Chapter 9
Vocational Education and Training in Thailand—Current Status and Future Development

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9.1 Introduction

The Ministry of Education in Thailand has engaged in serious strategic scoping about the future reforms in the higher education and TVET sub-sectors so that it can produce capable workforce that is needed in the creation of a knowledge-based economy. These reforms will respond to three major rising problems in the country: (1) declining population of main workforce; (2) ageing population; and (3) critical needs for highly skilled technical workers. In higher education, the improvement of quality is prioritized although there are many other target areas such as performance-based funding in the sub-sectors, and increasing collaboration between the universities and the private sector. Overall, it is planned to increase the ratio of vocational to general academic track at the secondary education level from the current proportion of 40:60–60:40 in the next 10 years so as to produce sufficient numbers of graduates from TVET with technical skills and knowledge.

Nearly 2 million students were enrolled in higher education institutions in 2010, of which almost 90% were enrolled in public higher education institutions. According to the 15-year Long Range Plan on Higher Education (2008–2022) developed by the Thai government, it is projected that demographic changes will result in a decrease of participation in higher education, and the main focus of higher education will shift to quality issues. The Government of Thailand has initiated a program called "One District, One Scholarship" in order to increase the access of disadvantaged groups of students to higher education. This program provides opportunities for outstanding students from remote areas to pursue quality higher education. From a gender perspective, about 64% of the recipients in 2004 and 2006 were females which also reflects the gender gap in learning achievements.

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In 2010, nearly 0.7 million students enrolled in TVET colleges governed by OVEC of the Ministry of Education, and approximately 0.4 million students were studying in private vocational schools and colleges. As Thailand is entering the ageing society, the number of students in basic education is decreasing, and manpower will be in short supply in the future. There is a lack of middle-level skilled manpower. The tendency in the decrease of graduates with vocational certificates can be mainly explained by the negative value and reputation according to vocational education, including wage differentials that are directly associated with level of education.

The higher education sub-sector has to respond to the needs for increasing economic productivity of the working population and put an emphasis on continuing education to respond to changes and creation of new professions. However, employees with college degree or above represented only 10% of total employment in the enterprises surveyed in 2007. Many job vacancies arise because the majority of applicants lack both basic and technical skills required by the enterprises. The government tries to improve the quality of higher education set out in the 15-year Long Range Plan on Higher Education (2008–2022). Specific strategies and intervention programs to improve the quality of higher education developed by the Office of the Higher Education Commission (OHEC) include programs for: (1) new age citizens; (2) new age teachers; (3) educational institutions and new age sources of learning; and (4) new educational management programs.

Vocational education provision must be in line with the National Economic and Social Development Plan and National Education Plan (2002–2016) in order to produce and develop vocational manpower at levels of technical and technological skills that can serve the demands of the labor market. So far, however, it appears that TVET in Thailand has not been able to provide sufficient highly qualified and well-trained technicians for a rapidly changing economy. The qualifications of manpower that are lacking include: communication skills, computer and ICT-using abilities, management, calculation skills, problem solving, teamwork, responsibility, honesty, tolerance, discipline, punctuality, and leadership.

9.2 National Educational System

9.2.1 Educational System in Thailand

See Fig. 9.1.

9.2.1.1 Pre-school

Education in Thailand is largely a government responsibility provided through the ministry of education. Two to three years of kindergarten begins this process, followed by 6 years of primary school. The Thai school year is from May to March for

Education	School/Level	Grade From	Grade To	Age From	Age To	Years	Notes
Primary	Prathom 1 - 3 - Elementary School	1	3	6	8	3	
Primary	Prathom 4 through 6 - Elementary School	4	6	9	11	3	
Secondary	Matthayom 1 - 3 - Secondary School	4	6	15	17	3	
Vocational	Dual Vocational Training (DVT)			15		3	2 year diploma technician level, 3 year certificate for skilled workers
Tertiary	Tertiary						
Tertiary	Bachelor's degree					4	
Tertiary	Bachelor's Pharmacy & Architecture					5	
Tertiary	Bachelor's -Doctor of dental surgery, medicine, and veterinary medicine					6	
Tertiary	Master's Degree					2	
Tertiary	Doctorate Degree						

Fig. 9.1 Educational system in Thailand

primary and middle school, while secondary schools begin one month later. Uniforms are also compulsory during tertiary education.

9.2.1.2 Primary School

Three years of middle school follow, where students continue with core subjects including Thai language, arts and music, math, physical and social science, technology and foreign languages. From here though, vocational students follow a different path.

9.2.1.3 Secondary School

At high school, students who wish to continue academic education move on to elective courses. Of these, the science and math/English programs are most popular—other choices include foreign languages and social science. In this way, they are already preparing for tertiary education that may follow.

9.2.1.4 Higher School

Higher education in Thailand has undergone dramatic changes in the past four decades, reflecting three major global trends: massification, privatization, and internationalization. The country now has a total of 150 higher education institutions and 19 community colleges with approximately 2 million students in 2010.

There are 80 public higher education institutions consisting of 14 autonomous universities, 16 traditional universities, 40 Rajabhat universities, 9 Rajamangala Technical universities, and one Pathumwan Institute of Technology. Besides, there are 71 private higher education institutions and 19 community colleges. Continued efforts have been made to allow traditional public universities to enjoy greater autonomy and academic freedom. The remaining traditional public universities will soon be transformed into public autonomous universities. Rajabhat universities are traditional teacher training colleges in most provinces. Programs include courses in teaching methodology, school administration, special education, optional specialization, supervised practical teaching experience, and the general education subjects of language and communication, humanities, social science mathematics and technology. Rajamangala universities are educational institutions which accept the holders of a diploma/certificate in vocational or technical education. It provides two-year program leading to the higher diploma in technical education.

