

Skills Development in The Asia-Pacific Maritime World: A Comparative Study of Vocational Education in Malaysia and Indonesia

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Abstract

This region of Southeast Asia shares more social and cultural ties with other Austronesian peoples in the Pacific than with the peoples of mainland Southeast Asia. Contemporarily, Asia Pacific is still the fastest growing economic region in the world despite economic turbulence and uncertainties in recent years due to the global economic slow-down. As one of centres of economic power, the region could hardly remain immune to the globalizing impact of economic and technological change. The purpose of this study was to explore the development of Technical and Vocational education in Malaysia and Indonesia by analyzing the history, policies, and its direction. In Malaya, the Technical and Vocational education prior to independence had projected the images of “colonial apprenticeship” with the emphasis on manual agricultural and crafts, which aimed at training the Malay students to fill positions in the Railway department under the Federated Malay States. After independence, Technical and Vocational education in Malaysia continued to grow, and some reforms have been implemented to improve the image of Technical and Vocational education itself. In Indonesia, a similar development occurred but the difference is in terms of Technical and Vocational education funding at the secondary level where there are many private Technical and Vocational schools as compared to Malaysia. There are new concepts introduced in Technical and Vocational education, such as the Tech-Prep, Time Sector Privatization and Vocational Colleges in Malaysia and Link and Match, Dual System, Product-based Curriculum, and Total Performance Management (TPM) in Indonesia, but the concepts are yet to be carried out optimally due of some constraints. The implications of this study are to identify the human capital development in the maritime Archipelago countries from the perspectives of the competitiveness and the preparation for dealing with the impact of globalization.

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Introduction

Historically, Asia-Pacific Maritime World in Southeast Asia began with a long history of Malay Archipelago. The Malay Archipelago referred to the archipelago between mainland Southeast Asia and Australia. The name was derived from the contestation concept of a “Malay race”. It has also been called the Indo-Australian Archipelago, East Indies, Indonesian Archipelago, and

other names over time. The term is largely synonymous with Maritime Southeast Asia. Situated between the Indian and Pacific Oceans, the group of over 25,000 islands is the largest archipelago by area, and fourth by number of islands in the world. It includes Indonesia, the Philippines, Singapore, Brunei, East Malaysia and East Timor. Over 350 million people live in the region, with the most populated island being Java. The people living there are predominantly from Austronesian sub-groupings and correspondingly speak Malay-Polynesian languages. The purpose of this study is to explore the development of Technical and Vocational education in Malaysia and Indonesia by analyzing the history, policies, and its direction. In Malaya, the Technical and Vocational education prior to independence had projected the images of “colonial apprenticeship” that emphasized manual agricultural and crafts, which aimed at training the Malay students to fill positions in the departments under the Federated Malay States. After independence, Technical and Vocational education in Malaysia continued to grow, and some reforms have been implemented to improve the image of Technical and Vocational education itself. In Indonesia, a similar development occurred but the difference is in terms of Technical and Vocational education funding at the secondary level where there are many private Technical and Vocational schools as compared to Malaysia. There are new concepts in Technical and Vocational education, such as the Time Sector Privatization in Malaysia and Link and Match in Indonesia, but the concepts are yet to be carried out optimally due of some constraints. The implications of this study are to identify the human capital development in the Archipelago countries from the perspectives of the competitiveness and the preparation for dealing with the impact of globalization.

