BUILDING LOCAL RESPONSIVENESS IN EMPLOYMENT AND SKILLS SYSTEMS IN SOUTHEAST ASIA

Lessons from Malaysia, the Philippines, Thailand and Vietnam
Abstract

Southeast Asia has experienced unprecedented growth and development as a result of market-led and export-driven policies over the last thirty years. This has had pulled millions out of poverty and drastically improved living standards over the course of a single generation. As industry becomes more diversified, job requirements demand more complex and sophisticated skills. Strong vocational education programmes at the local level can play a significant role in helping national economies to adjust to changes in the labour market, advances in technology and challenges associated with globalisation.

This report on Building local responsiveness in employment and skills systems in Southeast Asia presents learnings from local case studies in Thailand, Viet Nam, Malaysia and the Philippines in an effort to showcase successful examples of partnerships between employers and the vocational education system. It draws from local experiences to provide policy makers with practical advice for the implementation of vocational education programmes.
Acknowledgements

This report was written within the framework of a project on Engaging Employers in Skills Development and Utilisation by the Local Economic and Employment Development (LEED) Programme of the Organisation for Economic Co-operation and Development (OECD) under the leadership of Sylvain Giguère, Head of Division, within the Centre for Entrepreneurship, SMEs, Local Development and Tourism.

This report was prepared by Angela Attrey and Jonathan Barr of the LEED Programme. Sections of the report were also written by Dr. Dung Do Van (Viet Nam), Dr. Razali Bin Hassan (Malaysia), Dr. Numyoot Sonthanapitak (Thailand) and Dr. Felino B. Javines (Philippines).

Useful comments and inputs were also provided by Caitlyn Guthrie and Saakshi Mishra from the Directorate of Education of the OECD. Nils Geissler and Konstanze Lang from Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Scott Neil from the Department of Education and Training, Australia provided valuable inputs and feedback on the development of the paper. Thanks also go to François Iglesias for production assistance and Janine Treves who provided useful editorial support.

This report also benefited from the inputs of the participants of the OECD Southeast Asian Regional Policy Network on Education and Skills in Cebu, Philippines on 11-12 October 2016. The Australian Department of Education and Training, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Asian Development Bank (ADB) provided support for the development of this stream of work.
# Table of contents

*Executive summary* ........................................................................................................................................ 6

Case Study #1: Employer engagement in skills development in VietNam .................................................. 22

Case Study #2: Employer engagement in skills development in Malaysia .............................................. 34

Case Study #3: Employer engagement in TVET in Thailand .................................................................. 43

Case Study #4: Employer engagement in TVET systems in the Philippines ........................................... 54

*References* ................................................................................................................................................. 57
Executive summary

Southeast Asia has experienced unprecedented growth and development as a result of market-led and export-driven policies over the last thirty years. This has pulled millions out of poverty and drastically improved living standards over the course of a single generation. As industry becomes more diversified, job requirements demand more complex and sophisticated skills. Strong vocational education programmes at the local level can play a significant role in helping national economies to adjust to changes in the labour market, advances in technology and challenges associated with globalisation.

Many ASEAN countries are interested in work-based training programmes as a means to build pathways for youth into the labour market and to raise the skills levels of the existing workforce. Work-based learning encompasses a diversity of arrangements including apprenticeships, informal learning on the job, work placements that form part of formal vocational qualifications, and various types of internships. One of the key requisites of successful work-based learning is the engagement of employers in the design and delivery of training programmes.

At the local level, establishing partnerships between employers and the vocational education system can help to improve the overall quality of technical education and ensure that graduates are well-placed to transition into the world of work. Engaging the private sector can also help to boost capacity, formalise employment arrangements and improve poor perceptions of vocational education that persist across many Southeast Asian countries.

This report presents learnings from local case studies in Thailand, Viet Nam, Malaysia and the Philippines in an effort to showcase successful examples of partnerships between employers and the vocational education system. It draws from local experiences to provide policy makers with practical advice for the implementation of vocational education programmes. The following key lessons and recommendations emerge from this report:

1. **Key lessons and recommendations**

   i. **Inject flexibility into the design and delivery of TVET programmes**

   Poor rates of employment after graduation from Southeast Asian technical and vocational educations systems suggest that they do not produce the competences required for the world of work. Vocational education and training systems must be agile and inject flexibility into programme delivery and design to respond to variation in employer needs at the local level. This includes offering more part-time course, modular training units, and using e-platforms to deliver skill development programmes.

   ii. **Promote collaboration and dialogue between stakeholders at the local level**

   There are many stakeholders who have influence on the design and delivery of TVET, including but not limited to local employers, business groups, trade unions, training providers, educational institutions, learners and government policy makers. Formal governance and collaboration mechanisms should be established at the local level to enable stronger collaboration, the identification of common priorities, and strategic
objectives, as well as the possibility to leverage resources to achieve better employment and economic development outcomes.

iii. **Streamline governance structures to ease engagement with national governments**

Across many Southeast Asian countries, responsibility for policy, legislation and regulation of TVET falls under the Ministry of Labour/Employment as well as the Ministry of Education. Harmonising competences for TVET into a single ministry can remove confusion and complexity for employers and enable them to more effectively contribute to the design and development of TVET curricula. Similarly, working across employment and education departments can help to ensure that TVET policies are well-embedded with broader regional development and employment strategies.

iv. **Develop stronger linkages among groups of employers**

Current forms of engagement with employers tend to feature ad-hoc collaborations between individual employers and individual vocational education and training providers. This form of engagement risks short-term partnerships that may result in the development of overly firm-specific occupational competences. To ensure that future sectoral skills needs are accommodated, efforts should be made to build relationships among groups of employers, namely chambers of commerce, sectoral organisations and employers’ associations. Similarly, incorporating representative groups, such as trade unions or youth parliaments, can be an effective method of advocating for a broad range of interests on the effectiveness of TVET programmes.

v. **Improve the quality of formal TVET**

Many training providers lack capacity, and there is a wide degree of variation in the nature and quality of training. This in turn affects perceptions of the value of technical vocational education and training amongst students, parents and employers. More attention must be paid to ensuring that technical is market-relevant, including with respect to facilities and infrastructure, in order to promote engagement and improve perceptions of TVET quality.
2. Skills in Southeast Asia: An evolving challenge

i. Southeast Asia has transformed rapidly, but structural challenges loom

Over the last three decades, Southeast Asia has enjoyed economic growth and development on an unprecedented scale. ASEAN countries showed average rates of growth of 5.3% per year from 2000 to 2013 (ASEAN, 2015), continuing the transition from largely agrarian societies into dynamic, export-oriented economies. The region accounted for 44.4% of global GDP in 2014 (Ra, Chin & Liu 2015) and 32% of the world’s trade flows in merchandise exports in 2015 (WTO, 2015).

This increased economic growth has driven broad increases in living standards for the region’s population of over 600 million people. The proportion of those living below the poverty line more than halved between 1990 and 2008 (Brooks et al., 2013) in spite of broad increases in population over the same period. Similarly, the infant mortality rate and the maternal mortality ratio declined by more than 50% over the same period. This rate of economic development and improvement in material living standards has been the fastest ever observed in human history (UN, 2013).

This phenomenal economic growth and development was underpinned by a broad shift away from primary production, as the share of the workforce employed in agriculture fell from approximately 60% in 1991 to approximately 40% in 2008 (World Bank, 2014). Southeast Asian economies pivoted into the secondary sector, particularly low value-added manufacturing activities. The removal of trade barriers and the broader global trends in globalisation, improvements in technology and increases in the movement of capital facilitated growth in the export sector.

However, the pathway towards continued growth and development in the region remains unfinished. The majority of workforces across the region still remain informally employed in relatively small businesses (World Bank, 2014). Although growth in the secondary sector was the broadest factor towards economic development in the region, many employees in the manufacturing sector are not productive, particularly in comparison to international peers (see Figure 1.1). In the long-term, low productivity is a significant constraint on incomes, endangering further improvements in growth and living standards across the region.
Meanwhile, rapid improvements in technology and the global shift towards knowledge-based economic production endanger the traditional growth model for Southeast Asian economies. As international growth is increasingly driven by high-tech industries and services and the share of global employment in routine or manual tasks declines (World Economic Forum, 2016), the employment prospects of many lowly productive workers in Southeast Asia is at risk. Already, over 60% of occupational profiles in the electronics sector in Indonesia, the Philippines, Thailand and Viet Nam are at risk of automation (ILO, 2016). There is an increasing need to ensure that workers have skills that complement, rather than compete with, the technical capacities of machines to preserve long-term employment prospects.

There have also been increasing signs of skill mismatch across the region, particularly at the local level. An ‘inadequately trained workforce’ was cited as the second-largest constraint on business for employers in the East Asia Pacific region (World Bank, 2014). Similarly, 48% of employers in the Asia Pacific report skills gaps (Manpower, 2015). Vacancies for skilled workers in the East Asia Pacific remain open for the second longest time for any region in the world, with the exception of Latin America (World Bank, 2014). As this has occurred alongside a broad increase in academic educational attainment across the region (OECD, 2016), this suggests that the nature and quality of the skills currently developed in Southeast Asia is not optimally aligned to meet the demands of employers.

**ii. Skills development and occupational competences have emerged as a priority**

Consequently, the nature and quality of skills have emerged as a priority across Southeast Asia. Both occupation-specific and general skills are needed to ensure that workers are able to shift towards skill-intensive, capital driven production across the region. Building occupational competences can also help Southeast Asian economies successfully climb the ‘value ladder’ and shift economies towards high value-added production in the secondary and services sector. Highly productive employment also tends to be better
remunerated (van Biesebroeck, 2015) and of higher quality, which should continue to
drive improvements in living standards across Southeast Asian countries.

In particular, competences that are broadly relevant to the world of work have emerged
as a priority for employment and skills policies across Southeast Asia. While primary
education attainment has become near universal across ASEAN countries, reaching a net
enrolment ratio of 90.66% in 2010 (UNESCO and UNICEF, 2013), there are gaps in the
 provision of upper secondary and post-secondary education in the region, particularly
with respect to the development of occupational competences. As the production
landscape in Southeast Asia rapidly evolves, developing competences that respond to
both current and future skills demand is particularly important.

Consequently, technical and vocational education (TVET) has emerged as a priority for
many Southeast Asian economies. The vocational orientation of TVET and its direct
relevance to the world of work can help to address many of the skills challenges emerging
throughout Asia. Consistent international evidence indicates that employment outcomes
for vocational graduates in countries with well-developed TVET systems tend to be
higher than the national average (see Figure 1.2).

Figure 1.2. Employment outcomes are better for those with vocational education, 2015

 iii. Gaps still exist in TVET provision

In particular, Southeast Asian economies have recognised TVET as a priority at the
supra-national level. ASEAN countries have begun to prioritise TVET development and
harmonisation in preparation for the labour mobility opportunities posed by the recent
introduction of the ASEAN Economic Community. The Southeast Asian Ministers for
Education Organisation has brought together national education ministries to collaborate
on high-level discussions about TVET in the region. Similarly, the development of the
ASEAN Qualifications Reference Framework has enabled improved co-operation and the
mutual recognition of TVET qualifications across the Southeast Asian region.
The need to improve TVET to boost skills has also been recognised as a national policy priority for many Southeast Asian economies. For example, TVET has been incorporated into the 11th Malaysian Development Plan as one of six ‘thrusts’ to drive economic growth over the next five years. Similarly, new laws and national strategies for vocational education and training have been developed in Viet Nam and the Philippines in recent years.

However, this policy priority has yet to translate to the provision of TVET at the local level. TVET systems across Southeast Asia remain weakly responsive to the needs of employers at the local level, meaning that vocational graduates are often equipped with skills that are outdated and irrelevant to current market demand. In combination with highly complex training systems with a wide degree of variability in quality and capacity, this results in poor labour market outcomes for young graduates. TVET systems across Southeast Asia have also been historically underfunded both in comparison to general education streams and relative to systems in developed countries.

Perhaps unsurprisingly, employers and young people are consequently unwilling to engage with TVET systems that do not appear to offer a clear transition from school to highly productive work. SMEs, particularly those in the informal sector, have little to no engagement with the formal TVET system, and thus fail to reap the productivity benefits and cost savings associated with a well-trained workforce. This lack of engagement from the core stakeholders, contributors and beneficiaries of TVET systems then perpetuates the existing gaps in the system.

3. Engaging employers to build better TVET systems in Southeast Asia

Engaging employers is central to building efficient, demand-driven and successful TVET systems across Southeast Asia, which can in turn help to address gaps associated with the quality and provision of skills development pathways in the region. This paper draws upon case studies from three ASEAN countries, namely Viet Nam, Thailand and Malaysia, to extract best practices and learnings for deepening employer engagement in the Southeast Asian context. Specific recommendations and conclusions are also presented at the end of this chapter.

i. The merits of demand-driven systems

Demand-driven TVET systems are those that are able to respond to the skills demanded by the labour market as they evolve, and are agile and flexible enough to meet local needs in terms of skills supply and demand. In particular, demand-driven systems are dynamic enough to accommodate changes in economic, political or social forces that affect the supply and demand for skills at the local level. Ensuring that TVET systems are responsive to change in local demand is necessary to ensure strong links between vocational education and the world of work, and facilitate easier transitions from school to employment opportunities in the private sector (OECD, 2014).