The administration and supervision of higher education are under the Office of the Higher Education while the Office of the Private Education Commission supervises and subsidizes private educational institutions. Both offices are under the Ministry of Education's administrative structure. In accordance with recent educational reforms, public universities have become autonomous and they exercise greater control over the management of their own affairs to enhance efficiency and accountability.

9.2.2 Integrated by Technical and Vocational Education and Training

TVET in Thailand is provided in three forms: the normal program; the dual vocational training (DVT) program; and non-formal program. Three levels of vocational education are offered: the Certificate in Vocational Education (Por Wor Chor) which is taken during the upper secondary period; the Technical Diploma (Por Wor Sor), taken after the Certificate, and the Higher Diploma upon completion of which admission to university for a Bachelor degree program may be granted. As of 2010, the OVEC of the Ministry of Education administer 415 public colleges, 427 private vocational schools and colleges around the country.

Vocational education is administered by the Office of the Vocational Educational Commission (OVEC). The Commission administers and manages vocational education at the national level by formulating long-term plans and major policies related to TVET. Over 400 public colleges and around 500 private vocational schools and colleges are operating in this sub-sector. OVEC aims to develop a strong partnership with the private sector, mobilize resources, and develop demand-driven programs to meet local needs.

9.3 TVET Education System

9.3.1 TVET Overview

In accordance with the research topic "Development of ITE College East," first comprehensive TVET college developed by ITE specified: there are 4 schools (Applied & Health Science, Business & Services, Engineering and Info-Comm Technology) with more than 25 Nitec and Higher Nitec Courses and 7800 PET students at up to 8000 CET training places.

There is an autonomous College of ITE supported by 500 qualified and competent academic staff and 120 functional support staff and strong industry partnership with more than 80 technology leaders, and global connection with 7 overseas TVET colleges.

Formal TVET programs are offered at the secondary education level. Formal TVET programs at the upper secondary education level are provided in vocational colleges and institutes and last three years. The types of colleges providing formal TVET can be classified as follows:

- Technical colleges
- Vocational colleges
- Agricultural and technology colleges
- Commercial colleges
- Industrial and ship building technology colleges
- Fishery colleges
- Administration and tourism colleges
- Polytechnic colleges
- Automotive industry colleges
- Golden Jubilee Royal goldsmith colleges
- Arts and crafts colleges.

Based primarily on the German model, students are also able to attend dual system and apprenticeship programs. Dual system (http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Dual+system)[1] programs are partly organized in vocational institutes under the Ministry of Education, and partly with entrepreneurs or state enterprises and government agencies. Dual system programs also last three years and more than half the time is spent gaining practical experience.

TVET programs in Thailand are linked to national, regional, and community needs. Students can choose between nine specializations offered at the colleges. These specializations are as follows:

- Trade and industry
- Arts and crafts
- Home economics
- Commerce and business administration

[1] International Centre for Training and Vocational Education and Training (2014).

- Tourism industry
- Agriculture
- Fishery
- Textile industry
- Information and Communications Technology (ICT).

In the formal TVET system, students are also able to complete short TVET programs, generally lasting up to 225 h. These TVET programs are targeted at those who have completed at least primary education and aim to provide students with vocational skills for higher education or the labor market (http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Labour+market).[2] Students who take three to five years of short courses are awarded a certificate. Short TVET programs are also available to students from the general academic education who have selected a vocational or technical course as their major, minor, or elective.

TVET programs at the tertiary education level are offered in tertiary level colleges and universities. TVET programs are normally provided in two cycles, each lasting two years. However, associate degree programs lasting two years are also offered in universities and colleges.

Students who have completed a two-year post-secondary TVET program are able to switch to the undergraduate program and attend the last year. Upon passing the final examination, students are awarded with an undergraduate qualification.

Non-formal and adult programs are provided in a number of settings, including:

Occupational development programs which aim to develop students' vocational and occupation skills. The programs emphasize the importance of the development of life skills in order to overcome unemployment (http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Unemployment)[3] and meet community needs. Programs are organized in: (1) short occupation training programs for life skill development; (2) skills training for job employment; (3) group learning for students of the same occupation or trade; and (4) occupational development through the application of technology such as Information and Communications Technology (http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Information+and+communication+technology)[4] (ICT).

Non-formal vocational programs which involve: (1) short training programs; (2) group vocational courses; (3) vocational certificate programs equivalent to lower secondary school; and (4) non-formal occupational certificate programs.

[2] International Centre for Technical and Vocational Education and Training (2014a).

[3] International Centre for Technical and Vocational Education and Training (2014b).

[4] International Centre for Technical and Vocational Education and Training (2014c).

