

**School in Factory (SIF): an approach of Work-integrated Learning in Thailand**

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**Abstract**

In the fast-growing economic world, Thailand is faced with the problem of producing qualified vocational human resources. In general, educational institutions are unable to educate students to meet the demand of the labour market. The government realized this issue by promoting Work-integrated Learning (WIL) as one of the strategies to cope with the challenges of producing job-ready graduates. As a result, various forms of Work-integrated Learning have been implemented and many of the industries are involved in this educational program. The document analysis method has been used in this article to describe the educational system, national plans and policies, theoretical and didactical concepts of Work-integrated Learning and current approaches of WIL programs in Thailand. The discussion in the present paper concludes that to solve the problem of mismatch in graduates' qualification between the demand and supply sides, it is crucial to build effective collaboration between educational institutes and the industrial sectors to provide better education to students. The School-in-Factory project is one of the best practice-examples implemented in Thailand that showed positive outcomes for all stakeholders. For the sustainable development of WIL programs, it is recommended that the government needs to be involved in this process more than just promoting its implementation through educational plans and policies. It is also important to note that Thailand needs to put more effort into teacher development.

**Keywords:** *School in Factory, Work-integrated Learning, Public-Private Partnership*

**1 Introduction**

The total population of Thailand (2013) is approximately 67 million people. Comprising about 55 million people of working age (15 - 64 years), the group is categorized into the labour force of around 38.5 million people of which 38 million people are employed (Ministry of Labour 2015, 13). Of those employed, the employment rate for agriculture, services and industries sectors are 12%, 43% and 45% respectively. While almost 30 years ago the employment rate for agriculture was around 65% (National Statistical Office Thailand 2012). This data both reflects the changes in the labour structure and indicates growth in services and industries sectors.

Moving away from a low-wage country and basic production processes towards a high-tech and knowledge-based economy, Thailand will undergo a structural change in its labour market. As a result, average wages will be increased, less employment in labour sectors may be visible and an advanced education system is necessary (PWC 2014, 19). This leads to one of the major challenges in Thai labour force wherein around 70 % of the employees are

educated to a lower level than upper secondary education (op. cit., 2015, 18). These employees lack the necessary skills in almost every aspect for a modern workplace. Among these competencies are English language, critical thinking, time management, communication and problem solving skills.

One of the various reasons for lack of skilled manpower in Thai industry can be found in the mismatch of the supply and demand between educational institutes and industry. The educational sector cannot keep pace with rapid change in the economic world (Promwong and Pittayasophon 2011, 2). For this reason, there needs to be a mechanism that effectively links universities with industry, which effectively allows information, knowledge and skill exchange between the two parties (ibid., 2011, 4).

Consequently, the educational institutes have been developing various Work-integrated Learning environments to reduce this gap in the labour market. This requires an effective collaboration between stakeholders: university and an industrial partner to provide students with either theoretical basics or practical skills that can develop their job competencies. The university provides theoretical knowledge to students while the industrial partner trains them in the real working situation.

## 2 Educational system and policies in Thailand

Formal education in Thailand comprises basic education, vocational and technical training and higher education. The transition for each of the educational levels is demonstrated in the figure below.