Ensuring that TVET systems are responsive to local skills demand is particularly important in the context of Southeast Asia, a particularly dynamic region that has already undergone significant and rapid economic transformation. As the skills demanded from the labour force become more technical alongside a shift to value-added production, the need for occupationally relevant skills development pathways will become more acute. Workers without work-ready skills risk being left behind.
ii. **Employers are central to determining the state of play in local labour markets**

Employers are core stakeholders in TVET systems that benefit from the productivity benefits and cost savings associated with a well-trained, responsive workforce. Engaging employers in TVET systems is particularly important because they are the best placed to identify the skills and competences required for the world of work. Chambers of commerce, sectoral organisations and other groups of employers are also able to advocate for the needs of industry when it comes to future skills needs.

Employers are important to ensure the relevancy of TVET systems. Of the diverse range of stakeholders involved in TVET systems, employers are often best placed to note gaps in the provision of vocational education, including inadequate curricula, out-dated technology and poorly designed or focused competences. Their active inclusion enables vocational training providers to ensure and authenticate the relevance of the training provided. In Southeast Asian TVET systems, which are characterised by wide variation in the quality of education provided, the systematic inclusion of employers can help to improve the general standard of TVET and target structural weaknesses in course and competence offerings.

iii. **Employers can become engaged in a variety of ways**

There are a diverse range of ways to engage employers in the design, development and delivery of vocational education. These can include active collaboration in the development of curricula, the identification of core competences, the dissemination and marketing of vocational education or even the delivery of some classes. Work-based training opportunities, where vocational students have the opportunity to build and improve skills through practical participation in a real workplace, are a particularly important aspect of employer engagement. Hands-on work is important for the development of general skills (also known as ‘transversal’ or ‘core’ skills), including problem solving, conflict management and communication skills, which are often more easily developed in workplaces than in classrooms or simulated work environments (OECD, 2010; Brewer, 2013). These skills are particularly valued by employers and have been noted as a factor that affects the ‘marketability’ of graduates (Rashidi, 2013).

iv. **Engaging employers has a number of benefits for a variety of stakeholders**

Increasing the relevance of TVET systems to high quality work can also help to reduce reliance on informal skills development mechanisms which are common across Southeast Asia. This in turn can help to professionalise informal businesses, particularly where employers receive targeted support and incentives to engage in skills development for their workers.

Improvements in the development of work-ready skills across the workforce should also improve labour market outcomes for graduates of vocational education, particularly where students have the opportunity to complete some form of work-based training. Previous work from the OECD finds that graduates of vocational training across OECD countries, which tend to feature relatively demand-driven systems, tend to have better labour market outcomes than non-graduates (Hoeckel, 2008). This in turn should improve perceptions of TVET amongst young people and employers in the region.

Engaging with TVET systems also has a wide range of benefits for employers themselves. Future growth and development is predicated on the existence of a well-trained and productive work force. Similarly, those employers that provide work-based
training reap significant productivity and growth effective (Cappellari et al, 2012). More broadly, employers from the case studies in this OECD paper identified reduced wage outlays, increased reputational benefits from corporate social responsibility and costs savings from the recruitment and training process as core benefits of engaging with TVET systems.

4. Barriers to employer engagement in Southeast Asia

While there are a number of benefits to TVET participation, employers may choose not to engage with TVET systems for a number of structural, economic or cultural reasons. There is also considerable variation in the degree to which employers within a national system choose to engage with TVET systems – for example, there is a historic link between the trades sector and vocational education, which may encourage increased engagement from employers in the construction and manufacturing industries.

i. TVET systems and training landscapes across Southeast Asia are very complex

Across Southeast Asia, the competencies for vocational education are often spread across multiple departments or ministries, resulting in a lack of joined up policy co-ordination when developing or implementing TVET priorities. For example, the jurisdictional responsibility for TVET in Myanmar is divided among 13 to 19 ministries (ILO, 2014), while the Malaysian system divides competencies for ‘education’ and ‘training’ between a number of ministries, each of whom operate a variety of skills development programmes that are subject to different qualifications frameworks (Rasul et al, 2015).

Institutional fragmentation of this kind can prevent the development and achievement of joined-up policies and strategies relating to TVET. Similarly, a complex system of institutions can inhibit employer engagement, particularly where incentives are difficult to access. Similarly, a lack of clarity about the specific qualifications, frameworks and certification arising from TVET makes it increasingly difficult to articulate the benefits of engagement to both employers and young people. In particular, employers may be reluctant to engage in skills development programmes that vary in their administration or quality across and between government institutions.

There is considerable diversity in the degree of development of TVET training provision both within and between countries in Southeast Asia. For example, the Malaysian system features over a thousand public vocational institutions, while the training landscape in Myanmar is fragmented between inefficient compulsory state mechanisms, and unofficial private schools (ILO, 2014).

Similarly, the formal TVET system necessarily competes with informal skills development pathways in many countries across Southeast Asia. Some estimate that only 10% of those trained in Southeast Asia do so through the formal sector (UNESCO, 2016). Informal training tends to take the form of unpaid work-based learning relationships between a ‘master craftsperson’ and a student. Where informal systems are considered more beneficial than formal training arrangements, employers will be relatively less likely to engage with formal skills development pathways available through the TVET system.
ii. Vocational training providers are underdeveloped and have limited capacities

In addition to a fragmented system, vocational training providers in Southeast Asian countries broadly lack capacity and are underdeveloped in comparison to international peers. The case studies and academic literature highlight gaps in the provision of formal vocational education, particularly with respect to the provision of up-to-date and modern equipment, well-trained teachers and up-to-date curricula and programme structures (Ratnata, 2013).

There is corresponding variation in the employment outcomes of vocational graduates, suggesting varying degrees of relevance to the needs of the labour market (UNESCO and UNICEF, 2013). A wide range of employment outcomes for graduates can reinforce negative perceptions of the value of vocational education and further disincentivise engagement from young people. Similarly, where the provision of training is highly variable in quality, employers lose confidence in the system for future staffing and recruitment needs. This is a particular issue for small- and medium-sized enterprises, who are less likely to have the administrative, financial or human resources capacity to compare training providers in a complex system.

iii. There is a lack of a tradition of long-term collaboration between stakeholders in TVET systems

Countries with well-developed TVET systems and a long tradition of vocational education, including Australia, Germany and Norway, tend to feature a high degree of collaboration between stakeholders in the system. These stakeholders can include employers, young people, training providers, policy makers and civil society stakeholders.

However, Southeast Asian TVET systems tend not to feature a high degree of collaboration between stakeholders. A lack of formal collaboration and discussion mechanisms means that employers do not have an obvious platform to contribute to the development of skills priorities at either the national or the local level.

The case studies of employer engagement from this OECD paper are diverse, ranging from providing work-based learning opportunities to collaborating on the development of post-secondary curricula and custom vocational courses designed specifically for the needs of an employer. However, in all but one, the interactions have been developed on an ad-hoc basis between individual employers and vocational training providers. This model of stakeholder engagement risks shallow and short-term collaboration between particular stakeholders.

5. Build employer engagement by collaborating with local stakeholders

A precondition for high-quality TVET systems is effective implementation at the local level. The potential role for local governments, public agencies and social partners to enhance TVET systems can often be overlooked at the national level and even by local actors themselves when they do not have the ability to shape local actions. The design of national schemes should include specific measures to encourage engagement of stakeholders at the local level to incentivise their engagement with the TVET system. This is particularly important in the Southeast Asian context, where systems are often characterised by unwieldy centralised national systems that result in gaps in provision ‘on the ground’.
i. Local actors can make or break TVET systems

Engaging employers requires local leadership, particularly from community and government actors in local communities. Employers, particularly SMEs, necessarily interact with local labour markets and are among the most exposed to changes in economic, political or social circumstances that affect production. They consequently have much to gain from improvements in the supply and quality of skills on the local level, but often have few opportunities to connect with local training providers or aspiring apprentices. Consequently, the responsibility often falls to local leaders, including government and civil society actors, to identify skills development opportunities for both employers and other stakeholders. Involving local actors from community organisations or the third sector is particularly important in local areas across Southeast Asia with large informal or grey economies, where conventional engagement mechanisms are unlikely to reach the private sector (UNESCO, 2016).

The case studies in this OECD paper highlight the importance of local actors in building relationships between employers and training providers. For example, the Vietnamese case study cited the enthusiasm of local implementation staff and administrators in developing links with the private sector as a core factor in building the successful relationship between the vocational education provider and local employers. Where relationships are predicated on ongoing dialogue and mutual problem-solving, engaged and proactive local actors within the relevant institutions or organisations underpin their long-term success.

ii. Clarify roles to encourage participation

The Malaysian and Vietnamese case studies also note that clearly outlining the obligations of stakeholders can help to ensure that local employers remain engaged with TVET systems over the long-term. This is particularly important in the context of work-based training relationships, where a trade-off exists between the quality of the apprenticeship and the cost-benefit ratio of training and investment from firms (OECD, 2012). The rights and entitlements of apprentices and the obligations and responsibilities of employers must be carefully defined in standardised agreements in order to preserve the quality of this form of training for both parties.

iii. Boost engagement from employers by building mechanisms to facilitate their engagement

As highlighted earlier, a lack of formal discussion or collaboration mechanisms for the plurality of stakeholders in TVET systems across Southeast Asia can negatively impact the intensity and level of engagement. This is a necessary feature for well-developed and responsive TVET systems as it enables employers to participate in the development of TVET priorities in a systematic manner. Other countries have built cohesive forums and consultation channels with employers, alongside a range of other stakeholders that operate at the national, regional and local level to ensure local flexibility and responsiveness to evolving skills demand. The system in Germany is outlined in Box 1.1.
Box 1. Systemic collaboration in the formal TVET sector - lessons from Germany

Countries with a well-established history of technical and vocational education sector tend to feature systemic and entrenched collaboration between a diverse range of TVET stakeholders.

For example, the German TVET system enables employers to express their skills needs through a diverse cross-section of organisations including the national business body, national employer organisations, national industry and crafts organisations and chambers of commerce. Similarly, concerns about the quality and value of TVET are represented by the national labour union confederation, sectoral labour unions and work councils at the plant level. These organisations are represented on regional VET boards, which are established at the federal state level to advise regional governments on the particular skills needs and priorities for TVET development at that level. Similar bodies exist at the local level in order to develop local regulations for the implementation of recommendations from federal state boards. This collaboration can extend into the workplace with respect to regulation and accreditation of in-company VET.

The German system has a number of strengths. By enabling stakeholders to actively engage with the development of skill priorities and the design and implementation of regulation, TVET policy can be tailored to needs at the local level. Similarly, all stakeholders are able to develop confidence in the system’s ability to develop high-quality graduates, which promotes further engagement and investment. Hence, institutionalising the involvement of a diverse range of stakeholder can help to promote the overall quality of the system.


The case studies in this OECD paper outline a diverse array of collaboration between employers and the formal TVET system. For example, the Vietnamese case study features instances of employer input into the skills development process through one specific vocational education provider, Thu Duc College of Technology. The case study features examples of work-based learning programmes and custom training programmes designed with specific employers. Similarly, the Malaysian and Thai case studies outline opportunities for students to become embedded in the activities of specific employers, typically those approached by the vocational training provider.

While the examples in the case studies have resulted in widespread benefits for the parties involved, there is a risk of short-term and ad-hoc engagement. Similarly, focussing on the technical requirements of a single employer may limit the potential for the graduate to develop horizontal or transversal competences that can enable occupational flexibility. Where employers have very specific requirements, this can act to limit the future mobility of vocational graduates.

Moreover, it is particularly important to encourage engagement from both individual employers (for example, for the provision of work-based training opportunities) but also with broader groups of employers, namely sectoral organisations, employer associations and chambers of commerce. When employers are able to engage in TVET systems in a collective manner, they are more likely to advocate for general skills that meet the needs of all employers, while individual employers have more incentive to develop firm-
specific skills (OECD, 2010). Groups of employers are also more likely to be able to identify general trends in production and the consequent future demands for skills in their sectors.

In other countries, government actors have typically played the facilitating role in coordinating regular meetings between groups of employers, training institutions, young people and other relevant parties. This allows for the systematic and comprehensive identification of future skills needs, and ensures that a broad range of vocational training providers are able to develop curricula and focus on competences that are relevant to labour market demand. Collaboration in this form is necessary in order to develop a demand-driven system that meets national education priorities and future skills needs.

6. Building demand-driven TVET systems requires improving perceptions of vocational education

Employers in countries with well-developed and industry-led TVET systems tend to view engagement in the system as a fundamental social responsibility. This is not the case in many Southeast Asian countries, which lack both institutional knowledge and strong public opinion of the value of vocational competences. Thus, the process of incorporating employers in skills development must begin with improving the perception of TVET amongst both students and employers.

Cultural attitudes towards TVET can dis-incentivise engagement from individuals, which can in turn inhibit employers from participating in the system. In countries with a strong tradition of vocational education, participants tend to have higher secondary education scores (ILO/World Bank, 2013). All case studies note that there is a significant stigma against vocational education amongst young people and parents in Malaysia, Thailand, and Viet Nam. The poor perception of TVET pathways is partially a function of the highly variable quality of education.