Technical and Vocational Education in Malaya Prior to Independence

Technical and Vocational education in Malaya prior to independence had projected the image of manual agricultural and technical skills, in order to train the Malay students to fill positions in the departments under the Federated Malay States. Technical School, Trade School, Technical College and a number of Technical and Vocational education institutions had been opened. Teacher Technical School was the first technical school opened in Kuala Lumpur in 1906 by the Public Works Department, Federated Malay States. The purpose of this school was to train technical assistants in the Department of Public Works and Railways. The school was closed at the beginning of the First World War. However, it was then reopened in 1918 knowing as Technical Training School under the Department of Railway Engineering. This school had been back administered by the Public Works Department in October 1925 and changed again under the Education Department in 1931. Starting in 1948, technical education had been incorporated into primary schools by emphasizing local agriculture and village industries.¹ Gardening activities had been practiced in primary school curriculum and contained on textbooks *Peratoran Memasak* (Cooking Procedures) that were supplied to the primary schools. The first Trade School was opened in 1926. After ten years the school was operated, a senior education officer Mr. H.R. Cheeseman had made a study of schools in Great Britain and the Netherlands, East Indies in 1937. He then prepared a report of his studies and made recommendations for the development of technical education. Among the proposals that were submitted; (1) Building more trade schools which should be met by actual contents and it could be a junior technical school; (2) Paying attention should be implied on curriculum by practical subjects such as carpentry workshop for boys and domestic science for girls; (3) Transfer students who were not interested in academic subjects to Trade Schools; (4) Intensive agriculture training to selected

¹Federation of Malaya, *Annual Report on Education*, Kuala Lumpur, 1948.

teachers; and (5) Centralized commerce school in each of the major centers for male and female students who passed the School Certificate Examination.

Trade Schools had become popular and produced a new syllabus in 1948. The problem was the schools did not have complete materials and equipment. School supplies were ordered from Japan and the United Kingdom, but unfortunately the equipment from Japan was not suitable to use in schools. Trade Schools offered courses for three years in specific areas according to minimum qualifications such as Machine Garage Practice [*Amalan Bengkel Mesin*] (standard five qualification), Electricity (standard seven qualification), Motor Engineering (standard five qualification), Furniture (standard four qualification), Brick Arrangement (standard four) and Cabinet Making (standard three). The final year students were allowed to work for three months but they had to attend school two days a week or evening classes to enable them to sit for final examinations. Before the end of a course, students would sit for the City and Guilds of London or Government Electrical Wireman Examination.

In 1935, Teacher Technical School had been made by the Federal Institute, it was located in Selangor. Meanwhile in 1941, the school was on the upgrade, and changed its name to the Technical College. Learning collaboration between the Technical College and the Trade School was made in which college students' practical training was done at the Trade School and their theoretical training was made at the Technical College level. Classes were also held at the Technical College to meet the needs of students who could not enter full-time. The courses offered were building construction, electrical and mechanical engineering, radio technology. Scholarships were available for outstanding students from the technical college that wished to pursue a degree in the United Kingdom, such as the Overseas Higher Education scholarships and Colonial Development and Welfare scholarships.

School of Agriculture had been proposed by the Technical and Industrial Education Committee in 1918 but it was located at Serdang under the supervision of the Department of Agriculture and only opened in 1931. This school provided two types of courses at diploma level and a minor course to provide practical and theoretical trainings of agriculture. The diploma course was run for 3 years by using English as medium of instruction. Students were given practice and those graduated would be offered the post of Agriculture Assistants. The minor courses were done for 1 year by using Bahasa Malaysia as the medium. Students were given practice and the graduates would be offered a post of Junior Agriculture Assistants. Other technical and vocational education institutions carried out prior to independence were: (a) School of Forestry, (b) Training Institute, (c) School of Commerce, (d) School of Music, and (e) School of Domestic Science. Barnes Report (1951) proposed the practice of a more systematic technical education. The report states²:

Entry to the Junior Technical Type School should be normally through a two year post primary course and not after failure in the academic course: though as we said, nothing should prevent the transfer to a vocational course (and the sooner the better) of any pupil who is seen to have been unsuitably admitted the academic course. In addition, Domestic Science Centres, modal homes, travelling and fixed housecraft units, craft schools, camp school, elementary trade and commerce centres should be brought into being, either as extension to existing schools or as separate units in favourable areas.

² Federation of Malaya, *Barnes Report*, Kuala Lumpur, 1951.

