoral programs in TVET institutions are still research-based, without focus on application."

Fourth, according to many interviewees, the low status of TVET in Taiwanese society is a challenge for its development. TVET is always considered as a second choice and the paralleled trajectories are not parallel in reality. Some interviewees said that, due to the way Confucianism shapes social context and cultural traditions, scholars and academics are highly valued in Taiwanese society, while labour work has a lower status. As TVET prepares students for vocational occupations, it is not as highly valued by parents and students as regular studies. Generally speaking, TVET is the second choice for students when applying to higher education institutions and students who have lower academic achievements tend to choose TVET. Interviewees were hoping that this social value will change as more graduates play important roles in their workplaces and make contributions to the country.

Related to its lower status, problems were also mentioned in transitioning between the vocational and regular streams. According to one interviewee, there were fewer opportunities for TVET high school students to transition to regular university studies, but there were more opportunities for students from general high schools to transition to technology universities.

With regards to private institutions, one interviewee mentioned that strict government policy is making things worse, as private institutions need to compete for students while birth rates remain low. In addition, they received less funding and have limited autonomy to develop unique programs.

Several interviewees mentioned that TVET graduates' low salaries constituted a challenge for economic development, as it led to brain drain problems. In recent years, TVET graduates often choose to work in Singapore or mainland China as salaries are higher there than in Taiwan. A few interviewees clarified that Taiwan also uses immigrant workers from Thailand and the Philippines for some blue-collar jobs. The interviewees were of the opinion that Taiwan did not lack labour, but that TVET's oversupply of high degree graduates is causing the perceived shortage, as these graduates prefer higher-level jobs more in line with their credentials.

One survey respondent summarised the challenges presented thus far: "Currently, there is no clear distinction between TVET and general higher education. There is a preference for academic track among the public; low birth rate has been a problem for several years; there are too many technology universities, which are upgraded from former technical colleges. All these factors are contributing to the fact that the TVET institutions have a lack of students. Our students, no matter what their talents are, all choose the academic track and research institutions for higher degrees. TVET has lost its primary goals and significance." Another mentioned that: "Although Taiwan government attaches importance to vocational education, it does not have a clear focus on skills and technology. Therefore, students are focusing on transition to higher education, and are taking technical high school as a step to move forward. They did not learn general subjects well, nor did they acquire specific skills or practical experience."

As well, interview participants mentioned several challenges with regards to teachers' and educational support workers' working conditions. According to interviewees and survey participants, in recent years, due to new demands for industry experience, teachers now require more time to gain this additional experience while maintaining their teaching jobs. In addition, teachers also need to update their teaching skills and pedagogy to use teaching and learning technologies. Traditional lecturing no longer works very well with students, they suggest. Some interviewees also mentioned that teachers are asked to write grant applications and undertake administrative work, which also takes a lot of their time. One survey respondent pointed out that increased teacher workloads are an obstacle to education's development: "Teaching work and administrative work should not be overlapped. A problem for Taiwan's education system is that teachers are required to undertake administrative tasks, which influences their focus on teaching and reduces the teaching quality." Some interviewees added that new students are harder to teach because they are spoiled children, and that students and parents have higher expectations from their teachers.

Finally, interviewees mentioned challenges related to programme development. Taiwan is implementing a policy to cultivate talents in the next five or ten years. According to

interviewees, such a long-term strategy can be realised only through cooperation between government, teachers and companies. Policymakers need feedback from employers and teachers on their long-term plans. Interestingly, survey respondents identified the high number of subsequent educational reforms as being a challenge to programme development. According to respondents, those reforms were often inappropriate, lacked clear focus and goals, and thus yielded little to no achievements. Although there are many obstacles and challenges, most interviewees believe that TVET in Taiwan will have a bright future if policies are made based on thoughtful planning.

Interestingly, despite perceptions being modestly positive throughout, the fact remains that Taiwan's TVET faces emerging challenges which are perceived by its actors as important threats to a system of education they respect and wish to see succeed. Chief among the concerns raised are issues of prestige. It seems that Taiwan has reaped the successes of its focus on vocational education and reached the point where parents and students aspirations now run higher, which in turn questions current policy arrangements. However, issues of brain drain and the importing of workers from other Asian countries suggest that Taiwan needs to work on perceptions first, in order to improve how TVET is perceived by students and parents, and graduates' working conditions come second.



Conclusion

TVET in Taiwan exhibits striking characteristics. Foremost is its strong linkage with economic sustainability and growth in a country that relies strongly on its manufacturing and services. Taiwan's vocational education serves human capital imperatives. Yet, it goes beyond that. As this report shows, female participation is similar to that of males, pathways exist to move from vocational to regular education and the other way around, and vocational education can be pursued all the way to the doctorate. Furthermore, vocational education provides, in addition to practical experience, what could be called a Confucian liberal education, focused on whole-person education and emphasising virtue.