The Thai case study notes that vocational education pathways are perceived to only result in occupations that pay low salaries, despite long hours and heavy workloads. Stigma against blue-collar work results from the fact that this type of work is currently of low-quality, whereas future jobs in the secondary sector in Southeast Asia are likely to be increasingly high value-added and highly productive, with corresponding increases in incomes (IES, 2011) and working conditions. Similarly, TVET is increasingly used to develop occupational competences in emerging services sector professions, as noted in the Malaysian case study which outlines the collaboration between Polytechnic Ibrahim Sultan and employers in the tourism and hospitality sectors. Improving awareness of the flexibility and functionality of TVET as a pathway into a wide variety of work profiles can help to improve engagement from individuals and employers.

The perception that TVET pathways are inflexible can be addressed by developing strong links between the vocational education system and other educational or occupational routes. This could occur by increasing the flexibility of entry and exit points in vocational education (CEDEFOP, 2015), and deepening linkages between the academic and vocational educational systems. Improved flexibility could also help to improve the responsiveness of TVET systems to local changes in skills supply and demand, while meeting the diverse requirements of young people who may wish to combine education activities with other commitments or pursuits.
7. Engaging SMEs: Formalising training in Southeast Asia

The vast majority of those employed across Southeast Asia are employed in micro-, small- and medium-sized enterprises, namely employers with fewer than 200 employees (World Bank, 2014). Similarly, many enterprises of this size in many Southeast Asian countries operate in the semi-formal or informal sector. For example, approximately 75% of the workforce in the Philippines is informally employed (Charmes, 2012). Informality across Southeast Asia is also persistent – in international comparisons, there are higher rates of residual informality in Southeast Asia than in countries in other parts of the world at similar levels of income.

This poses a particular challenge for skills development in many countries across Southeast Asia. On one hand, some SMEs have low productivity and informal production is characterised by limited opportunities to access incentives or take advantage of agglomeration, technological innovation or economies of scale, and consequently has little added value. However, SMEs also account for 70% of the job creation in the region and are important contributors to local economies (World Bank, 2014). In particular, where there is little penetration from large employers into local labour markets, SMEs are the principal drivers in supporting local employment and promoting thriving local economies. Ensuring that SMEs are able to reap the productivity benefits of improved skills development in local labour forces can be a significant factor in continued economic development across Southeast Asia and improving the quality of life for the region’s poor.

A lack of engagement from SMEs in formal TVET offerings does not necessarily imply that skills development does not occur. Informal apprenticeship arrangements are the largest providers of skills in the mostly informal labour markets of many emerging countries (ILO, 2012a). For example, the ILO estimates that some 90% of workers employed by medium, small and micro-enterprises in Indonesia are trained through informal training arrangements (ILO, 2013). These arrangements typically take the form of an oral apprenticeship agreement between a ‘master craftsperson’ and a young learner to transmit the skills of a trade (Steedman, 2012). These arrangements are often precarious, uncertified and can easily mask exploitation from the master craftsperson.

However, despite their shortcomings, a benefit of informal skills development mechanisms noted by Eichhorst et al (2014) is that they are necessarily characterised by engagement with employers. Consequently, where formal TVET systems lack strong links with the world of work, informal training options become relatively more attractive to young people and employers. Improving the scope and offerings of formal TVET in Southeast Asia is particularly significant for the working conditions and quality of life for young people. Young people are more exposed to informality due to their higher incidence of employment in the sector in comparison to older counterparts and a lack of absorptive capacity in more formal systems (ILO, 2012c). However, young people who enter the informal sector can be relatively less likely to move occupations and sectors than their counterparts in the formal sector (Naidoo, Packard and Auwalin, 2014), indicating that traditional apprenticeship can in effect ‘trap’ workers into precarious and low value-added work.

Formalising the provision of TVET to the SME sector can be used to ensure that training is of high quality and that the rights of young people are adequately protected. The quality of apprenticeships, in particular, has been highlighted by G20 employment ministers as a critical feature of an effective system (see Box 1.2).
Box 2. Building apprenticeships of higher quality

At the G20 meeting in Mexico in 2012, ministers committed to ‘promote, and where necessary, strengthen quality apprenticeship systems that ensure high level of instruction and adequate remuneration, and avoid taking advantage of lower salaries’. Apprenticeships must be of high quality in order to attract young people and be recognised as valuable by employers. High quality apprenticeships have a number of features, including:

- Relevant and rigorous training both on and off the job;
- Adequate remuneration that reflects the skills and productive input of apprentices, whilst costs are shared amongst employers, governments and the apprentice;
- Adherence to minimum standards of workplace and occupational health and safety standards;
- Flexible and integrated pathways with the formal education and tertiary education system;
- Broad and equitable access, particularly for people of all stages of life, women, people with social, mental or physical handicaps and those with an immigration background.

Strong governance mechanisms are necessary to ensure that employers adhere to minimum standards and to ensure that apprenticeships are not exploited as a form of cheap labour. Similarly, a robust governance system should be developed to ensure that apprenticeships remain valuable to both apprentices and employers during periods of economic recession or social, institutional or demographic pressures.


One barrier to the transition to the formal economy is the portability of skills and competences earned informally (ILO, 2014). This can be addressed by focusing on competence-based frameworks that certify students at all levels on the basis of proven prowess in a given skill. While recognising past experience, such frameworks can bring informal workers into the formal system, particularly where there are increased opportunities for mobility across regions or countries with a certification of recognised quality. This is a particular opportunity for Southeast Asia given the introduction of the ASEAN Economic Community in 2015.

Similarly, formal skills development programmes can be used as formalising tools, particularly where incentives or business support are linked to registration. Expanding access to training opportunities can be linked to tailored support services, such as loans or subsidies that are contingent on the production of documentation and registration. These may be more effective when introduced by employer organisations (OECD, 2015) or intermediaries.

Encouraging engagement from SMEs across the Southeast Asian region in the TVET system can involve updating archaic apprenticeship systems. SMEs in Southeast Asia, for example, are limited by systems that feature significant penalties, restrictive regulations
and limited enterprise eligibility and participation, thus contributing to skills development mechanisms outside the formal infrastructure. Reforming such systems to provide tailored support and assistance for SMEs can help to improve overall engagement.

**Box 3. Improving the quality of informal apprenticeships – an initiative from Bangladesh**

Introducing some formal elements into informal apprenticeships can be an efficient method of improving skills development while making use of existing and pervasive training mechanisms. For example, Steedman (2010) notes that the process of incorporating assessment and certification elements into the traditional apprenticeship system can help to overcome weaknesses and may be more cost-effective than developing new formal mechanisms.

This is highlighted through the STAR model, an initiative to improve informal apprenticeships in the context of Bangladesh. The initiative, which was developed through a collaboration between the ILO, UNICEF and a not-for-profit organisation known as BRAC, incorporates off-the-job training alongside traditional on-the-job training for apprentices from master craftspersons. Training both on- and off-the-job is recorded through a Competency Skills Log Book which provides a uniform standard and system of measurement which can then be recognised by other employers and occupations.

The STAR programme specifically aims to include groups that are traditionally underrepresented in apprenticeships in Bangladesh: 50% of programme participants are women and 8% are people with disabilities. Master craftspersons are also provided with training in occupational health and safety, competency instruction and overall standards regarding the quality and nature of the employment for apprentices.

The initiative was found to be successful in incorporating formal elements into the traditional informal apprenticeship model. By ensuring a basic minimum standard of quality of training for apprentices and providing them with transferable certifications, the initiative was able to promote skills development for young and often disenfranchised persons in local areas.

Source: OECD (forthcoming), Engaging employers in apprenticeship opportunities at the local level."

However, factors leading to formality in the private sector are many and diverse, and training is just one piece of the puzzle. Ultimately, the benefits of legitimacy must outweigh the burdens of administration in order to drive the movement towards formality across Southeast Asia.

**8. Improve the quality and capacity of formal TVET to boost engagement from students and employers**

Formal TVET across Southeast Asia broadly suffers from a lack of quality and capacity. There are significant gaps in terms of the qualifications of teachers and lecturers and the actual infrastructure of TVET institutions (OECD, 2013).

These gaps are partially because the TVET sector across the Southeast Asian region has suffered from a historic lack of engagement from governments as well as employers: vocational offerings are underfunded in comparison to general education streams, an issue that is particularly acute in local areas in remote or rural places (UNESCO, 2013).
The Malaysian case study, in particular, noted that a lack of funding for vocational education through polytechnics has affected the sector’s ability to develop core competencies. Currently, the percentage of public spending allocated to education and training across the Asia-Pacific is amongst the lowest in the world (UNESCAP, 2013), which poses challenges for vocational training providers that require significant up-front costs associated with capital investment for modern technology.

Engaging employers can help to improve the quality of vocational education. For example, the Vietnamese and Thai case studies show that enabling instructors to complete internships with employers can help to improve the skillsets of teachers. It can also help them to reform curricula and methods of teaching with reference to the practical needs of the workforce. Teachers from the Vietnamese training provider Thu Duc College of Technology who completed ‘industry semesters’ cited improved confidence, teamwork skills, managerial experience and work-ready technical competences as benefits of industry engagement.

Improving the quality of TVET can also involve ensuring that TVET teaches a diverse range of competences and is linked with a variety of professions. While there has been a historic perception of close links between the trades sector and vocational education, emerging and dynamic industries with projected skills needs should also feature amongst the course offerings from TVET institutions. The Malaysian and Vietnamese case studies highlight the benefits of working with the emerging tourism and computer science industries, respectively. Building a demand-driven system must ensure that the offerings of TVET institutions are broad and flexible enough to meet the dynamic needs of employers.
Case Study #1:
Employer engagement in skills development in VietNam

1. Overview of Viet Nam and local socio-economic context

Viet Nam, officially the Socialist Republic of Viet Nam, is the easternmost country on the Indochina Peninsula in Southeast Asia. It is bordered by China to the north, Laos and Cambodia to the west, the Eastern Sea to the east and the Pacific Ocean to the east and south. The population of Viet Nam was approximately 90 million in 2014, the thirteenth largest in the world and third largest in Southeast Asia. There are 54 different ethnic groups across the 64 cities and provinces of Viet Nam.

Viet Nam was unified in 1975 under a communist government but remained impoverished and politically isolated. In 1986, political and economic reforms (Đổi Mới) were launched that have transformed the country from one of the poorest in the world to a lower middle-income status country. Per capita income has risen from around USD 100 in 1986 to approximately USD 2,100 in 2015. Since 1990, Viet Nam’s per capita GDP growth has been among the fastest in the world, averaging 5.5% per year since 1990, and 6.4% per year in the 2000s. In 2015, Viet Nam’s rate of economic growth was 6.7% while GDP per capita reached USD 2,052 per person. However, Viet Nam’s GDP per capita is low in comparison to its neighbours, including Thailand (USD 5,732), Malaysia (USD 11,307) and Indonesia (USD 3,491) (World Bank, 2016).

Social outcomes have also improved dramatically. The fraction of people living in extreme poverty has dropped from more than 50% in the early 1990s to 3% today. Concerns about poverty are now focused on ethnic minorities, who make up just 15% of the population but account for more than half of those below the poverty line.

Not only are incomes higher, but the Vietnamese population is better educated and has a higher life expectancy than most countries with a similar per capita income. The maternal mortality ratio has dropped below the upper-middle-income country average, while the under-five mortality rate has halved to a rate slightly above that average. Access to basic infrastructure has also improved substantially. Electricity is now available to almost all households, up from less than half in 1993. Access to clean water and modern sanitation has risen from less than 50% to more than 75% of all households.

Viet Nam has boosted its international economic integration as it enters into more free trade agreements with the Eurasian Economic Union, the European Union, South Korea and the Trans-Pacific Partnership. At the same time, the ASEAN Economic Community was established on December 31, 2015, and is likely to create more opportunities for Viet Nam to integrate into regional and global economies. But while Viet Nam has embedded itself in global value chains, the benefits are constrained by the absence of linkages with domestic firms.

2. Overview of Viet Nam’s labour market indicators

A number of key labour market indicators, including the labour force participation rate, the rate of trained labour force with certificate, the rate of paid worker in total employment, youth unemployment rate (aged 15-24), have increased over time. While
over 40% of Vietnamese workers are employed in agricultural and fisheries work, this proportion has slightly declined in recent years, indicating a movement of labour towards other economic sectors. The unemployment rate has tended to rise over time, especially for young people. This may indicate that the youth population has grown faster than the creation of jobs.