9.3.2 TVET Providers: The Statistic of Different Providers

The provision of vocational education varies according to the types and programs of vocational education and fields of study followed the Act and the Educational Reform. The TVET programs, therefore, are diversified and offered in formal and non-formal in institutions and in the workplace or dual courses as followed: **TVET Level**

(1) TVET at upper secondary level (grade 10–12)

TVET at upper secondary level (grade 10–12) leads to Certificate in Vocational education (Cert. Voc.). This program is offered to those who have completed lower secondary education (grade 9). This program is diversified into the following types:

- Certificate in Vocational Education (Cert. Voc.). The regular course students completing the lower-secondary level are able to study in this three-year formal program in which theoretical and practical subjects are studied in a school setting with a semester spent in the workplace.
- Certificate in Dual Vocational Education (Cert. Voc.-DVT). DVT is a three-year program for students who have completed lower secondary education (grade 9). The learning and training take place at two venues, at a college and a company, with whom students conclude a contract for training. During the training, students receive an allowance from the company. The completion of a certificate is equivalent that the certificated of Vocational Education is awarded.
- Certificate in Vocational Education: Credit Accumulating System (Cert. Voc.-CAS). This program provides 3–5 year courses for adults who are not able to participate in full-time study at an institution. An assessment system to evaluate their knowledge and skills for validation of their experience is provided. In addition, accumulated credit can be transferred within the same or between different institutions.
- Certificate in Vocational Education: Evening Class (Cert. Voc.-EC). This program is similar to the Cert. Voc.-CAS. It is specially designed for those who are in the labor market and wish to study in evening after work.
- Non-formal Program for the Certificate in Vocational Education. Non-formal education activities leading to the Certificate in Vocational Education are available to lower secondary school graduates through distance learning approaches. Both employed and unemployed adults can participate in this program, which requires at least 3 years of study, except when there is a transfer of academic performance or experience. Polytechnic, Industrial, and Community Colleges under OVEC, as well as the Office of the Non-formal Education Commission, basically offer this type of program.

(2) Diploma in Vocational Education (Dip. Voc.)

Admissions are accepted through competitive entrance examination for those who have completed Cert. Voc. or upper secondary education. This program is offered in various types as in Cert. Voc. Level.

(3) Higher Diploma in Technical Education

This three-year program is designed for those completing a Diploma in Vocational Education who plans to teach in vocational education institutions and is offered at the university level, leading to a higher technical diploma or a degree.

(4) Bachelor Degree in Technology/Performance

This two-year program is designed for those completing a Diploma in Vocational Education which focus on dual system and start in 2011.

(5) Short-Course Vocational Training

At present, short-course vocational training programs are offered by both public and private institutions and are designed to serve the needs for self-employment and to articulate with formal program that encourage lifelong learning. Pre-employment training and upgrading courses range from 6 to 255 h, depending on the content and objectives. Types of vocational training are as follows:

- Short Training Course Program (225 h): The only prerequisite for admission is the completion of primary education. No entrance examination is required. The students must complete 225 h, and upon completion, a certificate will be awarded. Starting salary for the graduates of this certificate level depends on their skills and ability.
- Short Training Course (6–225 h): In addition of 225 h program, a variety of short courses are training in different areas. The duration of the courses ranges from 6 to less than 225 h. Course duration and its contents will depend upon the interest and need of local people and community.
- Cooperative Study Training (CST): Training for students from general secondary schools who select vocational subjects as their major, minor, or elective.
- Agricultural Short-Course Training: Each College of Agricultural and Technology provided short-course training (7–8 days) for local farmers. The course contents vary according to the farmers' need.
- A Special Vocational Education Program (for young farmers): The program is designed with the aim to upgrade young farmers between 15 and 25 years of ages. Young farmers with compulsory education can go to any colleges of Agriculture and Technology to study in their spare time. Upon completion of all the subjects acquired, they will be awarded a special certificate, equivalent to Certificate in Vocational Education.

Types of TVET Institution and Areas of Specialty

There are 415 public TVET colleges under OVEC, the main authority responsible for

TVET. TVET is also offered at 412 private vocational schools which have been taking care by the Office of the Permanent Secretary, Ministry of Education. Furthermore, TVET is provided to adults and out of school youths through the non-formal or short-course training. Non-Formal Education Department in the Ministry of Education, Department of Skill Development, Ministry of Labor, and other ministries provide short-course vocational training as required by local areas.

There are more types of colleges under OVEC which are 106 Technical Colleges, 40 Vocational Colleges, 47 Agricultural and Technological Colleges, 144 Industrial and Community Colleges, 54 Polytechnic Colleges, 4 Business Administration and Tourism Colleges, 3 Industrial and Ship Building Technological Colleges, 2 Arts and Crafts Colleges, 3 Fisheries Colleges, 1 Royal Goldsmith College and 11 Technology and Management Colleges.

Types of Courses

OVEC provides nine types of courses which are industry, agriculture, home economics, arts and crafts, commerce and business administration, fisheries, textile, tourism and hospitality and information technology. Under those types of courses, there are many branches which are specific in occupation such as automobile, gem and jewelry, and accounting which are relevant to the markets' need.

TVET's Role for Sustainable Development

TVET takes on a complex and distinctive character with regard to sustainable development. The empirical sustainability of sustainable development is to integrate economic, environment, and social aspects through TVET. Thailand recognizes the important role of TVET as a vital tool for producing manpower with the necessary skills required for employment and/or entrepreneurship as well as for poverty alleviation. TVET by OVEC has made a lot progress and accomplishment during the past decades, especially in terms of providing skills for works, continuing education, raising quality of life, and sustaining labor force. Integration of sustainable development issues in TVE has been considered by agencies provided to strengthen TVET so as to increase the skilled manpower in both production and service sectors. These include the improvement of curriculum and instruction, the establishment of Thai Vocational Qualification, validation of experiences, research and innovation, and career development.