In the Education Committee Report (1956), the education committee had suggested that technical education should be organized and divided into three levels³:

a. Technical College

This college was established so that students who had completed secondary education could further their education in technical fields.

b. Trade School

The Trade School existed at that time was made a Technical School where students who had completed three years of secondary education could continue their education. Period of study in technical schools was for three years and education offered was meant for those who wanted to work as technicians with the government or other parties.

The proposed trade school by the committee was for students who had completed their primary school. School period was for two years. The subjects taught should be in accordance with the conditions and requirements of local economy contents so that school leavers were made easy to get jobs. The proposed number of this school was 14 and built in many places in the Federation of Malaya. In 1957, there were four schools were built, tens more were built in 1958 and 1959. In terms of administration, the committee had suggested that all the Trade School and Technical School were run by the board of governors. However, the Trade School should be administered by the local education authorities and the Technical School was administered by the Ministry of Education. The Committee had also proposed that teachers at the Trade and Technical School should be given more training that was equivalent to training at the University, compared to the training received by teachers at academic secondary schools and high schools. Teachers who would teach at the Trade School should expire three years of study in secondary school and completed another three years at the Technical School. Their teaching training was conducted for a year at the Vocational Teachers' Training Centre and was followed by a year of part-time studies at the time they started teaching at the Trade School.

Technical Education After Independence

Technical education continued to grow rapidly after Malaysia achieved its independence. Rahman Talib Report stated that technical education should be managed and developed through three stages, which were Technical College, Technical School, and Trade School; all similar to what were proposed by the Education Committee, 1956.⁴ The Technical College, Kuala Lumpur had extent its courses to diploma level, to train trainees for government positions in engineering, architecture and surveying, and also five-year professional level courses in the same fields. Preliminary three-year course was made available to assist the students from remote areas to enter the Technical College. These students lack-of the opportunity if they chose to enter the college by using exam results of the Cambridge Overseas School Certificate or Certificate of Education of Federation of Malaya. If the students could get the the certificate while training , they could then further their education in engineering degree level at universities. Technical schools existed in two types, namely Trade and Technical Secondary School. The courses were conducted over three years. Trade Schools were built rural areas, where they were also known as Village Secondary School (*Sekolah Lanjutan Kampung*). Courses were available for a period of three years in carpentry work, agriculture, plantation, livestock, and households.

The report also suggested that a college for training technical teachers should be established in 1962. All technical subject teachers should graduate from secondary education for three years and another year for teacher training courses. Meanwhile teachers who were teaching agriculture at the Village Secondary School must have completed full secondary

³Kementerian Pelajaran Malaysia, *Penyata Jawatankuasa Pelajaran 1956* (Kuala Lumpur, 1956). 8.

⁴ Federation of Malaya, *Rahman Talib Report* (Kuala Lumpur, 1960): 198.

education. They should take a course too at the College of Agriculture and undergo teacher training course at the Technical Teachers' Training College for a year. The Cabinet Committee Report Review of the Implementation of Education Policy (1979) had explained about the development of technical education in lower and upper secondary education levels.⁵ Since 1965, education at lower secondary level has been changed to a pattern of multiple courses.

Multi-courses education was based on the curriculum of core subjects for all students and elective subjects selected from the Enterprising, Domestic Science, Agricultural Science and Commerce. Students allowed to choose one of the elective subjects specified above. The purpose of multi-courses education was to provide students with equal opportunities for education as well as providing chances for them to choose a prevocational education subject according to their likeness, talents and interests. However, these goals were not fully achieved because of the shortage of facilities to teach those subjects. The exposure of students was very minimal to the fields of Technical and Vocational Education at lower secondary level. Therefore, the committee had recommended the elective curriculum structure at this level need to be changed.