Table 2.1 Labour market indicators in recent years

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2012 Q4</th>
<th>2013 Q4</th>
<th>2014 Q4</th>
<th>2015 Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour force indicators (million people)</td>
<td>52.8</td>
<td>53.7</td>
<td>54.4</td>
<td>54.6</td>
</tr>
<tr>
<td>Labour force participation rate of population aged 15 and over (%)</td>
<td>76.7</td>
<td>77.5</td>
<td>77.7</td>
<td>78.8</td>
</tr>
<tr>
<td>Rate of trained labour force with three months certificate and above (%)</td>
<td>17.3</td>
<td>18.4</td>
<td>18.5</td>
<td>20.2</td>
</tr>
<tr>
<td>Employment (million people)</td>
<td>51.9</td>
<td>52.8</td>
<td>53.4</td>
<td>53.5</td>
</tr>
<tr>
<td>Rate of employment in agriculture, forestry and fisheries sector in total employment (%)</td>
<td>47.7</td>
<td>45.8</td>
<td>45.3</td>
<td>42.3</td>
</tr>
<tr>
<td>Rate of employment in industry – construction in total employment (%)</td>
<td>21.6</td>
<td>21.9</td>
<td>22.4</td>
<td>24.5</td>
</tr>
<tr>
<td>Rate of employment in service in total employment (%)</td>
<td>31.7</td>
<td>32.4</td>
<td>32.4</td>
<td>33</td>
</tr>
</tbody>
</table>

Source: GSO, 2013; GSO, 2014; GSO, 2015; statistic data and quarterly labour – employment survey data

While the rate of qualified workers has increased from 18.39% in 2014 to 20.2% in 2015, this also indicates that up to 80% of the Vietnamese labour force is untrained. There is also an imbalance in the level of technical training, as people with university education or higher comprise 43.9% of the total trained workforce, resulting in comparatively few people with intermediate skills. This has resulted in both ongoing skills shortages but also an oversupply of engineers and those with ‘masters’ degrees. In 2015, 178 000 of workers holding a masters or university degree could not find employment. There are increasing signs of skills mismatch, as the skills gained from the education system fail to meet those demanded by the labour market (ILO, 2014)

Table 2.2 Unemployment indicators in recent years

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2012 Q4</th>
<th>2013 Q4</th>
<th>2014 Q4</th>
<th>2015 Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment at working age (thousand people)</td>
<td>1 106</td>
<td>900</td>
<td>975</td>
<td>1 051</td>
</tr>
<tr>
<td>Rate of unemployment at working age (%)</td>
<td>1.8</td>
<td>1.9</td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td>Rate of urban unemployment rate (%)</td>
<td>3.2</td>
<td>3.2</td>
<td>3.2</td>
<td>3.15</td>
</tr>
<tr>
<td>Rate of youth unemployment (aged 15-24) (%)</td>
<td>5.3</td>
<td>6.0</td>
<td>6.2</td>
<td>7.2</td>
</tr>
</tbody>
</table>

Source: GSO, 2013; GSO, 2014; GSO, 2015; statistic data and quarterly labour – employment survey data
Table 2.3 Technical training labour force with certificate

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Q4 2014</th>
<th></th>
<th>Q4 2015</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Million</td>
<td>% of total labour force</td>
<td>Million</td>
<td>% of total labour force</td>
</tr>
<tr>
<td>Total labour force</td>
<td>54.43</td>
<td>54.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total trained labour force</td>
<td>10.01</td>
<td>16.4</td>
<td>100</td>
<td>11.02</td>
</tr>
<tr>
<td>Primary vocational training</td>
<td>1.57</td>
<td>2.9</td>
<td>15.7</td>
<td>1.68</td>
</tr>
<tr>
<td>Secondary vocational training</td>
<td>0.87</td>
<td>1.6</td>
<td>8.7</td>
<td>0.71</td>
</tr>
<tr>
<td>Professional secondary school</td>
<td>2.01</td>
<td>3.7</td>
<td>20.1</td>
<td>2.14</td>
</tr>
<tr>
<td>Vocational college</td>
<td>0.28</td>
<td>0.5</td>
<td>2.8</td>
<td>0.18</td>
</tr>
<tr>
<td>Professional college</td>
<td>1.18</td>
<td>2.2</td>
<td>11.8</td>
<td>1.47</td>
</tr>
<tr>
<td>University and higher</td>
<td>4.1</td>
<td>7.5</td>
<td>41</td>
<td>4.84</td>
</tr>
</tbody>
</table>

Source: GSO, 2014; GSO, 2015; statistic data and quarterly labour – employment survey data

As a result, labour productivity in Viet Nam was amongst the lowest in the Asia-Pacific region. According to the ILO, productivity in Singapore in 2013 was nearly 15 times the level of productivity in Viet Nam. Viet Nam’s productivity was only one-fifth and two-fifths of Malaysia and Thailand, respectively.

Unemployment outcomes in Viet Nam show considerable variation across groups with differing technical qualifications, ranging from 0.98% for those with a certificate of less than three months of vocational training to 8.16% for those with a qualification professional college in 2015. The data indicate that a higher level of technical training appears to have higher rates of unemployment.

Table 2.4 Unemployment rate of people in working age by technical qualification from 2012 to 2015

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2012 Q4</th>
<th>2013 Q4</th>
<th>2014 Q4</th>
<th>2015 Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No qualification</td>
<td>1.5</td>
<td>1.4</td>
<td>1.6</td>
<td>1.9</td>
</tr>
<tr>
<td>Certificate of under three months of vocational training</td>
<td></td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Primary vocational</td>
<td>1.8</td>
<td>2.3</td>
<td>1.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Secondary vocational</td>
<td>2.5</td>
<td>2.6</td>
<td>2.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Professional secondary</td>
<td>3.4</td>
<td>3.5</td>
<td>4.1</td>
<td>3.3</td>
</tr>
<tr>
<td>Vocational college</td>
<td>5.9</td>
<td>7.7</td>
<td>5.4</td>
<td>3.4</td>
</tr>
<tr>
<td>Professional college</td>
<td>5.4</td>
<td>6.7</td>
<td>6.6</td>
<td>8.2</td>
</tr>
<tr>
<td>University or higher</td>
<td>2.6</td>
<td>4.3</td>
<td>4.2</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Source: GSO, 2013; GSO, 2014; GSO, 2015; statistic data and quarterly labour – employment survey data
3. Human resource development in Viet Nam

Human resource development is a key factor that can foster the development of the economy as well as improve the quality and productivity of production. In Viet Nam, well-trained workers only comprise about one fifth of the total labour force. Trained workers also do not meet the demands of employers, while national labour productivity is one of the lowest in the Asia-Pacific region. A study of 350 manufacturing and service sector firms in Hanoi and Ho Chi Minh City noted that almost all employers were not satisfied with the quality of education and skills in the current workforce, particularly for engineers and technicians. The report also highlighted the need for cognitive, social and behavioural competences alongside technical skills. These are skills that can particularly be developed through the application of knowledge into practical or real-world situations.

Viet Nam’s Law on Vocational Training (2015) states that business associations, social organisations and professional organisations are responsible for participating in the design and development of training and the appraisal of vocational training curricula. There are also provisions to facilitate the inclusion of employers in VET activities. However, in practice, employers are not actively engaged in TVET activities. The onus typically falls on TVET institutions to determine solutions and build relationships with companies to improve the quality of training.

Many TVET institutions have recognised the need for closer links with industry and a movement away from the largely classroom-focused nature of vocational education. However, in the absence of formal mediation mechanisms administered through the government, each TVET institution collaborates with employers on an individual basis.

Figure 2.1 Types of co-operation between TVET industries and institutions
There are a number of forms of co-operation between TVET institutions and industries. These include:

- Internship and practice.
- Recruitment before training. This occurs when companies select untrained workers and then engage directly with TVET institutions to develop a training programme. The employees then meet the requirements of the company and are hired following the completion of the course.
- In-service training at companies. This encompasses on-site training conducted by TVET teachers and trainers.
- Building and developing a training curriculum. This involves the co-operation of TVET institutions and companies to build a new training curriculum and/or improve an existing programme. This enables employers to adapt training programmes to encompass not only the basic knowledge and skills in the framework curriculum of the Ministry of Labour, Invalids and Social Affairs but also the practical knowledge and skills required by the business.
- Other support training. Enterprises are able to offer a range of other forms of support to TVET institutions, including with respect to improved training assistance, support facilities for training, company sightseeing, and scholarships.

The most popular form of collaboration is the use of 4-5 week internship programmes with relevant employers in the final semester of vocational education. Throughout this period of time, students largely observe and spend very little time practically engaging with the business. Without the opportunity to work in the industry, this form of work-based learning has little practical benefit for students whilst also limiting the productivity benefits for employers.

Figure 2.2 Conditions needed to ensure successful collaboration between higher education institutions and the business sector

Source: Nha PX (2009)
4. **Thu Duc College of Technology (TDC)**

One example of a new model of industry engagement in a TVET institution is the case of Thu Duc College of Technology. Thu Duc College (TDC) of Technology is a public technical and vocational institution that is administered by the Ministry of Education and Training. TDC aims to build technical expertise for students in a variety of professions ranging from tourism to engineering. Since its establishment, the college has trained thousands of students to a high level of technical expertise. The college is a known place of recruitment for organisations for both the public and private sectors in Ho Chi Minh City.

TDC ensures that its teachers and trainers retain a high standard of professional skills. Over 76% have a post-graduate degree and many studied overseas, including in countries such as South Korea, Germany and Singapore.

TDC offers a range of different vocational and professional courses and training, including 11 majors at the professional level (three years of training or more) and 18 majors at the vocational level (two year certificates). The model of industry engagement at TDC is illustrated in Table 2.5.

**Table 2.5 TDC TVET Collaboration**

<table>
<thead>
<tr>
<th>First year</th>
<th>At the secondary vocational school</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Visit industries.</td>
<td></td>
</tr>
<tr>
<td>2. Train basic professional knowledge and skills.</td>
<td></td>
</tr>
<tr>
<td>3. Train professional ethics, labour discipline and industrial working culture.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>At the secondary vocational school</th>
<th>At industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Train professional ethics, labour discipline and industrial working culture.</td>
<td>6. Develop professional ethics, labour discipline and industrial working culture.</td>
<td></td>
</tr>
<tr>
<td>5. Train basic professional knowledge and skills at the advanced level.</td>
<td>7. Practice professional skills in the workplace.</td>
<td></td>
</tr>
</tbody>
</table>

In the first year, students are trained at TVET institutions. In this school year, TVET institutions focus on building professional ethics and discipline; developing basic knowledge and professional skills; and organising visits to workplaces for students. In the second year, students spend time working in industries, which enables students to practise professional skills.

5. **Objectives of increased engagement between employers and TDC**

TDC aims to engage employers in the training process as much as possible, in order to provide the best possible training experience for students. The aims of including employers in the vocational education process are as follows: Providing good opportunities for students and TVET teachers to develop technical skills in practical working environments; Combining academic knowledge with practical work-based learning to develop professional competences for students; Developing curricula to meet the skills required by employers; Ensuring non-technical skills, including behavioural and problem solving competences, meet the standard required by employers; and Broadening the variety of training available for students.
6. **Types of collaboration between TDC and employers**

In combination with classroom-based learning, TDC aims to improve the professional and social competences of students through ongoing collaboration between TDC and employers. This collaboration takes on many forms, including field trips, industry semesters, internships and firm-specific training.

*Figure 2.3 Collaboration between TDC and Industry*

**i. Field trips**

The aim of field trips is to help students become familiar with the major employers near Ho Chi Minh city, including Intel Viet Nam, Ajinomoto, Coca Cola and FPT Software. Students take a short trip to these workplaces to become familiar with a practical working environment, particularly in relation to operational processes, modern technologies and working environments. The students have the opportunity to observe the production process and ask questions. Representatives from the workplaces share their experiences and offer the students advice. This process of visiting local employers affects the motivation and goals of students, particularly with respect to the desired vocational or professional pathway.

**ii. Industry semesters**

An Industry Semester is one of the most effective types of collaboration between employers and TDC. In the Industry Semester, teachers and students are sent to industries to study and work in order to develop practical competences. This form of work-based learning not only helps students gain practical working experience but also enables TVET teachers to understand modern industrial needs and apply them in future teaching.

*Industry semester for students*

At TDC, a compulsory requirement for all curricula is the completion of an Industry Semester encompasses 135 hours of practical experience with an employer. Through observation and practical work-based learning in selected industries, the students are able
to explore industrial working culture, form professional working attitudes and develop practical industrial competences. These are skills that are necessary to successfully engage with the world of work, but are difficult to teach through TVET institutions.

For example, students from TDC’s Faculty of Information Technology completed an industry semester halfway through a three year college-level degree. They completed their work experience at IPL Corporation, a prestigious Vietnamese computer services company that provides phone services, network solutions, security infrastructure, data deployment and surveillance services. At IPL Corporation, students have the opportunity to observe and practise tasks, including developing network security. At the end of the semester, IPL Corporation assesses the students in terms of their knowledge, skills and attitudes. In response, the TDC Faculty of Information Technology revises course content, teaching methods and curricula to better match the skills demanded in the workplace.

Industry semester for teachers

Since 2013, the Faculty of Information Technology and the Faculty of Mechanical Engineering at TDC have allowed their teachers to take an industry semester for 3-6 months of the school year in order to improve professional and pedagogical competences. Almost all of the teachers from these faculties have taken at least one Industry Semester. The teachers work and receive formal salaries that are equivalent to the wages of employees in the workplace. Working in practical working environments has many advantages for teachers, including:

- Identifying which skills are used often and should be included in TVET curricula;
- Updating their understanding of the needs of industry;
- Practising professional skills through working;
- Being familiar with the industrial working culture; and
- Developing professional working attitudes.

These advantages enable teachers to incorporate practical lessons learned in the workplace into classroom-based vocational education. They also enable the teachers to gain a better understanding of the current state of the art of technology and skills in industry.

For example, lecturers from the Faculty of Information Technology at TDC have taken part in industry semesters at a number of companies, including Green Beetle Consultants Design Software Company Ltd, Promatica Viet Nam Co., Ltd, Pyramid Software and Consulting Ltd and TMA Solutions. The lecturers take specific occupations in website design, software testing, application and smart phone programming. They also took active part in a number of ongoing projects while completing their Industry Semesters, including some undertaken overseas.