Thai National Education System

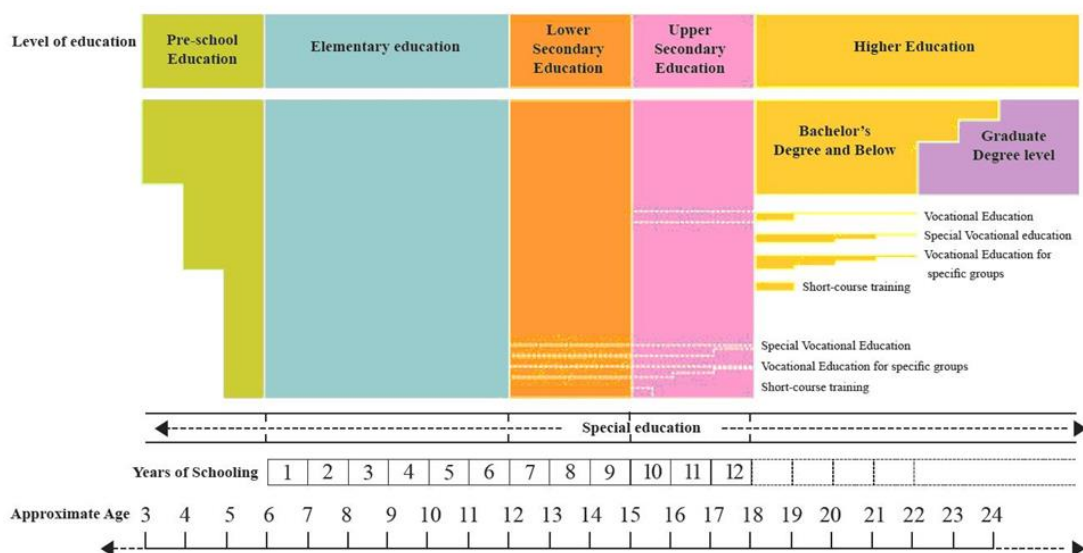


Figure 1: Thailand's National Education System (Southeast Asian Ministers of Education Organization 2017)

The basic education consists of nine years of compulsory education, divided into primary and secondary levels. Upon completion of the secondary education, students can continue in upper secondary schools (general education) or in vocational colleges. Upper secondary education leads to the university while vocational education leads directly to employment or higher vocational training. Most students (70%) aspire to higher education. However, only around 30% opt for vocational educational (Office of the Permanent Secretary 2014, cited in Education in Thailand: An OECD-UNESCO Perspective 2016, 46). These figures require a better understanding of how vocational education and training and higher education operate in Thailand.

## 2.1 Vocational Education and Training

Vocational education and training (VET) in Thailand is under the supervision of the Commission of Vocational Education. This commission is generally responsible for promoting and providing vocational education for the country (Office of Vocational Education 2017, 1).

Vocational education and training is organized in three different levels: first is a fundamental education of three years' vocational certificate level (equivalent to upper secondary education), followed by two years' diploma program (Post-secondary and first part of a higher education level) and finally two years for a higher academic graduation (level of Bachelor degree). On successfully completing each educational level, students can choose to study further or enter the workforce. However, most students continue to pursue their higher education to obtain a higher degree and earn more income. Programs are offered in the fields of agriculture, commerce, business, and industrial specializations.

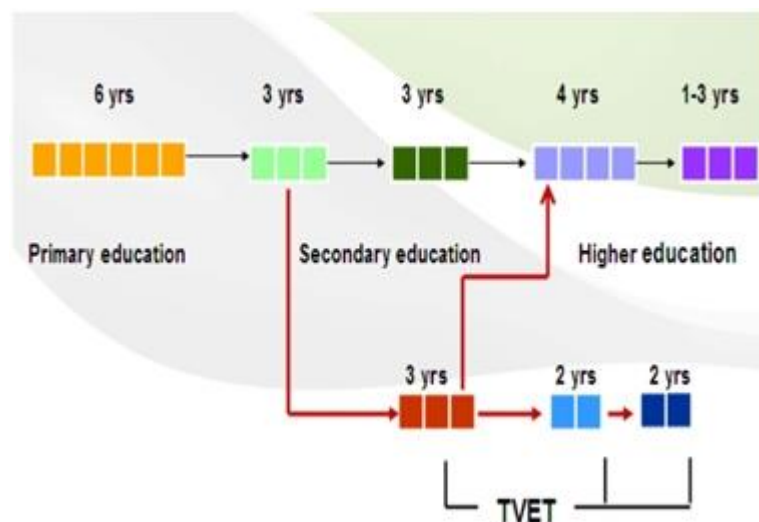


Figure 2: Vocational Education and Training System in Thailand (Researching Virtual Initiatives in Education 2014)

The higher level of vocational training is offered by specialized institutes, colleges, and universities, for example at the Rajamangala Universities. Further technical training for people in the workforce is provided under the Ministry of Labour.

In the year 2012, around one million students enrolled in the formal VET program from various institutions available throughout the country. Even though the number of vocational graduates continued to increase, the share of employees graduating from vocational school to the upper secondary dropped from 32 % in 2001 to 28 % in 2010. (Labour Force Surveys 2001, 10) The significant decline of students is believed to be the result of the historical concept in education which shows a negative attitude toward vocational education.