At the upper secondary education (Form IV and V), students who passed the Lower Certificate of Examination (LCE) in form three, would be promoted to form four. Students who went to form four would be channelled to three types of secondary schools; national schools, Technical Schools or Vocational Schools. Technical School emphasized technical subjects. The aim was to provide students for jobs in technical fields or to pursue their studies in institutions of higher education. These school's admission was based on the students' own choice, but subjected to the achievement of specific subjects in the LCE. Meanwhile, Vocational Schools emphasized vocational subjects. Its objective was to equip students with basic practical skills to help them get jobs in the enterprising company. In 1978, there were 23 Vocational Schools in the Peninsula, 3 in Sarawak and 2 in Sabah.⁶ Vocational schools in Sabah and Sarawak were different from those in Peninsula because all the courses conducted there had to be done for three years, with an exceptional with the course of commerce. This school type carried out its own examination and entry qualification was passed in the LCE. Students studying at the Technical Schools ended their studies with SPM or MCE, whereas students at Vocational Schools sat for the SPVM examination. In Peninsula, SPVM examination was conducted in Bahasa Malaysia and English, but starting in 1980, it was conducted in Bahasa Malaysia only. The Vocational Schools' students were given basic education for skills and general learning in the ratio of 7:3, while practical training was done at the school.

The Committee had recommended that Vocational Schools should: (a) establish more vocational schools as the place available for students to enter Vocational schools was very limited, (b) vocational education curriculum must be reviewed and modified to make it more similar with the preparation of students to entering the job market as semi-skilled workers in certain areas, and (c) the practical training was made in factories.

National Education Policy

In line with the Philosophy of Education, Ministry of Education's mission is to develop world-class quality education system, to develop full individual potential and meet the aspirations of the nation. National Education Goals are to: (a) producing loyal and united Malaysian nations, (b) producing individuals who have faith, noble character, knowledgeable, competent and well-

⁵ Kementerian Pelajaran Malaysia, *Laporan Jawatankuasa Kabinet Mengkaji Pelaksanaan Dasar Pelajaran 1979* (Kuala Lumpur, 1979).

⁶ Ministry of Education, *Major Trend in Educational Development 1976-1978* (Kuala Lumpur: Planning & Research Division, 1978). Check also Ministry of Education, *Education in Malaysia* (Kuala Lumpur: Educational Planning & Research Division, 1993).

being, (c) providing human resources to meet the needs and progress of the country, and (d) providing educational opportunities to all citizens of Malaysia. Technical and Vocational Education Policy aims to strengthen and improve Technical and Vocational education system to create technical education oriented-students, to meet the needs of the nation's workforce. Its implementation strategies include: (a) adding more study place of technical education institutions; (b) verifying technical courses according to national needs; (c) identifying aspects that need to be adjusted, such as curriculum, teaching staff qualifications; equipment and training period; (d) reviewing the existing system from time to time; (e) strengthening career guidance in technology; and (f) establishing collaborative relationships with industries.

The Direction of the Technical and Vocational Education in Malaysia

In the 1990's, Technical and Vocational education has been through a rapid development. With the existence of the Education Bill (1995), the Technical and Vocational education has been strengthened. Among the contents of the Bill are as follows; (1) National Education System should be patterned to produce world class education in terms of quality to achieve the national aspirations; (2) National Education Philosophy is used as a basis for national educational policy; (3) Duration of primary education is between 5 to 7 years; (4) Preschool education is made part of the national education system; (5) Technical and polytechnic education are enhanced; (6) Provision is provided for regulating the private education; (7) Teachers' training centres can conduct degree, diploma or certificate or other forms of recognition of qualifications granted by any university or other higher learning institutions in or outside the country; (8) Enable vocational schools to be transformed to technical schools and polytechnics can run the twinning programs with institutions of higher learning, corporations or organizations within and outside the country.