One of the team leaders, Cuong Tieu Kim, noted that the new knowledge and professional skills would help her to teach students to the technical standard required by employers. Another teacher noted that the experience helped to build teamwork skills and management experience. A website design instructor at the Faculty of Information Technology at TDC reported, “With practical knowledge and skills, I feel more confident about training students to become website design technicians”.

### iii. Internships

Internships are also a popular method of promoting employer engagement in the vocational education process at TDC. They comprise 180 hours of practical work with an employer, typically taken in the final semester of the course. Students have the opportunity to engage in real projects and assist with technical tasks. However, there have been some difficulties associated with acquiring internships for students in major employers, as some industries are not willing to let students engage with their most modern technology.

### iv. Training at the demand of industries

Some industries, including the mechanical and telecommunications industries, commission training from TDC for their new recruits. One form of this training is where the employer provides support facilities to TDC, and collaborates with academics to develop workplace-specific curricula. Upon graduating from the course, students are then recruited by the specific employers. This process ensures that the company does not have to subsequently re-invest in training for new recruits.

For example, Tan Thanh Container Company Limited is the largest and the most reputable manufacturer of containers and semi-trailers in Viet Nam. Since 2014, the company has collaborated with the Faculty of Mechanical Engineering at TDC to train technicians to their particular standards. TDC selects 40 students per year to complete a course that is customised for the needs of Tan Thanh Container Company Limited. These students are also able to pursue work-based learning at the company to gain practical technical competences. Upon graduation, the students are then recruited to work as technicians at Tan Thanh Container Company Limited.

Similarly, the Phuong Nam Telecom Company is a leading telecommunications and internet services provider in Viet Nam, with over 2,200 employees and 31 branches. Since 2014, the company has engaged with the Faculty of Information Technology to train 50-100 students per year to become telecommunication and computer network specialists according to the company’s requirements. The company contributes funds and provides facilities for the students, who are also able to pursue work-based training. The Phuong Nam Telecom Company then recruit graduates from the course.

Another form of industry demand-driven training at TDC can be observed by the incorporation of employer-specific qualifications into the vocational education. For example, the Faculty of Information Technology collaborates with Cisco Systems Viet Nam to teach the Cisco Certified Network Associate Certification (CCNA), which is recognised all over the world. The qualification is embedded into the broader curricula, which allows students to gain the career qualification alongside general information technology competences.

### 7. Outcomes

There are a number of advantages to the collaboration between TDC and related industries. Students are able to learn and practise activities that are linked closely with the day-to-day work in local industries. Similarly, the curricula can then be tailored to the skills demanded by employers, while both teachers and students are able to experience working life. Increased employer engagement in vocational education at TDC also ensures that companies are not forced to retrain workers following recruitment.
More than 50% of TDC graduates found employment within three months of graduation (TDC, 2015). Over 86% students from the three year programme (college course) and 76% of those with vocational qualifications (two year diploma) found jobs within 6 months. After 12-15 months, 93-96% of college graduates and 80% of vocational graduates had successfully found employment. These are particularly impressive results in the Vietnamese context, where recent graduates account for almost 20% of those unemployed nationally (General Statistics Office, 2016).

**Figure 2.4. Percentage of TDC graduates that find employment**

![Chart showing employment rates for TDC graduates in different time periods and educational levels.](chart)

Source: Thu Duc College of Technology

Other positive elements of the collaboration include deeper relationships with 12 companies. Similarly, students who have completed industry semesters appear to have better and faster learning outcomes and improved discipline. Many students were asked to stay or return to employment at their resident companies following graduation.

The experimental programmes from these two faculties can provide a good example of co-operation for other faculties or other TVET institutions. Improved employer engagement will enable the skills of trained workers in order to meet the requirements of labour market while improving work quality and productivity. This could enable employers to save time and money incurred by recruiting and retraining employees.

At the initial stage of the project, the staff who proposed the idea thought it would be difficult to have the programme approved by all stakeholders. However, the idea soon had support from both college administrators and local employers as a means of improving the quality of training and the productivity of the labour force.

Improved co-operation between employers and the college has enabled the development of more practical training curricula so students’ skills meet the requirements of the labour market. Teachers also developed improved technical and pedagogical competences as a result of their work placement.

Another benefit of the programme is the provision of valuable work experience for students alongside a salary or daily stipend. Students have the chance to develop vocational skills alongside soft skills such as work discipline. There are also a number of
career paths and opportunities for them to pursue in the future. There are also a number of advantages for employers, including securing a well-trained and high-quality workforce while improving workplace productivity. The pilot programme has four innovative aspects, including:

1. Strong commitments from both training colleges and employers to contribute to the training of students. This is particularly facilitated through the signing of memoranda.
2. This case study is notable in its use of experiential and work-placed learning that complements the learning process.
3. Enhancing abilities of teachers. Most Vietnamese professional and vocational teachers lack practical skills so encouraging teachers to gain industrial experience had a major impact on the broader quality of the training system.
4. The programme aims to teach students both the official curricula as well as extra training courses that are introduced at the request of employers.

The success of the case study was predicated on the motivation of local leaders amongst implementation staff and the administrators, and the development of strong relationships between TVET stakeholders, including teachers, administrators and employers. Finally, custom policies were used to enable co-operation between stakeholders.

However, some obstacles or problems that emerged during the design and the implementation of the initiative included ongoing and continuous reiteration of training curricula, training schedules and the design of relevant materials to ensure the success of pilot. This was addressed through ongoing collaboration and communication between all stakeholders. However, some employers were not willing to collaborate with the college, or were potentially exploitative to students.

8. Potential transferability

A number of key elements of this project could be transferred to different contexts in order to develop technical competences for TVET students. For example, the government should have a strong and effective policy to encourage industries to collaborate with TVET institutions. This could include incentives such as reduced taxation, or prioritisation for investment. The policy should result in active engagement from employers alongside TVET colleges. Government should have guidelines, models or programmes of co-operation at different levels for training institutions and industries to select and implement according to their needs. If government actors do not actively promote collaboration and dialogue amongst stakeholders, TVET institutions have to be more active in creating this relationship. This process can be explored as follows:

- TVET institutions should issue an open call to employers to become engaged in the training process. This call should outline the purposes, benefits and activities of co-operation.
- The administrative and business relations departments of TVET institutions should actively seek local employers to develop initial relationships. These companies should be chosen with respect to their suitability and relevance to existing training priorities. It is often more difficult to convince companies with high-tech equipment and high security to allow students to complete work-based training than smaller companies.
- When companies agree to become involved, this understanding should be formalised through a memorandum of understanding. The relevant parties should
then outline the details, activities and characteristics of co-operation, such as: programme or curricula, responsibilities of each party, efficiency, accountability, sustainability, data collection, implementation and evaluation.

- In order to ensure that relationships between employers and TVET institutions continue in the long-term, both stakeholders must commit to ongoing dialogue and develop active and mutual methods of solving any problems that might arise.
- To ensure long-term engagement, students must have a number of foundational skills and competences before conducting work-based learning with an employer. It is important that competences including communication skills, problem solving skills, workplace discipline and a strong work ethic are developed in students prior to placement.

Each country should consider local conditions including the state of economic development, the local education system and strategic priorities before pursuing models of stakeholder co-operation to improve the skills of learners. This case study indicates that collaboration between TVET institutions and employers has the ability to improve technical and professional competences of both students and staff.
Technical and vocational education, if properly positioned, can provide tools which will enable the country to strengthen knowledge, skills, attitudes and the capacity for adaptation to a changing and vulnerable physical environment. The technical and vocational education and training (TVET) sector has a crucial role to play in the development of human resources for future manpower requirements.

The Government of Malaysia has spent MYR 1.8 billion on TVET institutions in 2010, MYR 774 million in 2011, MYR 520 million in 2012, MYR 3.7 billion in 2013, MYR 10.5 billion in 2014 (in the 10th Malaysian Plan), MYR 1.2 billion in 2015 and MYR 4.8 billion in 2016 on the development of human resources. Policies and government rules such as the New Economic Model, the Government Transformation Programme, Economic Transformation Programme and the 10th Malaysia Plan have targeted the development of human resources to support economic development. Malaysia has shortages of skilled workers, similar to already developed countries such as Germany, Japan, Korea and others European countries.

As noted in the eleventh Malaysian Plan, Malaysia needs more than 1.5 million high-skilled workers by the year 2020. However, only 28% of the total Malaysian workforce is engaged in high-skilled jobs, while the average share of high-skill employment in OECD countries is 37.6% (Rahim Bakar, Mohamed & Hamzah 2013). The government aims to ensure that 35% of the Malaysian workforce is employed in high-skilled jobs by 2020 (11th MP). The Malaysian government also aims to increase the number of students in TVET from 164 000 people in 2013 to 225 000 in 2020. This will result in an increase in the number of skilled and semi-skilled workers targeted by the government to meet the industrial and agricultural demand in the country.

1. TVET Institutions in Malaysia

Technical and vocational education institutions in Malaysia consist of various agencies that operate as public and private agencies. One thousand TVET institutions operate under the jurisdiction of the public TVET institution. Seven (7) Ministries are involved in conducting training programmes that consist of 242 900 students (Data as of June 1, 2014). Two (2) accreditation bodies have been involved in controlling the quality of education and training, namely the Department of Skill Development and Malaysia Qualification Agency. In addition there are also private agencies that implement programmes for TVET to support the government efforts in achieving the target.

In the Malaysian context, several Regulatory Acts are relevant to the implementation of TVET. These include the National Skills Development Act (Act 652), the Education Act 1996 (Act 550), the Private Higher Educational Institutions 1996 (Act 555), Malaysian Qualifications Agency Act (Act 679), the Skills Development Fund (Act 640) and the Human Resources Development Limited Act (Act 612). Various acts that have been created by the government laws have resulted in a variety of skills pathways in the national qualifications framework (MQF). The TVET education system is categorised under skills articulation, which is under the jurisdiction of the Malaysian Occupational Skills Qualification (MOSQ).
By the year 2020, there will be 1.5 million new employment needed to be filled in all industries. This includes manufacturer, construction, government servant, services sector, mining & quarrying and agriculture. The number of workers entering the labour force has subsequently increased. In the 11th MP, economic growth will be driven by domestic demand with increased contribution from the external sector, namely:

- Focus on high quality **private investment** in the manufacturing and services sectors to create high income jobs;
- **Public and private investment** will be driven by infrastructure projects such as high-speed railway, LRT3 and Pan Borneo Highway;
- **Private consumption** will increase in line with the country's prosperity;
- **Public consumption** is expected to moderate due to prudent spending.

**Table 3.1 Economic growth will be driven by domestic demand, with increased contribution from the external sector**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Original target</td>
<td>Achievement</td>
</tr>
<tr>
<td>% per annum</td>
<td>% per annum</td>
<td>% to 2015 GDP</td>
</tr>
<tr>
<td>Real GDP</td>
<td>6.0</td>
<td>5.3</td>
</tr>
<tr>
<td>Consumption</td>
<td>7.2</td>
<td>6.9</td>
</tr>
<tr>
<td>Private</td>
<td>7.7</td>
<td>7.1</td>
</tr>
<tr>
<td>Public</td>
<td>4.8</td>
<td>5.5</td>
</tr>
<tr>
<td>Investment</td>
<td>8.9</td>
<td>9.1</td>
</tr>
<tr>
<td>Private</td>
<td>12.8</td>
<td>12.6</td>
</tr>
<tr>
<td>Public</td>
<td>5.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Net external sector</td>
<td>-11.3</td>
<td>-7.6</td>
</tr>
<tr>
<td>Export</td>
<td>7.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Import</td>
<td>8.6</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Source: EPU, 2015

All economic sectors are projected to grow in response to the increase in labour market productivity, the increase in knowledge-based and high value-added activities and strong demand from the domestic and external sector. The manufacturing and services sectors will spearhead economic growth alongside Agriculture, Mining and Construction. The 11th Malaysian Plan aims to ensure that economic growth will be stable and strong by the year 2020. Therefore, there will be a need to increase the number of the skilled workers to create a first-world talent base. The Plan aims to refine labour force analysis and take into consideration in-house training provided by employers to produce or enhance TVET workforce. Similarly, the role of private institutes in supplying TVET workforce are now included in workforce analysis.

Five sectors make up two thirds of the gap in skills in Malaysia, namely:

- **Undersupply**: Wholesale & retail/motor vehicle repair; Transportation & Storage; Accommodation and Food & Beverage;
- **Oversupply**: Electricity, gas, steam & air conditioning; Professional scientific & technology.
However, the quantity gap varies significantly across geographical regions. For example, there is a shortage of 171,000 workers in the Central area but only a 5,000 undersupply in the Eastern Peninsular area. In term of capacity utilisation, there is an estimated 200,000 of additional capacity across all TVET institutes by 2020, which can address approximately 60% of a 300,000 undersupply. Approximately 18% of net undersupply can be addressed by excess capacity in existing high-performing VET programmes.