Consequently, the Office of Vocational Education Commission (OVEC) is challenged with the problem of promoting positive images for vocational education as well as providing essential VET programs that meet the demand of the industrial sectors. To assist the work of OVEC, the Ministry of Education (2012) issued the “Implementation Guidelines for the Office of Vocational Commission: Strategic policy on the development of vocational manpower”.

## **2.2 Higher Education**

The Office of Higher Education Commission (OHEC) is responsible for Thailand’s higher education, overseeing approximately 170 higher education institutions at both undergraduate and graduate levels (Office of Higher Education Commission, 2017). This sector consists of 80 public higher education institutions, 14 autonomous universities, 16 traditional universities, 40 Rajabhat universities, nine Rajamangala Universities, and one Pathumwan Institute of Technology.

Regardless of tremendous changes in higher education in the past decades, some major problems are still not eliminated. A clear long-term development plan for higher education must be formulated (Study International News 2017).

The number of students enrolled in higher education has significantly increased over the last few years, more precisely from around 20 % to 40 % (for the year 2013), which is equal to around two million students. However, there are more students graduated in the areas of humanities and social sciences (UPBEAN 2016, 2) than in areas that are meeting the current and prospective labour market demands, e.g. in the production, trading and service areas. Additionally, the teaching and learning settings in general have less connection to the real world of work. Hence, students lack necessary or adequate knowledge, skills and attributes required by the employers.

Fully aware of current situation, the Thai government’s national policies are planned toward the same direction with the goal to promote a learning strategy that can produce work-ready graduates to meet the demand of the industrial sectors. One of the main strategies aiming to achieve this goal is to endorse and strengthen WIL programs in all levels of education. The Thai National Policy Office therefore started to promote the implementation of WIL program by organizing WIL conferences, conducting pilot research, and encouraging educational

institutions to pay close attention to the learning outcome of their graduates (Konchiab 2015, 1).

### 2.3 Educational Plans

The Ministry of Education is also trying to promote WIL practice in vocational and higher education institutes. To provide a short overview, this section will review some of the educational plans and policies that promote the implementation of WIL in Thailand.

*The 12th Educational Development Plan (2016 - 2021)* is the master plan for framing the current educational development policy. The key principle is ‘people-centric development’ which aims to create a better quality of life for Thai people, by equipping them with knowledge, skills and, as well, a good sense of citizenship (Office of the Prime Minister, 2016). To bring these changes into Thailand's education system, the Ministry of Education, the main organization in education sector, has introduced various strategies. However, only strategies that support Work-integrated Learning will be discussed here. The three main strategies are:

1. *Improvement in curriculum, teaching and learning process and assessment.* This attempts to develop a standard-based curriculum that can support “School-to-work transitions” as well as to guide teaching and training at schools and the workplace (op. cit. 2016, 21).
2. *Development of educational personnel.* Improving the quality of teachers and educational personnel to meet the needs of educational levels and professional standards.
3. *Improving human resources and research that contribute to country's competitive development.* Focusing on competency development of vocational manpower by promoting close collaboration between educational institutes and industry through dual vocational education. Additionally, it is important to include professional associations in education planning. This will promote the implementation of a qualification framework that enables the transfer of learning credits between vocational training and general education.

*The 15-year Implementation Guideline for the Office of Vocational Commission: Strategic policy on the development of vocational manpower (2012-2026).* To improve the country's competitiveness and economic growth, vocational human resource is playing a major role. To support this development, the Ministry of Education (2012) issued a VET policy called “The Implementation Guidelines for the Office of Vocational Commission: Strategic Policy on the development of vocational manpower”. This guideline lays out four policies, 10 strategies, 28 approaches and 93 flagship projects (Ministry of Education 2012, 8). The four policies are:

1. To produce vocational manpower in response to labour market demands,
2. to raise the quantity and quality of teachers, faculties and personnel in vocational education,
3. to develop the quality of educational institutions and new learning sources and
4. to develop management efficiency.

### 3 Theoretical and didactical concept of Work-integrated Learning

This chapter will provide a theoretical approach to Work-integrated Learning and give an overview of WIL-related didactical concepts. To provide a better understanding of the term Work-integrated Learning, some definitions are given and discussed in the following.

#### 3.1 Theoretical approach

Generally, there is no universally accepted definition of work-integrated learning (WIL). It is more like an “umbrella term for a range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum” (Patrick, Peach, & Pocknee 2009, 1).