These manage TVET to sustainable development concept by:

(1) Having the unity of policy and various practice by decentralization from the center to colleges and institutions,
(2) Vocational education for youth and workers according to their aptitude and interest generally and continuously to bachelor degree,
(3) Participation of community, social, and enterprise in providing policy on producing and developing manpower and also providing vocational education standards,
(4) Education which is flexible, variety and having transferred system of learning outcomes and transferred system of personal work experience for studying and training on vocational education continuously,

(5) Having incentive systems for enterprise to participate in vocational education and training management,
(6) Collecting source from governmental sector and private sector in vocational education and training management by recognizing cooperated benefit generally and fairly,
(7) Having the system of personal development for OVEC teachers and staff continuously to technological change.

According to the needs and strategy for potential development for the country's competition, the quality and quantity of TVET from the occupational competencies and skill needs are accomplished by the four key strategies: increasing TVET participation, social services, research innovation and entrepreneurship development and quality improvement. According to those strategies, it can be expand to important issue as the following:

- **Increasing TVET Participation** is flexibility, TVE in secondary schools, articulation accreditation and recognition of prior learning, partnership, earning while learning, increasing opportunities, ICT, and distance learning.
- **Social Services** are poverty alleviation, fix it center, learning pathway, social lap, partnership and environment.
- **Research Innovation and Entrepreneurship Development** are strengthening staff capacity, changing paradigm, networking and partnership, and enhancing knowledge management, development linkages with industries and indigenous knowledge, organizing skill development in research and entrepreneur for TVET students.
- **Quality Improvement** is providing three tracks as an alternative of TVE programs, learning by doing, quality assurance, standardization, networking and partnership, knowledge management system, competency-based curriculum, career part/vocational and providing qualification for e-learning.

OVEC provides three main TVET standards, which are: Occupational Standard or Competency Standard, General Vocational Education Qualification, and Institute Standard or Vocational Education Standard. The competency-based curriculum is developed from competency standard and adding life skills and general academic which is become the General Vocational Education Standard. For student internal quality assurance, they will have the General Vocational Standard test by provincial college committee. The system of Quality in Vocational Education and competitiveness of the worker will be better, if Thailand has already accomplished in establishing the National Qualification Standards and the Institute of Vocational Qualification. Each organization is still developing their qualification framework but not completes yet. At this time, OVEC provided Internal Quality Assurance on 6 standards and 34 indicators for institute standard or vocational education standard. The six standards are: the students and the graduators, the curriculum and teaching–learning resources, the student activity developing, the innovation and research, the social services and the leadership. These are the frameworks for the colleges to perform and manage themselves to be qualified and accepted by Internal and External Auditing in Educational Quality Assurance system.

Partnership and Networking

All TVET institutions or providers, both public and private, are required to involve industrial groups, and local agencies in the development of policies, guidelines, and curriculum. Partnership and networking with enterprises are extensively enhanced. In order to make TVE more attractive, guidance and counseling put special emphasis on work-based learning, earning a living during they learn, opportunity for employment as well as furthering education in the higher level. The main objectives of partnership and networking are not only looking for training place for students or direction in producing manpower but also identifying competency required by enterprises. At present, main industrial groups that partnership and networking are well-developed, for example, petrochemical, gems and jewelry, textile and garments, automobile, tourism and hospitality, food. Through partnership system, teacher training, curriculum development, and competency-based training are organized and implemented.

9.3.3 TVET Management

The rationale for strengthening PPPs in Thailand, particularly in TVET, is based on extensive literature reviews, round-table discussions, and in-depth interviews. PPPs seem to offer a viable mechanism for strengthening vocational and technical education and training. The major reasons for promoting PPPs are outlined below: First, in Thailand, improving the quality and efficiency of education has been one of the key priorities for government over the past decade. Amidst rapid industrial growth especially in manufacturing such as the automotive and energy sectors, Thailand has suffered from a serious shortage of skilled workers as well as a skills mismatch between employer needs and the skills of new graduates from the educational institutions. In 2014, the Ministry of Labor disseminated survey questionnaires to 40,431 companies registered with the Social Security Office in twenty-nine industrial sectors in Thailand. The findings indicate that almost all of the key industries (including energy, hospital and health services, logistics, automotive and auto parts, electrical and electronic parts, rubber products, chemical, and food and animal feeds) have faced serious workforce shortages. Over seventy percent of the needed workers in these industries, except hospital and health services, require educational credentials lower than a bachelor degree. For example, in the automotive/auto parts and petrochemical industries, which are the industries requiring high levels of scientific and technological skills, the shortages of labor with vocational and higher vocational/associate degrees accounted for sixty-three and fifty percent of their unmet labor needs. These numbers are not matched by the supply of students graduating from the current education system, with only twenty-nine percent of the total students graduating from vocational and higher vocational education.

The challenge of addressing the shortages in the skilled workforce has been raised by the World Bank and Thailand Development Research Institute (TDRI), which have both made similar recommendations about involving the private sector to alleviate the problem. The World Bank pointed out the urgency of upgrading work-

force skills in Thailand in their recent study "Leading with Ideas: Skills for Growth and Equity in Thailand" which recommends that Thailand strengthens workforce skills and enhances innovation through private sector engagement in order to move toward a more knowledge-intensive, innovation-driven economy which would produce higher incomes and promote greater equality. Their recommendation is aligned with the findings of TDRI which were presented in its annual seminar "Revamping the Thai Education System: Quality for All." TDRI researchers recommended that the mismatch of skills in the workforce needs to be addressed by initiating work-based learning programs. TDRI noted that these programs require the involvement of the private sector to help participants develop skills matching private sector needs.