As noted in the third Strategic Thrust of the 11th Malaysia Plan, labour market efficiency must be improved to accelerate human capital development and economic growth in Malaysia. Government should enable industry-led concepts where Technical and Vocational Education and Training (TVET) is prioritised. Approximately 60% of the 1.5 million jobs that will be created during the Eleventh Plan will require TVET-related skills. Malaysian human capital is a highly valued endowment and must be accurately harnessed to facilitate the transition towards a knowledge-based high income economy. This will involve improving the quality of education for better student outcomes and institutional excellence.

Figure 3.1 Employment by major occupational groups

This has raised some issues that should be considered in order to achieve the government's intention a reality. Among the issues raised are:

- The need for workers to have various skill sets, especially soft skills;
- The continuous need for upskilling and reskilling;
- The need for better wages and remuneration packages;
- The need to develop curricula that meet the changing demands of the job market;
- The need to meet the real demand for STEM graduates from the private sector.

Numerous initiatives have been taken in order to further TVET policy priorities. As a result, the listed initiatives were intended to improve the quality of teachers, the quality of equipment and the training spaces and facilities. The cost of conducting a training course in TVET institutions will also increase. Among the efforts undertaken by TVET institutions include co-operative TVET collaborations between institutions, government and industry, also known as industry Public Private Partnerships or PPP. However, this
form of collaboration raises unique challenges with respect to mutual understanding and the implementation of strategic collaboration for high impact programmes.

2. Employer engagement with Malaysian TVET institutions

Malaysia aims to become a developed nation by the year 2020. A developed nation with knowledge-based economy requires a knowledgeable society with a competent and highly-skilled workforce to remain competitive on the global marketplace. This in turn requires collaboration between a number of stakeholders, not just government and education institutions. Industry plays a huge role in education, especially in Technical Vocational Education and Training (TVET) which includes problem solving, curricula development, study visits, scholarships, and apprenticeship training and incubation centres.

Curricula consist of statements of aims and objectives, content in terms of theoretical knowledge, practical skills to be acquired, attitudes towards work and necessary support materials to be used in the teaching process. There has been a growing awareness of the need to bring greater innovation to the process of curricula development in TVET to cope with changing employment requirements that arise as a result of rapid socio-economic and technological development. Numerous TVET activities have been planned and implemented in various TVET institutions to ensure that labour markets become more efficient to accelerate economic growth.

The Malaysian Economic Planning Unit (EPU) (2006) states that Malaysia needs to improve on the quality of the labour force by increasing educated and skilled human capital. As such, Malaysia has implemented several training and retraining programmes to reduce skills mismatch amongst graduates. In fostering the development of human capital, the focus is given to holistic “development encompassing knowledge and skills, progressive attitudes as well as strong moral and ethical values” (EPU, 2006:261). The 11th Malaysia Plan states that the development of human capital will be the major effort to sustain economic development. Therefore, the emphasis is not only on “economic resilience and growth”, but also on the need to develop a knowledge-based economy to encourage a community with a good value system (EPU, 2014). Polytechnic Sultan Azlan Shah and Polytechnic Ibrahim Sultan have been selected to develop projects in conjunction with major employers. Proton, one of the biggest automotive companies in Malaysia, agreed to a proposal from the government to enhance the quality and quantity of Malaysian workforce in automotive industries. A number of service providers in the tourism industry also aimed to strengthen its relationship with Polytechnic Ibrahim Sultan.

Work-based learning (WBL) is a subset of workplace learning. WBL refers specifically to the achievement of ‘planned learning outcomes’ derived from the experience of performing a work role or function. There is no single or simple definition of what WBL entails beyond the notion that it is about learning (not teaching) and occurs in the workplace (rather than on campus). It should not be assumed that WBL in the higher education context is specifically about training. It can take many forms for a number of different purposes and is not restricted to performance-related learning in a narrow sense.

WBL was first launched in 2007 in four community colleges under the MoE before being expanded to selected Polytechnics via programmes in the hotel and catering, electrical technology, computer technology and automotive technology industries. The main aim of the WBL programme was to enhance the employability of graduates by promoting soft
skills, technical and vocational skills. The WBL curricula were co-developed by the colleges and related industries. As part of this programme, a Memorandum of Understanding was signed between Polytechnic Sultan Azlan Shah and Proton Holdings Bhd in order to enhance the employability of Polytechnic students. It was supported by the government who acted as a mediator.

Work-based learning plays an important part in the development of improved academic and technical qualifications by obtaining credits for negotiated learning in the workplace. It is also increasingly an important bridge between TVET institutions and the world of work. WBL can be seen as part of a wider set of changes in the economy, society and the role of Polytechnic Sultan Azlan Shah and other TVET institutions. Work-based learning has also been identified as a means of responding to the needs of employers, particularly those in small to medium-sized enterprises (SMEs). This is in line with the MEB 2015-2025 (HE) objectives which stated that lifelong learning will enable Malaysians to meet the changing skill needs of a high-income economy and maximise the potential of individuals who are currently outside the workforce by reskilling and upskilling.

Work-based programmes typically employ different structures, approaches and processes to those used in subject-based academic programmes (Helyer, 2010). However, the shared characteristics of WBL programmes usually include at least one or more of the following elements: Accreditation of certified or experiential learning; learning agreements including industry partner as well as learners; learning in the workplace or ‘work’ as the subject of learning; and workplace or professional practice-related ‘applied’ projects.

WBL programmes have been found to be successful in terms of developing students’ soft skills related to creative and critical thinking (Alias & Abd Hadi 2011) as well as knowledge (Kamin, Cartledge & Simkin 2010) and problem-solving skills (Wan Mohamed & Omar 2010). In addition, Kamin, Cartledge & Simkin (2010) have found that there are other benefits including improved facilities through industry donations and improvements in the skills and knowledge of teachers.

The polytechnics and employers collaboratively developed the curriculum to suit the needs of both industries and MQA regulation. Mutual agreement and understanding from both parties was part of the process of curriculum development. It was essential to the success of WBL to have industry involvement in curriculum planning to ensure that learning outcomes are fully understood and accepted by industry. Polytechnics have also been advised to appoint industry advisors to assist with curriculum design. The WBL implemented in polytechnic programmes includes the Diploma of Automotive Technology offered at Polytechnic Sultan Azlan Shah and the Degree in International Tourism Hospitality Management available at Polytechnic Ibrahim Sultan. The structure of both WBL programmes as outlined in Figure 3.3.
3. Implementation of WBL at PROTON Holdings Limited

Proton Holdings Berhad is a Malaysian car manufacturer. It is headquartered in Shah Alam, Selangor and operates an additional manufacturing plant in Tanjung Malim, Perak. The company was established in 1983 as the sole national car company until the advent of Perodua in 1993. Proton is a Malay acronym for Perusahaan Otomobil Nasional Sendirian Berhad (National Automobile Company Private Limited). Proton was largely a manufacturer of badge-engineered vehicles for Mitsubishi Motors between 1985 and the early 2000s. The company has since produced several indigenously designed models and operates in at least 26 countries today, the majority of which are in Asia. In January 2012, it was taken over by DRB-HICOM, a Malaysian conglomerate, for MYR 1.2 billion.

The method used in the WBL programme requires each student to have a supervisor in the industry. Some employees are appointed supervisors to conduct teaching sessions and provide learning experience. This can improve the student’s experience of WBL and craft them into a candidate that will meet the needs of the industry. The terms of the WBL enabled the participation of full-time students, school leavers, those already employed with Proton, or those undertaking a combination of part-time or self-employment, entrepreneurial activity or voluntary forms of engagement with Proton. Hence, within the context of the guidelines, WBL will display some or all of the following characteristics:

- Facilitate the development of a student-centred curriculum within the context of programme requirements, whereby the experience results in the enhancement of their skills and/or academic knowledge;
- Flexible in terms of access, delivery and curriculum, feedback and assessment;
- Promote active partnerships with industry (PHB) and external organisations via industry negotiated programmes; and
- Promote innovative teaching, learning, support and assessment strategies applicable to the workplace and course/programme requirements.
The objective of WBL at the Polytechnic is to enable students to develop industry specific skills and knowledge from the workplace environment that will help them meet the learning outcomes of their programme or unit of study. Hence, WBL learning outcomes implemented with Proton include:

- Learning outcomes stated in terms of the MQF and Proton Standard levels;
- Knowledge - often knowledge frameworks or methods of information literacy are important as knowledge changes between both parties;
- General graduate skills recognised as employability criteria in accordance with Proton’s requirements;
- Specific competences - often in relation to a professional body; these may be required before a person can be licensed to operate within a profession;
- Specific skills required by the employer in relation to the nature of the employment. Proton has set some of the employment standard to work with automotive industries;
- Personal attitudes and attributes expected of a person behaving in a professional, ethical and responsible manner;
- Work targets which may need to be achieved but can be used as evidence of competence; and
- Career and development aspirations which may be identified by in-house review procedures.

Students involved with the programme have the opportunity to develop general skills, including learning autonomy, self-appraisal and critical reflection skills, in congruence with specialist knowledge, theory and skills in the context of the workplace. This will also enable them to learn through workplace experiences and link academic theory to real industrial practice, and gain an understanding of employment opportunities and responsibilities through on-the-job experience. WBL experience can also result in full-time employment with Proton for students after graduation, assuming they meet the standards set by the industry committee. Those who do not gain employment with Proton still graduate with valuable work experience that enhances their long-term chance of success and advancement.

4. Implementation of WBL at Polytechnic Ibrahim Sultan

Polytechnic Ibrahim Sultan has pioneered WBL in Malaysia by offering a year of work-based learning in the tourism and hospitality fields. The work-based learning partners from the industry based in Johor Baru included Matta, Malaysian Association of Hotels (MAH), KSL Resort, Mutiara Hotel, Thistle Hotel, The Puteri Pacific, Mumtaz Travel and Tours, Rajawali Bintang Travel and Tabung Haji Travel Services.

The Degree and Advanced Diploma in Hotel and Catering is a three and half year full-time course comprised of six semesters. The programme adopts a work-based learning (WBL) approach to blend classroom instruction with structured real-life working experience to prepare students for a competitive edge in today’s workplace. The programme aims to develop qualified and industry-ready manpower. Prior to that, the curriculum requires students to complete their first semester at their respective institutions (polytechnics), then complete on-site training at the relevant industries for the next two semesters. In order to keep abreast of rapid technological advancements and evolving requirements in industries today, the Department of Polytechnic Education (DPE) has initiated a collaborative programme with the nation’s key industry players.
This collaborative programme aims to equip students with up-to-date knowledge and skills necessary for practical use. The purpose of this programme is to provide the best education and training for students to meet the rapidly growing demand of the hotel management (HM) and culinary activities attached to industries such as hotels, resorts, serviced apartments, private and public housing services, healthcare institutions, sport complexes & recreation spaces and other hospitality environments.

WBL programmes train and support students with actual sector-based scenarios to curricula developed in collaboration with employers and the Department of Polytechnic Education Curriculum. Students also will be exposed to the planning, hotel operation & management and food servicing processes in the organisation. This programme is designed to provide theoretical knowledge combined with on-site practical experience. Students will be taught a combination of soft business management skills and culinary skills. Important areas of study include organisational behaviour, financial planning and hotel management, culinary, bakery, carving, procurement and contract management, health and occupational safety, total quality management, statutory requirements, environmental management & sustainability and management information systems.

5. Impact of work-based learning programme

In order to ensure the quality of the polytechnic students meets the standard required by industries, the Malaysian Qualification Agency established eight core domains for the fulfilment of the national qualification requirements: Knowledge; Practical skills; Social skills and responsibilities; Values, attitudes, and professionalism; Communication, leadership and team skills; Problem solving and scientific skills; Information management and lifelong learning; and Managerial and entrepreneurial skills.

The initiative also had a number of benefits for employers, including the development of new ideas and energy from the presence of young people in the workforce. There was also the opportunity to minimise recruitment costs while developing skills to ensure sustainable workforce development into the future. There were also impacts on increased employee morale, motivation and retention, while improved reputational benefits associated with community engagement.

6. Strengths of the initiative

Work-Based Learning aims to promote the involvement of employers in human capital development at all level as a TVET provider. Students from TVET institutions have the opportunity to fulfil the needs of specific industries. Among the key factors underlying the success of WBL are:

- Good rapport with industries, which helps each party to build co-operation to reduce the gap between the needs of industry and institutions;
- Mutual understanding to meet the aims of both parties;
- Demand-driven and flexible TVET that meets industry needs by developing, reskilling and upskilling the labour force;
- Saving the cost of maintenance or equipment purchasing and reducing the use of raw material for practical activities in training institutions;
- Enabling the mobility of staff between academies and industries.

The elements of innovation was that WBL was longer and more thorough that internships, which enabled students to become truly embedded into the workplace. With
more hands-on training, students will be confident that they can develop the skills required to secure future employment.

7. **Weaknesses of the initiative**

There were a number of obstacles and weaknesses in the effective implementation of WBL. These included a general lack of interest from employers due to a lack of understanding of the value of TVET, and a lack of communication and follow-up from the TVET institution. This was reinforced by a lack of support or enforcement from the government to ensure the sustainability of the programme, and a lack of time or funding for lecturers involved in monitoring and observing students in the workplace. Employers often failed to provide sufficient facilities for laboratories and workshops.

Similarly, the implementation of the initiative was constrained by the fact that employers who were not members of certain industry associations refused to accept participants to WBL programmes (eg. Malaysian Hotel Association), again highlighting the need for systematic collaboration with groups of employers. Further, the limitations on places for students to join the programme resulted in the monopolisation of the places by some industries. It was also difficult to come to mutual agreement about policies without open dialogue and strategic discussions over the long-term, highlighting the risks of short-term collaboration.