Similarly, Cooper, Orrell and Bowden (2010, xiii) define work-integrated learning as the “intersection and engagement of theoretical and practical learning”. In other words, it describes the process of bringing together formal learning and productive work, or theory and practice. The authors further differentiate the term WIL to be only those learning arrangements associated with university curriculum where the learning takes place within the act of working.

Focusing on the objectives of WIL programs, the WIL working group Thailand (WWG 2010, 2), reflects on the basic principle of WIL as an educational approach to improve the competencies of graduates by giving them valuable practical experience which is directly related to course being studied at university.

#### 3.2 Didactical Concept

However, regardless of various definitions, the WIL program in the following chapter is based on the seven key dimensions proposed by Cooper, Orrell and Bowden. (Cooper, Orrell, & Bowden 2010, 39-43). The seven key dimensions are purpose, context (workplace), nature of integration, curriculum issues, learning, partnership between the university and the workplace, and support provided to the student and the workplace. Each of the dimensions is discussed in details below.

*Purpose:* Defining clear goals, expectations and intended outcomes for all parties involved to ensure strong partnership and support students learning outcomes.

*Context (workplace):* Workplace includes a wide range of organizations, industries or governmental bodies that facilitate learning through guided learning, mentoring or coaching.

*Nature of integration:* Integration involves the application of formal theory with real-world problem solving, abstract thinking and practical action, and discipline-specific and vocational skills.

*Curriculum:* Defining the intended learning outcomes, choosing the teaching/learning activities and assessment that align with the requirements from professional associations, vocational or industries.

*Learning:* Involving students' engagement in experiential and situated learning, guided by clearly explained learning intentions and expected learning outcomes.

*Partnership between the university and the workplace:* Through partnerships, industry and the university can understand each other's interest and improve the quality of education.

*Support provided to the student and the workplace:* Support can be in various forms ranging from practical and administrative assistance to educational and emotional support. Both the Students and workplace need support in knowing what to expect and how learning takes place.

## **4 Implementation of WIL in Thailand**

There are approximately three million students (2013) enrolled in vocational education and training and in higher education. More than 80 percent of this number are expected to graduate and support economic growth of the country. Despite this statistic, employers require skilled and job-ready graduates. The Thai government's policy makers and educators realized the mismatch between university graduates' skills with industry's expectations as evidenced by their nation-wide policies and strategies that promote WIL implementation.

### **4.1 The implementation of Work-integrated Learning in general in Thailand**

A number of WIL programs have been carried out by education institutions in various forms. There are totally nine different forms of WIL implemented in Thailand, namely: pre-course experience, sandwich course, cooperative education, cognitive apprenticeship or job shadowing, new traineeship or apprenticeship, placement or practicum, field work, post - course internship, and joint industry-university course. All of these WIL programs have been implemented but only some of them show significant result in developing human resource for the country. Some of the assumptions for lack of success in these forms of WIL rely on the ineffective collaboration between educational institutes and industrial partners.

In contrast some arguments focused more on the basic principle of WIL programs itself. For example, the WIL Working Group in Thailand (WWG) (op. cit., 2010, 1) pointed out that Cooperative education program (one of the WIL programs implemented) only allowed students to *understand* the real working situation. But according to the didactical principle and learning goals, WIL program should be centered on working in the real work process to achieve professional competencies.

Similarly, Cooper et al., (op. cit., 2010, 25) distinguished between the old and new work-integrated learning cultures. In the old WIL cultures, they pointed out that students are considered as workers who learn how to work through observation. The new WIL cultures, on

the other hand, considered students as learners who work to learn by being included in the work process as one of the participants.

Having discussed challenges in implementation of WIL programs, this article will refer to the School-in-Factory (SIF) project as a practical approach to develop human resource in Thailand.

#### **4.2 School in Factory (SIF): an example of good practice for Work-integrated Learning**

The School-in-Factory (SIF) project is a Public-Private Partnership educational model among The National Science Technology and Innovation Policy Office (STI), Rajamangla University of Technology Lanna (RMUTL) and Michelin Siam Company Limited. Its main objectives are to solve the problem of shortage in qualified technicians and research engineers, reduce the turnover of the employees and increase the country's productivity.