Second, inefficient management of the current education system is seen by many business leaders as the main obstacle is strengthening career technical education. Inefficiencies have been identified in several areas: the lack of a unified human resources development plan to coordinate efforts of different ministries; an unfair distribution of educational resources across schools with small- to medium-sized schools receiving inadequate resources while larger schools receive more; and a lack of accountability for outcomes which leads to too little attention being directed to the quality of teaching and learning. Lack of collaboration and coordination among different government organizations, especially in terms of education, skill development, and national industrial development are major challenges facing the nation. The lack of coordination of workforce development is reflected in the widening gap between the numbers of students in vocational education programs and those in academic programs; the ratio between the two tracks is thirty-five to sixty-five in spite of the increasing demand for technical workers from emerging industries during the past decade. This gap is exacerbated by low social awareness about the value of vocational education which has discouraged parents and students from pursuing these programs. The low value placed on vocational education is particularly evident among the large schools under the Office of the Basic Education Commission (OBEC) where students focus on being admitted to the universities with minimal understanding of what careers they might want to pursue. Furthermore, many schools administered by OBEC do not encourage students to pursue vocational education unless they are considered ineligible for academic programs due to poor results or family poverty. Even in small extended opportunity schools or medium-sized schools located in high poverty areas, many teachers under OBEC do not encourage students to enroll in vocational education because they believe that the students will not have stable career paths. As a result, most of the current collaboration between OBEC schools and Office of Vocational Education Commission (OVEC) schools arise from local initiatives undertaken by school principals seeking to motivate students who are not interested in academic education and have a high tendency to drop out. Resources are distributed among small- and medium-sized schools in an inequitable and inefficient manner. Schools serving fewer than five hundred students are responsible for fifty-four percent of all students in Thailand. These primary schools and extended opportunity schools (offering courses from kindergarten to grade nine) have inadequate educational resources in all areas including administrators, teachers, equipment, and facilities. These schools face such serious obstacles that their principals

often seek promotion to larger schools. As a result, they lack the dedicated leadership required for school improvement. Many students who attend these schools come from families struggling with poverty and working hard just to survive. Therefore, the students often lack the parental support required to motivate them to learn. Some of these students pursue vocational study after finishing grade nine, and some principals in these schools voluntarily initiate collaboration with local vocational schools to encourage students who are not interested, or judged unable to pursue academic education, to continue their study in vocational education. Teaching and learning in these smaller schools are heavily dominated by rote memorization and are weakly linked with employability skills. Neither teacher training programs nor the available professional development is providing teachers with the pedagogical content knowledge and teaching practices needed to promote critical and analytical thinking of students. Furthermore, the existing incentives for teachers to improve or to reflect on their practice and the educational quality assurance system do not give sufficient weight to teaching practices which are directly linked to better students' learning and performance.

Third, there are some interesting PPP initiatives aimed at strengthening technical and TVET in Thailand that merits close examination. These initiatives fall roughly into three categories: bilateral initiatives, multilateral initiatives, and networks. These patterns of partnership are best defined through examples: Bilateral initiatives are one-on-one partnerships between a school or academic institution and a company or business group. These partnerships may be initiated by either party. One such partnership has been created by Isuzu UNT Co., Ltd and Samutprakarn Technical College to train students in automotive service skills. Multilateral initiatives are partnerships between more than one school and academic institution and one or more companies. This type of partnership often is initiated by a group of companies; for example, General Motors (Thailand) Co., Ltd is collaborating with ten vocational colleges in Thailand to develop the Automotive Service Educational Program (ASEP) that will prepare students at the higher vocational education level to be qualified technicians. A similar program is the collaboration between the Petrochemical Group consisting of SCG Chemical, PTT Global Chemical, UBE Chemicals Asia, Star Petroleum Refinery, the Federation of Thai Industries (FTI) and the Map Ta Phut Technical College to develop the Vocational Chemical Engineering Practice College (V-CHEPC) targeting students at both the vocational and higher vocational education levels. Networks are partnerships between public and private networks. For example, the cooperation between FTI, the Thai Auto Parts Manufacturers Association, the Department of Skill Development, and OVEC to establish a program in automotive and auto parts workforce development would be considered a network. Fifteen vocational colleges are participating in this program together with a group of automotive and auto parts manufacturers led by Mr. Thavorn Chalassathien from Denso (Thailand) Co., Ltd. Moreover, there is a partnership between the National Science Technology and Innovation Policy Office (STI) and OVEC to develop a Science-Based Technology Schools (SBTS) Program. This new program includes five vocational colleges in five regions.

Nevertheless, while concerned educators and far-sighted business leaders have launched these similar initiatives, their efforts are reaching only a small proportion of the countless numbers of Thai students who need employability skills and these initiatives have not yet led to the broader policy reforms needed to replicate these programs and practices such as making adjustments in the core subjects in the *K*-12 curriculum in order to more effectively meet the workforce needs of business and industry or providing more effective career guidance in lower secondary schools or changing the time allocations for subjects. At present, schools and other academic institutions do not have the flexibility needed to adjust their curricula to match the demand side. The existing partnerships are not holistic systems that include all of the components required to provide a quality end-to-end education to employment system. This would require establishment of a committee of advisors and a sub-committee for each industry sector, a public relations campaign to promote a more positive image of vocational education, policy planning by academic institutions for workforce development aligned with the demand from each industrial cluster, development of curricula and teaching materials for the actual jobs in each cluster, teacher development programs, assessment systems, internship programs in companies, a process of credit transfer among academic institutions, the development of occupational standards and professional qualifications and aligned examinations, a recruitment and selection process, and an evaluation of the program. There is a great deal of work to be done to create an effective TVET system in Thailand.