8. **Potential transferability**

Some of the underlying success factors could be successfully implemented in a range of other ASEAN countries. WBL was categorised as a model that enables students to move between employers across ASEAN. For example, a number of Indonesian students have completed their internships at local Malaysian hospitality services and hotels. Regardless, the costs and visa approvals are obstacles to continued labour mobility. Thus, improved co-ordination of WBL and other TVET programmes could assist the development of the tourism industry in ASEAN countries.
Case Study #3: Employer engagement in TVET in Thailand

A well-trained labour force is a key factor for economic development in Thailand as it will increase productivity and enhance the country’s overall competitiveness. However, evidence from previous studies and news from the public and private sectors have found that the existing education system is not delivering people who meet the needs of the industry (Parpart, 2015). According to the Vocational Education Act of 2008, one of the main goals of the National Economic and Social Development Plan and National Education Plan is to produce skilled people to meet the demands of labour markets and equipping students with the necessary practical competences for future occupations (Thai Government, 2016). This is increasingly a prerogative for vocational training institutions, colleges and universities.

Rajamangala University of Technology Lanna (RMUTL) aims to become a recognised higher education institution that enables students to study vocational education from the certificate to postgraduate level. In order to produce professionally qualified graduates, RMUTL regards workplaces as essential venues to train students for practical work alongside classroom-based learning. In the past, RMUTL has advocated the completion of short-term internships, but found that they were not sufficient for students to gain enough experience for the workforce. Similarly, the university’s instructors, instruction methods and equipment were not as modern as those commonly found in industry. As a result, the students were unprepared for the practical reality of work in the private sector.

In response, the National Science Technology and Innovation Policy Office (STI), RMUTL and Michelin Thailand Company Limited initiated a pilot project known as ‘School in Factory’ (SiF), to find a better way to incorporate industry into the education process. This paper provides the details of SiF, its impacts, weaknesses and strengths and its transferability to other Association of South East Asian Nations (ASEAN) contexts.

9. Issues and Challenges

The Thai labour market has two distinct problems. The first is that Thailand lacks highly-qualified research engineers and technical staff for the industrial sector. This is partially due to the limitations of curricula in vocational education and training institutes, which are largely outdated and impractical. There is also a lack of interest in vocational education among young Thai people with high academic potential, largely due to the fact that technician positions pay a low salary in comparison to other professions, despite long hours and heavy workloads.

Thailand, like many other ASEAN countries, is stuck in a ‘middle-income trap’, which occurs when a country is stuck at the income dictated by given resources and initial advantages, and cannot rise beyond that threshold. One of the methods of getting out of this trap is to improve the knowledge, skills and technology of the workforce, thereby allowing the country to increase income per capita. This requires effective integration between government, businesses and educational institutions in terms of educational policy.

Rajamangala University of Technology Lanna (RMUTL) aims to become a leader in the development of practical skills amongst graduates and the implementation of new and
innovative curricula. The University aims to create greater linkages with industry in order to ensure that students are well-trained professionals. Redesigning the curricula in order to improve occupational skills requires collaborating with a number of stakeholders, including employers, instructors and students.

In order to achieve these objectives, RMUTL adopted the School in Factory (SiF) programme where the students from the Faculty of Engineering at RMUTL’s Chiangmai Campus are assigned to work with Michelin Thailand for two years as part of their coursework. Together with the support of Michelin Thailand, instructors from RMUTL have redesigned their curricula to fit the immediate and relevant needs of industry in terms of theory and practical knowledge.

10. SiF Model

Michelin Thailand recognises that good productivity comes from a high-quality workforce. They also see the benefits of working with an educational institution to train students to their particular standards while completing their studies. Michelin Thailand also offers scholarships to diploma students from RMUTL with combined support from STI and RMUTL. SiF is the first pilot project between RMUTL, Michelin and STI. Figure 4.1 shows the SiF education management model used in the study. As the figure shows, RMUTL, STI and Michelin Thailand play equally crucial roles in order to make the SiF programme successful.

**Figure 4.1 The SiF management model**

---

**RMUTL, CM**
- Curriculum Development, SiF
- Recruitment
- Teaching & learning management
- Project management

**Siam Michelin**
- Curriculum Development with RMUTL
- Student recruitment
- Support 3-year scholarship
- Support transportation and accommodation
- Provide salary to student
- Job admittance

**STI, Thailand**
- STI organise with all stakeholders

---

**Government**
- RMUTL, CM
- Siam Michelin
- Parents
- Students
- Communities
As Figure 4.1 shows, the National Science, Technology and Innovation Policy Office (STI) is one of the key stakeholders and funding parties in the establishment of the SiF programme. STI was established as a result of the National Science, Technology and Innovation Act 2008. Its goal is to unify STI commitments among public agencies and to strengthen the collaboration with and among the private sector, academics, and research institutes. STI focuses development in three strategic areas – (1) society and local communities, (2) economy, and (3) energy and environment – with the ultimate goal of developing a society driven by sustainable and green innovation (NSTI, 2015).

The Michelin Thailand Group was established in 1987 and operates three tire manufacturing plants, a mould manufacturing plant and a steel cord manufacturing plant. It employs more than 6,700 people in total (Michelin, 2012). Michelin Thailand aim to sustainably contribute to the local economy and develop employees, communities and societies.

Thailand is a leader in many industries, including the production of automotive parts, electrical appliances, electronics and telecommunication, among others. Thailand is also a production base of companies from the USA, Europe and Japan. However, there is often a lack of quality graduates who lack the skills to work in multinational industries. High quality graduates with the necessary skills and expertise to work in industry is also necessary to improve overall standards of living for workers.

Prior to SiF, co-operative education, apprenticeships and internships were also undertaken. However, the SIF programme is for a longer duration, which enables students to become accustomed to the relevant business environment. After the successful completion of the programme, the students may choose to pursue further studies or continue working for the company. This work-integrated learning model ensures that students are able to develop the necessary skills for work upon the completion of the two year term. The success of SiF is based on five factors, including:

1. High quality teachers;
2. Innovative curricula and teaching pedagogy;
3. High tech manufacturing equipment and machinery as teaching aids;
4. The implementation of the SiF programme with a number of stakeholders;
5. Budget support from a number of public and private stakeholders.
i. Programme structure

Students complete classes at the university to develop foundational skills over the first three months of the semester. Following this, students work at the factory for a nine-month period and complete classroom-based courses for three hours per day. For a two-month period throughout the summer, students return to university full-time to study general education subjects and experience university life with other RMUTL students. After the two year SiF programme, the diploma students have the option of either continuing to work in the factory or pursuing two years of further study to get a bachelor degree.

Tables 4.1 to 4.5 show the programme structure and the subjects taught during the first two years of the SiF programme. In each semester, experts from the factory and instructors are involved in mentoring and teaching students. Teachers who instruct students undertaking the SiF programme must have industry experience and a master degree in a related field. The mentors from the Michelin factory all have more than 20 years of work experience. The site teachers are from RMUTL and they are situated in the factory together with the students throughout the two-year programme.
**Table 4.1 Term 1: 1 October 1 – 31 December**

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Subject</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert Instructor (from RMUTL)</td>
<td>Mechanical Mathematics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soil Mathematics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Precision Measurement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fluid Mechanics 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fluid Mechanics 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engineering Drawing</td>
<td></td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Metal Work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plastic Work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Machine Part Design</td>
<td></td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>Engineering Materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work+Study+Observation</td>
<td></td>
</tr>
</tbody>
</table>

**Table 4.2 Term 2: 1 January – 31 March**

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Subject</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert Instructor (from RMUTL)</td>
<td>Post-Harvest Machinery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning &amp; Production Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculus</td>
<td></td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Engineering Drawing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydraulic Pneumatics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Computer Technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAD</td>
<td></td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>Work &amp; Study</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manufacturing Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TQM</td>
<td></td>
</tr>
</tbody>
</table>

**Table 4.3 Term 3: 1 April – 31 June 2015**

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Subject</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Teacher 1</td>
<td>Microteaching</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applied Mechanics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engineering Drawing 3</td>
<td></td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>Wood</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transportation Materials</td>
<td></td>
</tr>
</tbody>
</table>
### Table 4.4 Term 4: 1 July – 30 September 2015

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Subject</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert Instructor (from RMUTL)</td>
<td>Class observation</td>
<td>1</td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Machine Maintenance</td>
<td>2</td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Engineering Drawing 3</td>
<td>3</td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Automated Manufacturing Engineering 1</td>
<td>4</td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Automated Manufacturing Engineering 1</td>
<td>5</td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>Field trip</td>
<td>6</td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>Planning and Production Control</td>
<td>7</td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>Production Process</td>
<td>8</td>
</tr>
</tbody>
</table>

### Table 4.5 Term 5 1 October – 31 December 2015

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Subject</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert Instructor (from RMUTL)</td>
<td>Observation</td>
<td>1</td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Solid Mechanics</td>
<td>2</td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Engineering Drawing 4</td>
<td>3</td>
</tr>
<tr>
<td>Site Teacher 1</td>
<td>Electrical Technology</td>
<td>4</td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>Wood Work 2</td>
<td>5</td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>Metal Work 3</td>
<td>6</td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>CAD</td>
<td>7</td>
</tr>
<tr>
<td>Site Teacher 2</td>
<td>TQM</td>
<td>8</td>
</tr>
</tbody>
</table>

The three year work-integrated master programme in Mechanical Engineering is run in conjunction with the diploma programme. The master in Engineering Education is a two year programme that focuses on both the practical and theoretical aspects of engineering. Students have the opportunity to act as trainers for Bachelors students of the SiF programme by working in the Michelin Thailand factory. The programme emphasises innovative pedagogy and authentic problem-solving in relation to issues that can occur in the production line. Students who finish this programme can expect to have a career.
either in the university or in the factory. Acting as trainers for the SiF programme students while working as a full-time employee for Michelin Thailand enables students to get the practice they require to become trained and qualified professionals once they graduate from the programme.

Master degree students have five prerequisite requirements for graduation. First, they act as supervisors for the diploma students while working as a quality control (QC) employee for Michelin Thailand on the production line. They are also expected to develop new course content for RMUTL that is appropriate for the diploma programme and matches the needs of the industry and the university, conduct research, submit a thesis, and lastly counsel students both inside and outside of the factory. In return, the master degree students do not pay any costs for their studies, while Michelin Thailand pays their accommodation, travel expenses and salary as full-time Michelin Thailand workers.

In the four years since the SiF programme began in 2012, approximately 40% of the diploma programme have continued to work at the Michelin factory as full-time workers, while 60% choose to study further to pursue a bachelor degree. Those that finish the bachelor degree are invited back by the university to pursue the master SiF programme or join the factory as full-time workers.

11. Budget and Financing

The SiF programme was funded by STI, Michelin Thailand and RMUTL. Table 4.6 shows the total funding provided by the three key players. STI provides initial funding for the project advisor, project head, committee, site director and co-ordinators, while Michelin Thailand funds the cost of students’ accommodation, travelling costs and school fees. RMUTL contributes the salary of the professors and the running costs of using machinery on campus to instruct students.
Table 4.6 Budget for the two-year Vocational Diploma Programme

<table>
<thead>
<tr>
<th>Expense Type</th>
<th>Amount</th>
<th>Per Person/Month</th>
<th>Amount (Baht)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Advisor</td>
<td>54 000 baht/person</td>
<td>2 persons</td>
<td>108 000</td>
</tr>
<tr>
<td>Project Head</td>
<td>10 000 baht/month</td>
<td>24 months</td>
<td>240 000</td>
</tr>
<tr>
<td>Committee (Team)</td>
<td>5 000 baht/month x 3 persons</td>
<td>20 months</td>
<td>300 000</td>
</tr>
<tr>
<td>Site Director/Teacher</td>
<td>15 000 baht/month x 2 persons</td>
<td>22 months</td>
<td>660 000</td>
</tr>
<tr>
<td>Co-ordinator</td>
<td>5 000 baht/month</td>
<td>20 months</td>
<td>100 000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1,408,000</td>
</tr>
</tbody>
</table>

Travelling and Accommodation Costs

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Amount (Baht)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travelling and accommodation costs for the head of project</td>
<td>120 000</td>
</tr>
<tr>
<td>Travelling and accommodation costs for committee (TEAM)</td>
<td>50 000</td>
</tr>
<tr>
<td>Travelling and accommodation costs for site teachers (university → workplace)</td>
<td>30 000</td>
</tr>
<tr>
<td>PR and material costs</td>
<td>100 000</td>
</tr>
<tr>
<td>Total</td>
<td>300 000</td>
</tr>
</tbody>
</table>

Materials and supplies

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Amount (Baht)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching materials</td>
<td>40 000</td>
</tr>
<tr>
<td>Stationery</td>
<td>40 000</td>
</tr>
</tbody>
</table>

12. **Strengths of SiF**

There are a number of core strengths of the SiF programme which have contributed to its overall success. The SiF programme enables students to have the opportunity to foster their practical training, develop practical experience, and build professional recognition. The students receive full academic support from the university to enable them to integrate their theoretical knowledge with practical knowledge at the beginning of the programme. During the two-year period in which the students are embedded in the workplace as full-time workers, they gain practical knowledge with the support of instructors and work supervisors. After the programme finishes, the students gain the Diploma in Industrial Technology while also gaining the professional recognition of working for a multinational organisation. As stated before, the SiF programme is the first long-term collaboration project between a major corporation and an educational institution.