This collaboration set out the responsibility for each of the parties involved. The STI, as the government body, fosters and supports this form of participatory education management. The RMUTL provides an "in kind- investment" such as lecturers, facilitators and school management. The Michelin Siam Company Limited, as the main stakeholder, offers the working venue, and an "in cash- investment" for example: students' school fees, monthly allowances, accommodation cost, payment for lecturers, facilitator and on-site trainers. Students graduating from this program receive a diploma certificate from Rajamangala University of Technology Lanna (Songthanapitak et al. 2016, 2-5).

This pilot project was launched in the year 2012. It is a two-years educational program. Each year, students spend three months studying in the university and nine months at the factory. The intake students of the SIF project have graduated from lower secondary school (general education) and vocational certificate levels. With this diversity in students' background, the university assisted them with a two month training program in basic and higher professional skills before joining the factory.

The students' learning arrangement at the factory consists of theoretical classes for 3-4 hours daily and 8 hours of work. This learning combination continues for six days a week. Since this learning program allows students to work and study at the same time, the integration between the two knowledge bodies is reinforced. Students are able to apply their theoretical knowledge in their work tasks and vice-versa.

This form of learning is possible through coaching and facilitation from the factory, lecturer and facilitator. The on-site trainers, in the factory, oversee and foster the learning toward acquiring job competencies. Simultaneously, lecturers and facilitators in the classroom promote the application of theories to real practices through the method of discussion and sharing experiences. Assessments of students learning are divided into two main parts: the practical training and the theoretical concepts learned. They are equally assessed in the forms of work done in the factory and students' monthly presentation. The monthly presentation is a



platform for students to express their learning progress to lecturers, trainers and facilitator. The comments and feedbacks given to students lead to their personal improvement.

The results of this program show that the industry is satisfied with students' performance. Students show better working results compared to regular employees because they are motivated to study in an authentic learning environment. One of the students reported "We have close contact with machineries [*sic*], employees and the working of the factory. It might be a bit tiring, but it's worth it. We have an advantage over others because we can work and study at the same time" (ibid., 2016, 6). Thus, the SIF project shows significant impact. It might be helpful in solving the lack of qualified manpower in the industry in terms of quality and productivity. Students gained their employability skills (more research is needed for specific competency), the university can provide professional development to its faculties, and together with the industrial partner, produce high quality human resources. Furthermore, the government has driven the policy for implementation of Work-integrated Learning.

## 5 Conclusion and recommendations

Moving toward a high-tech and knowledge-based economy, Thailand is facing challenges in human resources development. One of the major issues reflects the mismatch of skilled manpower between the demand and supply sides. The graduates do not have necessary knowledge and skills required by the industries. The government realized this problem and is trying to deal with it by promoting work-integrated learning programs throughout its educational plans and policies.

The term work-integrated learning (WIL) has no universally accepted definition. The founding principle that characterized this educational program is the integration of theoretical knowledge from classroom to practical skills at workplace. Successful implementation of the WIL programs needs several considerations as mentioned in the previous chapter. Failures to recognize these domains, especially the support to student and workplace, would easily lead to lack of qualified human resource as we have seen in Thailand.

The School-in-Factory (SIF) project, a Public-Private Partnership among governmental organization, educational institute and industry, arose as an effective educational management to solve the problem of lacking qualified human resource by producing students that meet the industry's demand.

One main factor that led to the successful implementation of the SIF project is the direct involvement of the governmental organization as one of the stakeholders. Strong evidence shows that incentives, such as tax refund for industries, are not enough: "The government institutions should collaborate with companies and universities" (Gennrich 2017, 9). This should act as a platform for the two partners to cooperate with each other. Personal contact between university and industry without the support from the government may lead to the problem in confidentiality and lack of trust between the two parties.

Although educational management supports the learning process that promotes student autonomy and life-long learning, teachers remain at the core of academic institutions. In the case of Thailand, it is necessary for teachers to update the content knowledge that is relevant to workforce and consequently develop the appropriate pedagogical skills. Vocational teacher development programs require cooperation from the private sector to train the teachers. A qualified and up-to-date vocational teacher will be able to teach students in a more work-oriented technique (Geissler 2015, 6).

Good practice for teacher training is carried out by Southern Taiwan University of Technology. (Hwang 2015, 11) They believed that teachers must be familiar with the working process of the industry first in order to teach students to meet the industry's standard. Consequently, teachers are encouraged to participate (5-40 days) in the industry to gain some experience that can reduce the gap between theoretical knowledge and industry work process.

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