OVEC is a leading organization responsible for developing Technical and Vocational Education (TVET) policy and standards, allocating resources, and coordinating projects to promote TVET. OVEC also produces required TVET manpower for the labor market and self-employment, provides social services, and facilitates poverty alleviation. Important projects and activities of policy of OVEC are based on several main targets which are handled by 415 institutions as follows:

(1) Developing Skills for Employability

TVET programs in Thailand are provided mainly in the areas of trade and industry, business, agriculture, home economics, arts and crafts, fisheries, textile, garments, jewelry, tourism, and hospitality at upper secondary, and post-secondary levels. TVET short-course programs are also offered to younger students and adults. As one of the national strategies is to increase competitiveness capacity, it is necessary to identify manpower demand in some specific areas needed. For TVET, there are urgent requirements especially in the areas of food industry, tourism industry, textile and garments, fashion design, software and petrochemical industry both in terms of quality and quantity.

(2) Strengthening Partnership with Industries

Joint committees between OVEC and industrial clusters are organized under cooperative projects to identify competencies required by each industrial cluster and career path. This is an attempt to develop a sense of ownership in TVET of industrial clusters and encourage them to work closely with OVEC in developing and producing qualified TVE graduates.

(3) Expanding Dual Vocational Training (DVT)

During the 2005–2006 academic years, there were more than 12,000 companies working with OVEC in providing Dual Vocational Training Programs for 40,000 students at both secondary and post-secondary levels. OVEC works closely with all stakeholders to increase the number of DVT students as required by industrial, agricultural, and service sectors.

(4) Enhancing the Changes in Teaching, Learning and Testing Methodologies

Strategies for changing in teaching, learning, and testing methodologies are enhanced in order that students will be provided with required competencies as identified by industrial cluster or occupational groups. Students learn to integrate and apply related subjects through project-based and problem-based assignments. Learning by doing in the real working situation is strongly emphasized.

(5) Making TVE more Attractive

Incentives are provided to attract more TVET students by offering various models of learning as well as providing continuing counseling and guidance in order to make them keep abreast with the changing labor market and career path. The following are different means of TVET process to attract more students.

- Earning while learning in relevant areas of occupation
- Transferring and accumulating credit hours
- Offering TVET program in secondary schools
- Learning through distance program
- Learning in company or work-based learning
- Accrediting all prior learning and experiences.

(6) Promoting Brand "R People"

OVEC has enhanced an important project on improving the character of TVET students. The main objective is to provide good public image and new paradigm of TVET students. A number of TVET students from both public and private institutions are selected as prototype or models to represent other TVET students to the public. They must possess 5R characters which include: Relation, Responsibility, Refresh, Representative, and Rescue: Therefore, they are called "R People" or prototype of TVE students.

(7) Fostering Entrepreneurship or Self-employment

OVEC has implemented the following activities to foster entrepreneurship or self-employment of TVET students—Creating chains of business partnership to support OVEC programs—Providing information in business opportunity—Establishing incubator training centers in the colleges—Developing capacity of staff—Changing teaching, learning, and testing methodologies—Developing pilot projects on "One College One Business." The students who are interested in self-employment will be provided with not only knowledge, skills, and experiences in organizing and implementing small business but also facilitated to funding sources. Teamworking is also encouraged.

9.3.4 TVET Teacher Education and Training

Educational System (http://edglossary.org/education-system/) in Thailand is given mainly by the government of Thailand under the Ministry of Education (http://www.moe.go.th/en/). The education begins from pre-school up to senior high school. The government, under the constitutional act of education, provides free basic education for all for twelve years and nine years of minimum school attendance is compulsory. Formal education in Thailand is divided into basic education of twelve years and further higher education. Basic education comprises elementary education for six years and secondary education also for six years. Secondary education is further separated into lower secondary (for three years) and upper secondary (for three years). The responsibility of formal education lies on the shoulders of the state government. Tertiary education in Thailand is better defined as post-high school education. It is provided in three forms: "Under" bachelor's degree (http://vocationaltraininghq.com/top-22-high-paying-jobs-that-dont-require-bachelors-degrees/), bachelor's degree, and postgraduate degree (http://vocationaltraininghq.com/top-22-high-paying-jobs-that-dont-require-bachelors-degrees/). For "Under" bachelor's degree qualifications, there could be a diploma, a vocational diploma, a diploma in Thai dance, or an art diploma. A bachelor's degree includes a higher diploma in teaching. A postgraduate degree consists of graduate diploma programs, master's degrees, higher-graduate diploma programs, and doctorate degrees.

Vocational training in Thailand (http://vocationaltraininghq.com/vocational-training-in-thailand/)[5] starts from the senior high school. The secondary education is divided into two branches—general and vocational education. There are over 60% of students following general education. However, the government is taking efforts to balance the ratio between general and vocational studies.

Currently, 412 colleges are governed by the Vocational Education Commission (VEC), of the Ministry of Education with more than a million students following the

[5] Vocational Training HQ (2018).

programs in 2004. Additionally, approximately 380,000 students were studying in 401 private vocational schools and colleges.

9.4 Issues and Challenges

9.4.1 Issues

Technical and Vocational Education is designed to offer people the opportunity of improving themselves in their general proficiency, especially in relation to their present or future occupation. Nuru (2007)[6] opined that changes in any nation's economy are required to prepare young people for the jobs of the future of which technical and vocational education have crucial roles to play. May et al. (2007)[7] observed that technical and vocational education are very much still neglected in the aspect of adequate funding, personnel, modern facilities, staff motivation which consequently are robbing the country of the economic development to be contributed by graduates of technical/vocational education.