Taken together, these characteristics suggest that Taiwan's TVET balances the needs of the market with those of individuals and society. Accordingly, this system of vocational education goes beyond human capital and develops human capabilities. As such, it is worthy of praise.

Nevertheless, recent population declines have put pressure on Taiwan's TVET, which has led to several policy efforts to reposition vocational education within Taiwan's changing context. Though most policy efforts aim at maintaining a balance between economic and cultural imperatives, two things stand out. The first is that teachers' working conditions seem to suffer most from the change. The second is that Taiwanese society is also changing its posture towards vocational education, which is now seen as the second option, despite the fact that the country is so invested in industry and services. Clarifying and solving these tensions is perhaps where efforts should primarily be spent.

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Appendix: Survey Sample

Table 16. Participants Who Completed or Partially Completed the Survey

	Participants (n = 1757)	
	Frequency	Percent
<i>Completed the survey</i>	835	47.5
<i>Partially completed the survey</i>	922	52.5

In Table 17. Participants' Gender, of the participants surveyed, 43.3% identified as female and 26.5% as male, while 0.6% preferred not to disclose. The non-response rate reached 29.6%.

Table 17. Participants' Gender

	Participants (n = 1757)	
	Frequency	Percent
<i>Female</i>	761	43.3
<i>Male</i>	466	26.5
<i>Undisclosed</i>	10	0.6
<i>No response</i>	520	29.6

Note. Undisclosed: I prefer not to respond.

Table 18. Participants' Age presents the most common age categories among participants, 40-49 years old (24.7%), followed by 30-39 years old (17.6%), and 50-59 years old (15.0%). The least common age categories among participants were under 20 years old (3.0%) and 60 and over (2.2%).

Table 18. Participants' Age

	Participants (n = 1757)	
	Frequency	Percent
<i>Under 20</i>	53	3.0
<i>20 - 29</i>	123	7.0
<i>30 - 39</i>	309	17.6
<i>40 - 49</i>	434	24.7
<i>50 - 59</i>	263	15.0
<i>60 +</i>	39	2.2
<i>Undisclosed</i>	18	1.0
<i>No response</i>	518	29.5

Note. Undisclosed: I prefer not to respond.

Among the survey participants, as seen in Table 19. Participants' Role in Vocational Education, the three most common roles in vocational education were: public TVET employees (29.3%), private TVET employees (23.1%), and student or graduate (10.8%). Only 6.4% of participants identified as a government employee. The least three common roles were private university employees (2.0%), public university employees (1.5%), and union employees (1.3%).

Table 19. Participants' Role in Vocational Education

	Participants (<i>n</i> = 1757)	
	Frequency	Percent
<i>Government employee</i>	112	6.4
<i>Private TVET employee</i>	405	23.1
<i>Private university employee</i>	36	2.0
<i>Public TVET employee</i>	515	29.3
<i>Public university employee</i>	27	1.5
<i>Student or graduate</i>	189	10.8
<i>Union employee</i>	22	1.3
<i>No response</i>	451	25.7

Table 20. Participant's Position in Vocational Education indicates that there was a high proportion of participants who identified as teachers as (36.6%). This was followed by education support staff (15.1%) which includes roles such as teaching assistants, psychologists, financial administrators, business administrators, academic supports, or student affairs and services staff. Finally, only a small proportion of respondents indicated working a managerial position such as president, vice-president, or similar senior leadership roles (1.8%). Overall, participants were reluctant in providing a response or did not identify with the given options, as seen by the high absence of responses (46.4%).

Table 20. Participant's Position in Vocational Education

Participant Position	Participants (<i>n</i> = 1757)	
	Frequency	Percent
<i>Manager</i>	32	1.8
<i>Support staff</i>	266	15.1
<i>Teacher</i>	643	36.6
<i>No response</i>	816	46.4

Table 21. Participants' Years Worked in Current Role demonstrates that a strong proportion of respondents had worked their current or a related role for 11 or more years (38.6%). The next most frequent number of years in their role was one to five years (19.5%). Finally, six to ten years in their role was the least frequent category (11.3%) among participants.

Table 21. Participants' Years Worked in Current Role

	Participants (<i>n</i> = 1757)	
	<i>Frequency</i>	<i>Percent</i>
1 - 5	343	19.5
6 - 10	198	11.3
11+	678	38.6
No response	538	30.6

Note. 1 - 5: Less than 5 years, 6 - 10: 6 to 10 years, 11+: More than 10 years.

Overall, survey participants were more likely to be female (43.3%) and between the ages of 40-49 years old (24.7%). Participants were also likelier to be public TVET employees (29.3%) or private TVET employees (23.1%). For those who responded to their position in vocational education, they were likelier to indicate teacher as their professional position (36.6%). Lastly, there was a high proportion of participants who had worked in their current or in a related role for 11 or more years (38.6%).





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TVET in Taiwan

Preliminary Report

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