Technical and Vocational subjects are now offered not only in Technical and Vocational schools but also in the academic secondary schools. There are 451 combinations of subjects can be chosen by the students, comprises four core groups of Humanities, Technology and Vocational Education, Science and Islamic Studies. However, the combinations are more on the Humanities and Vocational Education. Besides, technical subjects such as Engineering Drawing and Engineering Technology are offered in 15 Boarding Schools, 24 controlled/major schools and some selected secondary schools. The Department of Technical Education, through its theme of 'double jump' (*Lonjakan Berganda*) has formulated the Action Plan for Technical Manpower Production Improvement, which targets at increasing the output of technicians and engineers by the year 2020 by using a radical planned strategy aiming at channelling students to technical fields while in secondary schools. The plan also involves the development of Technical Secondary Schools and Polytechnics. In this regard, in 1996, the reformation of secondary vocational schools has been implemented by restructuring 69 Vocational Secondary Schools (SMV) to Technical Secondary Schools (SMT).⁷ In 1996, a number of SMT and new Polytechnics were established and the Time Sector Privatisation (TSP) program was introduced. However, the conversion of vocational to technical schools status has invited strong criticism especially from the vocational teachers who viewed the conversion as reversing the trend because the demand for skilled and semi-skilled (blue collar workers) was higher than the demand for white collar workers.⁸ Because of this pressure, the cabinet has approved to re-offer skills-based subjects at the SMT, in order to create more opportunities for students with low and moderate achievements to get access to education and technical and vocational training.

Polytechnics

⁷ Kementerian Pendidikan Malaysia, *Laporan Tahunan 1996* (Kuala Lumpur, 1996).

⁸ Abdul Rahman Abdul Raof, *Genocide: Terkuburnya Sekolah Vokasional*, (Unpublished manuscript, 1996).

Economic competitiveness of a country is based on the skills of its workforce. The skills and competencies of the workforce are dependent on the quality of the country's education and training system. Technical and Vocational Education (TVE) is one of the various disciplines of education that can generate economic growth of a country.⁹ TVE was designed to provide opportunities for students who have the tendency toward vocational fields and technology to fulfil the technical workforce. It is perceived as one of the crucial elements in enhancing economics of productivity.¹⁰ Since 1969 when the first polytechnic, Ungku Omar was established, the Malaysia public polytechnics system has evolved after it. There were 60840 students in 2009 and 87440 in 2012¹¹, the polytechnics have expanded to become Malaysia's largest public tertiary TVE provider in this country. In 2010, Polytechnics Transformation Plan was launched with these goals: (1) Enhance the polytechnics as the leading institution in field of technical training on semi-professional sector; (2) Strengthen the relevance and responsiveness of polytechnics programs to the needs of the national economic development; (3) Steer the niche technology areas to produce quality and competitive graduates; (4) Build excellent reputation and brand; (5) Diversify and expand its programs.

The demand for knowledge and skilled workers is growing due to the economic reality in 2020. High productivity and innovation are created by highly knowledgeable and innovative workforce – as evident in advanced countries such as the United States of America, Finland, Germany, South Korea and Japan. Generating human capital for high income economy requires the polytechnics system to transform itself ready for an innovation-led economy by advancing its graduates to higher levels of education and training. Thus, Project-Based Learning was introduced in the Malaysian polytechnics curriculum to produce creative and innovative graduates. It is believed that students using Project-Based Learning are actively involved in authentic inquiry, knowledge construction, autonomous learning, scaffolding, and proposing creative solutions (Chambers et al., 2007). In addition, upgrading a premier polytechnic into a polytechnic university is another option to boost the techno-creativity reservoir among polytechnic graduates. A combination of intellectual and technical prowess will produce world-class knowledge workers that will bring Malaysia into a greater height.

Nevertheless, the present challenges facing Malaysian polytechnics such as lack of innovative leadership, heavily centralized system, lack of PhD-qualified lecturers, poor R&D facilities, traditional pedagogies, heavy teaching workload, weak industrial linkages, inadequate funding and poor incentives (as compared to universities) may slow down the transformation pace. In addition, the issue of time frame to achieve all the 56 KPIs in the *Premier Polytechnics Strategic Plan* is viewed as unreasonable by the academic staff and the Heads of Department.¹² The 56 KPIs can be categorized into major groups such as Governance, Programs, Staff, Students, and Industrial Relations. On top of that, the premier polytechnics have to set up COT (Centre of Technology) and COE (Centre of Excellence).