A key strength of the SiF programme is its length, which provides all relevant parties with a number of benefits. Students gain valuable work experience while Michelin Thailand has little to no turnover rate at the industrial engineering level for a number of years. This enables goal alignment amongst all relevant stakeholders. Similarly, as illustrated by Figure 4.3, the collaboration between the private, public and tertiary sectors enables the contribution of different capital in terms of knowledge, finance or business incentive. This model demonstrates that in order for all parties to achieve their goals, each stakeholder must work together in order to ensure the success of programmes such as SiF.

Another key success factor is networking and communication of the head of departments from the university, Michelin Thailand and instructors. All three groups must share the common goal and all three institutions must share the same ethos in order for the SiF programme to thrive and succeed in the long-term. Interviews from instructors found that the programme gives equal opportunity to students from all backgrounds. The instructors feel that it is a merit-based system where the students are graded according to both textbook and practical knowledge.
13. **Weaknesses of SiF**

As this is the pilot study, several weaknesses were observed, which could serve to improve future programmes. One of the weaknesses observed was the gap between the workplace and academia. This was addressed by actively improving the collaboration and integration between stakeholders. There was also a lack of teachers who were willing to engage with the SiF programme. Teachers were expected to move to the factory from the...
university, and there were also additional pressures in terms of the development of a new lesson plan and curricula to integrate with work experience in the factory. Similarly, Michelin Thailand also expected teachers to use their professional knowledge to solve some of the problems in the factory. There was also a lack of intellectual and articulate teachers who were well-versed in academic knowledge, while there were comparatively more practically-oriented mentors. Teachers were also expected to liaise between businesses and students.

From the perspective of the students, one of the weaknesses of the SiF was a heavy workload of full-time work and additional university, which resulted in less time to enjoy university life. Similarly, Michelin Thailand also had to cater to the educational needs of the students, which resulted in digression from their main business goals and increased workload for factory workers. From the research perspective, there is a definite room for improvement in terms of recording data related to the research programme. This weakness was a result of the heavy workload of instructors, who were expected to develop the programme while redesigning curricula. As the programme stabilises and lecturers become more experienced, there will be increased capacity to record data to inform further developments of the programme.

14. Results and outcomes of the SiF programme

The pilot SiF programme began in 2012 with a total of 17 who worked at Michelin Thailand while studying at RMUTL. After four years, the programme has grown to 70 students at the Diploma level and 5 students of the Master of Mechanical Engineering. The current iteration of the programme is a result of collaboration between various stakeholders.

The outcomes at the present stage of the study show that students from the SiF programme have opportunities to foster their academic, practical and professional skills. Feedback from the supervisors showed that the work performance from students is better than regular employees as their presence in an authentic learning environment can motivate students to achieve more than their peers. In the field of vocational education where practical knowledge is key to being professionally successful, creating opportunities for students to apply theoretical knowledge was a concrete development. In addition to getting positive feedback from the company, the students were found to excel academically. In 2015, 10 students who graduated with a Diploma of Industrial Technology were offered jobs at the rubber molding factory of Michelin Thailand in the Computer Numeric Control (CNC) and CAD sections.

15. Potential knowledge transferability

A number of success factors of the SiF pilot could be transferred to other ASEAN countries. As countries such as the People’s Democratic Republic of Lao, Myanmar and Cambodia become increasingly industrialised, there are increasing opportunities to reform national TVET programmes. This would involve deepening linkages between the government, participating universities and local employers. It is also important to ensure that relevant vocational education institutions have the necessary technical capacity, and partner employers should be seeking the long-term sustainable development of a qualified workforce. Similarly, government policies should also enable collaboration between other stakeholders.
In terms of the subject transferability, the pilot study could be expanded to other sectors such as the service and agricultural industries, but this model may be less applicable to industries that require less practical knowledge.
Case Study #4: Employer engagement in TVET systems in the Philippines

The Philippine government has acknowledged the need to build technical competences amongst its largely informal workforce through the implementation of the Republic Act 10533, which designates a vocational educational pathway as one of four ‘tracks’ offered to secondary school students. Since June 2016, students have the option of enrolling in a ‘Technical-Vocational Livelihood’ track that culminates in certification. As a result of this change in the education system, there is an increased imperative to standardize the delivery and quality of vocational training.

1. The Philippine education system

The Philippine Qualifications framework reflects the expected competences and outcomes for students throughout the secondary and tertiary education system. It aims to outline the relevant levels of educational qualifications that relate to certification outcomes (TESDA, 2016). As part of this system, technical and vocational pathways are provided between secondary education and traditional academic routes. Technical and vocational education and training (TVET) is also available for those already in the labour market and need to upgrade or develop new competences to enhance employability or improve productivity (Syjuco, 2005).

The Technical Education and Skills Development Authority (TESDA) is mandated to manage and supervise technical education and skills development in the Philippines. As part of this mandate, TESDA is responsible for competency assessment and certification. It supervises more than 4500 technical vocational institutions (TVIs), of which over 90% are private training providers, and manages over 800 businesses that provide learnership and apprenticeship programmes.

TVIs employ more than 23,000 trainers, who are responsible for teaching over 200 qualifications. Given the depth and the range of the technical education available throughout the Philippines, TESDA implemented the National TVET Trainers-Assessors Qualification Programme (NTTAQP) in 2006 in order to ensure trainers have a general minimum standard of training and qualification. Technical and vocational education and training (TVET) is generally viewed as a second tier of education in the Philippines, where strong cultural influences have resulted in a preference for academic routes as TVET is associated with low quality and low skill blue collar employment. However, vocational training has emerged as a priority for the Philippine workforce.

The country’s education strategy is based on the National Education for All (EFA) 2015 Plan, which aims to achieve the Millennium Development Goals (MDGs) and provide an overarching policy framework for basic education, with a vision that all Filipinos will acquire basic competences. Significantly, the objectives of early education also expressly mention pathways beyond higher education, namely “be adequately prepared for the world of work or entrepreneurship or higher education” and “be legally employable with potential for better earnings”.

Similarly, the Philippine Main Education Highway’s document notes that choices after high school can include pathways to “proceed to post-secondary education under TESDA or to higher education under CHED or simply join the world of work.”
As a result of this, the implementation of the Enhanced Basic Education Act of 2013 (Republic Act 10533) has outlined a policy vision wherein every Grade 12 Graduate must be prepared for employment, entrepreneurship and higher education. This Act also outlined a Vocational Technical Livelihood (VocTech) track option to be created for Filipino students. Other partnerships between training providers and industry were strengthened in order to deliver competency-based or enterprise-based training. The latest TESDA evaluation confirms that graduates who pursue training of this nature have a rate of employment of 83%, well in excess of the overall graduate employment rate of 61%.

2. Description of the case study

In order to facilitate a VocTech track, the Collaborative Program between the Centre for Industrial Enterprise (CITE) and the University of San Carlos (USC-BED) was established in 2012. CITE is a technical school in Cebu, Philippines located in San Jose, Tamban, Cebu City, while USC-BED is a Catholic private school in Cebu City that offered the VocTech track as one of the pathways for upper-secondary students. This became one of the pilot studies in the implementation of upper-secondary education, which is anticipated to be implemented nationwide in 2016.

The Collaborative Programme between CITE and USC-BED aimed to develop an academic and technical model based on the institutions’ respective expertise in technical vocational skills, general sciences, pedagogy and education. CITE was responsible for outlining the best method of delivering technical competences, while USC-BED was expected to focus on the general education courses. This agreement was formalised through a Memorandum of Agreement (MoA) that outlines the parameters expected and required from each party. The ultimate aim of the collaboration is to ensure that graduates are employed at the end of the programme. The specific responsibilities of each party is outlined in Table 5.1.
Table 5.1 Partnership between CITE and USC-BED

<table>
<thead>
<tr>
<th>CITE</th>
<th>USC-BED</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Prepares for the screening of the students for the program through battery of tests and interviews;</td>
<td>• Conducts a promotion about the program by offering scholarship grants to interested candidates;</td>
</tr>
<tr>
<td>• Identifies the Competencies for the implementation of the Collaborative Program under Senior High School (Grade 11 and 12) Technical Vocational Livelihood Track;</td>
<td>• Defines timeline for the submission of requirements by interested applicants;</td>
</tr>
<tr>
<td>• Collaborate with USC-BED personnel about the parameters of the subjects to be taken by the students vis a vis academic and technical subjects;</td>
<td>• Set the date and time for the entrance examination and interview;</td>
</tr>
<tr>
<td>• Collaborate with USC-BED as to the benchmark of the tuition fee package per student;</td>
<td>• Identifies the General Education courses to be taken by the students starting Grade 11;</td>
</tr>
<tr>
<td>• Facilitates in the On the Job (OJT) training or In Plant program of the students thus, collaboration with the employers and Industry;</td>
<td>• Collaborate with CITE personnel about the parameters of the subjects to be taken by the students vis a vis academic and technical subjects;</td>
</tr>
<tr>
<td>• Collaborates with the employers vis a vis competencies to be tailored, number of hours for the OJT.</td>
<td>• Collaborate with CITE as to the benchmark of the tuition fee package per student;</td>
</tr>
<tr>
<td>• Collaborate with CITE personnel about the parameters of the subjects to be taken by the students vis a vis academic and technical subjects;</td>
<td>• Collaborates with CITE about the class schedule of the students vis a vis academic and OJT.</td>
</tr>
</tbody>
</table>

There were 18 male upper-secondary students in the first cohort of the programme. These students pursued an Electo-Mechanic course through both institutions. As a result of their industry experience, their tested competencies in their chosen specialisation increased over time. Some of these students proceeded to pursue engineering, while the majority were hired by the same companies where they had their on-the-job training.

Mr. Marlon Valencia, one of the academic supervisors of CITE, said that the engagement of the employers with CITE is designed to be pro-active and dynamic. Industry participation has been encouraged in identifying lists of competencies that are tailored to fit the needs of their respective sectors. Increased employer engagement in the design and review of curricula enables training providers to align their technical facilities, tools and equipment to the needs of industry. It also enables graduates to more easily transition into a real work environment. This is particularly relevant as Filipino graduates often miss important workplace-related skills and attitudes. As noted by Wiegelman et al. (2016), “the education system struggles to properly prepare trainees and students for a world of work where technological development and changing labor market requirements call for increasing standards and flexibility in terms of skills, application and professional development.”
References


BIBB (2016), The Engine of Dual VET Cooperation of Stakeholders from Business, Government and Society www.bibb.de/


Cedefop (2015), “*Skill shortages and gaps in European enterprises: Striking a balance between VET and the labour market.*” Cedefop reference series, No. 102. www.cedefop.europa.eu


ILO (2014), Assessment study of technical and vocational education and training in Myanmar (ILO Asia-Pacific working paper series, ISSN: 2227-4391, 2227-4405 (web pdf))


ILO (2012c) The youth employment crisis: Trends, characteristics and new challenges


Maizam Alias & Razali Hassan (2013), Universiti Tun Hussein Onn Malaysia. TVET agency-industry collaborations: addressing diversity © ALIAS/ HASSAN (2013) www.tvet-online.asia Issue 1 1

Malaysian Qualifications Agency (2015), Guidelines To Good Practices: Work-Based Learning (GGP: WBL), The Standards Division Malaysian Qualifications Agency, Malaysia


McKinsey and Company (2014a), Southeast Asia at the crossroads: Three paths to prosperity.


OECD (forthcoming, 2016), Engaging employers in apprenticeship opportunities at the local level.”


Pang C.L., Rajamorganan N & Simon S. (2010), Skills Development In The Workplace In Malaysia, Background Paper For Malaysia: ILO/SKILLS-AP/Japan Regional Technical Workshop and Study Programme on Skills Training in the workplace Overseas Vocational training Association, Chiba, Japan 1-5 February 2010


Paryono Paryono (2014), SEAMEO VOCTECH. Transferable skills in Technical and Vocational Education and Training (TVET) in Brunei Darussalam www.tvet-online.asia Issue 3 1

PwC – EPU Workshop: Study on the Demand and Supply of Human Capital Requirements on TVET, April and May 2016

R. Hassan (2016), Theoretical Approach On Public Private Partnership (PPP) For Universities/Training Institutes In TVET, paper presented at Workshop for RCP members and Associates members, Chiang Mai, Thailand


Ratnata, I W. (2013), Enhancing the image and attractiveness of TVET. In: TVET@Asia, issue 1, 1-13. Online: [http://www.tvet-online.asia/issue1](http://www.tvet-online.asia/issue1)


Wayan Ratnata (2013), Universitas Pendidikan Indonesia, Fakultas Pendidikan Teknologi dan Kejuruan Enhancing the image and attractiveness of TVET [www.tvet-online.asia](http://www.tvet-online.asia) Issue 1 1

World Bank (2014), East Asia Pacific at Work: Employment, Enterprise and Well-being. World Bank, Washinton. DOI: 10.1596/978-1-4648-0004-7


Thu Duc College of Technology (2015), The report on the status of students finding jobs after graduation. Human Resources and industry collaboration department.