Most analysts agree that employers of labor today demand more skills than they did in the past (Yang 2008).[8] Oranu (2004)[9] also observed that there are many factors that have contributed to the ever-rising demand for skills in the labor market which include the followings: technological and organizational change, trade, deregulation of key industries and the decline of unions.

The too much emphasis on university education in Nigeria has always reduced the economic opportunities of those who are more work oriented than academics (Ojimba 2012).[10] Not everybody needs a university education. Who would employ them if everybody becomes a university graduate? Many of the so-called expatriate engineers receiving a huge sum of money in dollars for road construction in Nigeria are graduates from vocational colleges but in Nigeria, the issue of technical and vocational education is not taking seriously.

The nation's poverty level has increased to about 70% that many Nigerians now live on less than one dollar a day. As earlier on stated, higher institutions in Nigeria lack the tools and machines to train students to acquire the skills needed by employers of labor. The challenges of vocational and technical education are quite enormous.

[6]Nuru (2007).
[7]May et al. (2007).
[8]Yang (2008).
[9]Oranu (2004).
[10]Ojimba (2012).

9.4.2 Challenges

9.4.2.1 Labor Market Demands and Trends

Following the global financial crisis in 2008 (https://en.wikipedia.org/wiki/Global_financial_crisis_in_2009), labor markets across the world experienced structural changes that influenced the demand for skills and TVET. Unemployment (https://en.wikipedia.org/wiki/Unemployment) worsened and the quality of jobs decreased, especially for youth (https://en.wikipedia.org/wiki/Youth). Gender differentials in labor force participation placed men ahead of women, and skill mismatches deepened. The crisis impacted labor markets adversely and led to deepening uncertainty, vulnerability of employment, and inequality. Furthermore, measures to improve efficiency and profitability in the economic recovery have often led to jobless growth (https://en.wikipedia.org/wiki/Jobless_recovery), as happened in Algeria (https://en.wikipedia.org/wiki/Algeria), India (https://en.wikipedia.org/wiki/India) and post-apartheid South Africa (https://en.wikipedia.org/wiki/Post-apartheid_South_Africa).

In seeking to address the level of vulnerable employment, TVET systems have focused on increasing the employability of graduates and enhancing their capacity to function effectively within existing vulnerable labor markets and to adjust to other labor market constraints. This has meant enhanced coordination among government departments responsible for TVET and employment policies. It has also created the need for TVET systems to develop mechanisms that identify skills needs early on and make better use of labor market information for matching skills demands and supply. TVET systems have focused more on developing immediate job skills and wider competencies. This has been accomplished by adopting competency-based approaches to instruction and workplace learning that enable learners to handle vulnerable employment, adjust to changing jobs and career contexts, and build their capacity to learn and agility to adapt.

9.4.2.2 Migration Flows

Increasing migration is a significant challenge to the national character of TVET systems and qualifications. TVET qualifications are progressively expected not only to serve as proxies for an individual's competencies but to also act as a form of a currency that signals national and international value. TVET systems have been developing mechanisms to enable credible and fair cross-border recognition of skills. In 2007, the ILO (https://en.wikipedia.org/wiki/International_Labour_Organization) identified three types of recognition that TVET system may use: unilateral (independent assessment by the receiving country), mutual (agreements between sending and receiving countries), and multilateral (mostly between a regional grouping of countries). The most prevalent of these are unilateral recognition, which is mostly under the control of national credential evaluation agencies. Countries have been slow to

move from input-based skill evaluations to outcome-based methodologies that focus on competencies attained.

TVET systems are responding to migration by providing qualifications that can stand the rigor of these recognition systems and by creating frameworks for mutual recognition of qualifications. Regional qualifications frameworks such as those in Southern Africa (https://en.wikipedia.org/wiki/Southern_Africa), Europe (https://en.wikipedia.org/wiki/Europe), Asia (https://en.wikipedia.org/wiki/Asia) and the Caribbean (https://en.wikipedia.org/wiki/Caribbean) aim to significantly support the recognition of qualifications across borders. These efforts are further supported through the introduction of outcome-based learning methodologies within the broader context of multilateral recognition agreements.

9.4.2.3 Providing Broader Competencies Alongside Specialist Skills

Skills for economic development include a mix of technical and soft skills (https://en.wikipedia.org/wiki/Soft_skills). Empirical evidence and TVET policy reviews conducted by UNESCO (https://en.wikipedia.org/wiki/UNESCO) suggest that TVET systems may not as yet sufficiently support the development of the so-called soft competencies. Many countries have, however, adopted competency-based approaches as measures for reforming TVET curricula. The HEART Trust National Training Agency (https://en.wikipedia.org/w/index.php?title=HEART_Trust_National_Training_Agency&action=edit&redlink=1) of Jamaica (https://en.wikipedia.org/wiki/Jamaica) adopted this approach, with a particular emphasis on competency standards and balanced job-specific and generic skills. Competency standards aimed to ensure that the training was linked to industry and was up to date, and that competences were integrated into training programs, along with the needed knowledge, skills, and attitudes. The balancing of skill types was to ensure adequate attention was given to job-specific skills as well as the conceptual and experiential knowledge necessary to enable individuals to grow and develop in the workplace, and more generally in society.

9.4.2.4 Globalization

Globalization of the economy and the consequent reorganization of the workplace require a more adaptable labour force, requiring countries to rethink the nature and role of TVET. Globalization intensifies pressure on the TVET sector to supply the necessary skills to workers involved in globalized activity and to adapt existing skills to rapidly changing needs. As a consequence, there is an increasing requirement for more demand-driven TVET systems with a greater focus on modular and competency-based programs, as well as on cognitive and transferable skills, which are expected to help people adapt to unpredictable conditions.