Vocational Colleges

⁹Ramlee Mustapha & Abu Abdullah, "School-to-Work and Vocational Training in Malaysia," *International Journal of Vocational Education and Training* 8 (2002): 69-88.

¹⁰Kementerian Pendidikan Malaysia, *Laporan Tahunan 1995*, Kuala Lumpur.

¹¹A. W. Sahul Hamed et al., "Transformational of Malaysian 's Polytechnic into University College in 2015: Issues and Challenges for Malaysian Technical and Vocational Education," (paper presented in the 1st International Conference on Technical and Vocational Education and Training, 2010), 10.

¹²Hamed et al., "Transformational of Malaysian 's Polytechnic," 11.

The aim of the Vocational Transformation Program is to produce skillful and competent workforce which is indeed very much needed requirement by all industries in order to achieve Vision 2020 which is making Malaysia an industrialized country by the year 2020. In Malaysia only 28 percent of the 12 million workforces in Malaysia are highly skilled today. The National Key Economic Areas (NKEAs) will create about 1.3 million vacancies for qualified skill full workers by the year 2025. These qualified workers should at least obtain vocational certificates and diplomas. After a series overseas of seminars, workshops, bench-markings were done, meetings with personnel from various industries, vocational training centre, government and higher private learning institutions, a working paper was presented to the cabinet and the implementation of the Vocational Education Transformation in the Education Ministry was approved in 2011. The implementation of the Vocational Education Transformation started in January 2012, in which 15 vocational secondary schools were upgraded to vocational colleges that run a four-year semester system of which 70 percent was made up of training skill and 30 percent on academic achievement. Another 72 vocational colleges were also upgraded in 2013 to ensure the production of sufficient highly-skilled technical manpower in the country. The curriculum of skills training is based on the National Occupational Skills Standard (NOSS) by the Ministry of Human Resources and for the academic subjects is based on the National Education Standard. On top of acquiring specific skill-training, the students are further equipped with employability-skill, business communication skill, business studies and on-the-job training (OJT). For the OJT sessions, the students are exposed to practical orientations with actual tasks and actual working environment to prepare them to face of the job challenges after graduation. After completing four years of comprehensive practical training program, the students will be awarded by the Malaysian Vocational Diploma. These Diploma holders will form the group of highly-skilled technical manpower to achieve the 50% target workforce comprising skilled manpower in the country.

Several new policies and initiatives have been introduced, especially in the mid-nineties, such as contextual learning, Tech-prep, the integration of academic and vocational, Time Sector Privatization, partnership between schools and industries, School-to-Career program, the establishment of community colleges and technical universities.¹³ Finally, number of Technical Secondary Schools and Polytechnics have been modified for students with special needs, in order to enable them to learn technical and vocational training based on their abilities. This includes aspects of self-governance, life skills, vocational training, communication and IT.¹⁴

Technical and Vocational Education in Indonesia Before Independence

Before independence, informal education in Indonesia were organized by religious groups: Hindu, Buddhist, and Muslim. Portuguese colonization occurred in the 16th century, followed by the Dutch (VOC). The first school was built by the Portuguese in the Moluccas (*Maluku*) in 1536. The Dutch established its first school in Ambon, 70 years later (1607). When the VOC was dispersed at the end of the 18th century, the Dutch Government still continued to establish many more new schools. The history of vocational education in Indonesia began with the formation of the Ambacht School va Soerabaja in 1853. It means that the first vocational school was opened

¹³Ramlee Mustapha & Abu Abdullah, *School-to-Work and Vocational*, 69-88. See also Ramlee Mustapha, "Technical and Vocational Education for All: The Case of Special Needs Students in Technical Higher Education in Malaysia," *Proceedings of the International Conference on Education for All* (Bangi: Fakulti Pendidikan, Universiti Kebangsaan Malaysia, 2002).