9.4.2.5 Promoting Social Equity and Inclusive Workplaces

Preparing marginalized groups of youths and adults with the right skills and helping them make the transition from school to work is part of the problem faced by TVET in promoting social equity. Ensuring that the workplace is inclusive poses numerous policy challenges, depending on the contextual dynamics of inclusion and exclusion, and the capabilities of individuals. For example, the experiences of exclusion by people with disabilities (https://en.wikipedia.org/wiki/Disability) and disadvantaged women may be similar in some ways and different in others. Many individuals experience multiple forms of disadvantage in the workplace, to different degrees of severity, depending on social attitudes and traditions in a specific context or organization. Approaches to inclusiveness in the workplace will therefore vary according to population needs, social diversity, and context. To give one example, the Netherlands set about the task of making workplaces more inclusive for low-skilled adults by offering programs that combine language instruction with work, and in certain cases on-the-job training.

A review of employer surveys in Australia (https://en.wikipedia.org/wiki/Australia), the Netherlands (https://en.wikipedia.org/wiki/Netherlands), the UK (https://en.wikipedia.org/wiki/United_Kingdom) and the USA (https://en.wikipedia.org/wiki/United_States) reported that employers valued people with disabilities for their high levels of motivation and their diverse perspectives and found their attendance records to be the same or better than those of other employees. Many employers mentioned that being seen as pro-inclusion was positive for the company or organization's image, an advantage that goes well beyond providing employment opportunities to disadvantaged groups. In many cases, however, social and cultural perceptions are an obstacle to make workplaces more inclusive, and this will require sensitive and concerted attention. Some low- and middle-income countries have sought to address this through legislation. In Tanzania (https://en.wikipedia.org/wiki/Tanzania)_Act_of_1982&action=edit&redlink=1), the Disabled Persons (Employment) Act of 1982 (https://en.wikipedia.org/w/index.php?title=Disabled_Persons_(Employment) established a quota system that stipulates that 2% of the workforce in companies with over fifty employees must be persons with disabilities.

The 2012 Education for All Global Monitoring Report (https://en.wikipedia.org/wiki/Education_for_All_Global_Monitoring_Report) concluded that "all countries, regardless of income level, need to pay greater attention to the needs of young people who face disadvantages in education and skills development by virtue of their poverty, gender, or other characteristics." The report found that several barriers and constraints reduced the success of TVET in meeting social equity demands. First, national TVET policies in most cases failed to address the skills needs of young people living in urban poverty and in deprived rural areas. Second, additional funds were needed to support TVET learning opportunities on a much larger scale. Third, the training needs of disadvantaged young women were particularly neglected. The 2012 EFA Global Monitoring Report also noted that skills training alone was not sufficient for the most disadvantaged of the rural and urban poor. Coherent policies that link

social protection, micro-finance, and TVET are considered critical for ensuring better outcomes for marginalized groups.

9.4.2.6 Gender Disparities

Recent years, there have seen rising numbers of young women enrolling in TVET programs, especially in service sector subjects. At times, the challenge is to bring more males into female-dominated streams. However, beyond number games, the real gender parity test that TVET systems are yet to pass is balancing the gender participation in programs that lead to employability, as well as to decent and high-paying jobs. Gender disparities in learning opportunities, and earnings, are a cause for concern. The persistent gender-typing of TVET requires concerted attention if TVET is to really serve a key facilitative role in shared growth, social equity (https://en.wikipedia.org/wiki/Social_equity), and inclusive development (https://en.wikipedia.org/wiki/Inclusive_development).

The absence of work, poor quality of work, lack of voice at work, continued gender discrimination, and unacceptably high youth unemployment are all major drivers of TVET system reforms from the perspective of social equity. This is an area where TVET systems continue to be challenged to contribute proactively to the shaping of more equitable societies.

Gender equality has received significant international attention in recent years, and this has been reflected in a reduction in gender participation gaps in both primary (https://en.wikipedia.org/wiki/Primary_education) and secondary schooling (https://en.wikipedia.org/wiki/Secondary_education). Efforts to analyze and address gender equality in TVET are relevant to other aspects of equity and dimensions of inclusion/exclusion. In almost all parts of the world, the proportion of girls to total enrolment in secondary education defined as TVET is less than for "general" secondary education.

9.5 Way Forward

TVET Teacher Competencies Standard of Thailand in the future must require as the following:

Core Competency
The core competencies mean the ones everybody must be fluent, that is, communication, figure analysis, information technology and communications, systematic problem solution, reactions among people and responsibilities, and continual self-development.

Professional Competencies
The professional competencies refer to the ones all teachers must process. In other words, they have ability of curriculum design and development, of learning manage-

ment, of measurement and evaluation, of psychology for vocational teachers, and of learning measurement and evaluation, of environmental management and administration for learning, of educational research, of development of educational innovation and information technology, of guidance and learning activity management, and of building cooperation between academic institutes and communities for educational management.

Functional Competencies

The functional competencies mean the ones for the vocational teachers of every study field which is about course development and design. These competencies are concerned with teaching aid development for vocational learners. Working in specific study areas, teaching and learning management in technical and skilled levels, working and/or teaching in specific area, such as classroom, workshop and laboratory management, equipment usage and maintenance, innovation and invention building, apprentice supervision, evaluation of professional evaluation, knowledge application to specific study areas for development, together with learning management and self-development in one's specific study field.

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