¹⁴ Mustapha, "Technial and Vocational."

317 years after the first school being built by the Portuguese and 246 years after the first school built by the Dutch. By the end of the Dutch rule, in 1940 there were about 88 Technical and Vocational schools in Indonesia with 13,230 students, generally in the areas of trade, technical and agricultural.¹⁵

After the Age of Independence

Since its independence and up to the present, the vocational education has rapidly expanded in Indonesia. There are approximately 4,200 Vocational Secondary School (SMK) with 2.1 million students, or 35% of the total population of secondary school students. The education system in Indonesia was as follows: elementary school for 6 years followed by 3 years of first level of secondary education; it is now known as 9 years of basic education, being announced as the compulsory 9-year basic education since May 1994. At the upper secondary education, there were two streams: academic and vocational stream. Academic education (general) is run by General Secondary School (*Sekolah Menengah Umum-SMU*), previously known as the Upper Secondary School (*Sekolah Menengah Atas-SMA*). Vocational education is conducted through the Streaming Secondary School (*Sekolah Menengah Kejuruan-SMK*). Each SMK has a special learning program. Two of the largest SMK is the SMEA which is specializing in fields of trade/economy and the STM which offers technical areas such as automotive, building construction, machinery, electricity and others.

The number of students at the SMEA is 50% and at the STM is 38% of all Vocational students. The remaining 12% are Vocational students in other areas such as hotel management, textile, and few other arts. In 1995, the number of Vocational students has reached around 1.57 million, with over 69% of them were at Private Vocational Schools.¹⁶ In contrast to secondary education at Technical and Vocational schools in Malaysia, which is almost entirely fully government-owned. In Indonesia, there are many private vocational schools. Vocational education is run for three full years; besides that, there is Developmental Vocational School (*SMK Pembangunan*), which studies last for 4 years. The students are generally aged 16-19 years. However, there are few Vocational Schools offering non-formal courses for other age groups.

The system described above is within responsibilities of the Department of Education and Culture (*Depdikbud*). In the *Depdikbud*, there are four Directorate General. One is the Directorate General of Primary and Secondary Education (*Ditjen Dikdasmen*). Under the *Ditjen Dikdasmen*, there is the Directorate of Secondary Technical and Vocational Education (*Dit. Dikmenjur*), who is responsible for managing approximately 700 State SMK and 3,000 Private SMK (statistics in 1995). Another directorate, the Directorate of Private Schools has a duty to maintain private schools' education, including approximately 3,000 Private SMK. Several other government departments are also implementing training programs. Department of Labor (*Depnaker*) has more than 150 training centers called *Balai Latihan Kerja* (BLK). BLK is available to all new job seekers, including school leavers who are yet to be employed.

Dual System of Education (Pendidikan Sistem Ganda-PSG)

PSG is an innovation in the vocational program, where students undergo industrial training in companies or industries which are part of the process of teaching and learning at Vocational Schools.¹⁷ PSG is based on the model of "dual system" which is practiced in Germany. Students in the PSG system undergo practical vocational training in industry for several months. PSG

¹⁵ Dedi Supriadi, *Sejarah Pendidikan Teknik dan Teknikal dan Vokasional di Indonesia* (Jakarta: Direktorat Jenderal Pendidikan Menengah Teknikal dan Vokasional, 2002), 10.

¹⁶ Supriadi, *Sejarah Pendidikan Teknik*, 12.

¹⁷ Supriadi, *Sejarah Pendidikan Teknik*, 17.

make Technical and Vocational education system more relevant to the world of work and thereby linking it with industries in the surrounding areas. Indonesia will enter free trade era of AFTA, APEC and WTO. Therefore, the education system and the industries are required to make change, if not, then they will be left behind. To remain competitiveness, Indonesia requires training and re-training, particularly for improving skills of workers that is integral part of industrial restructuring. Although there has been significant improvement in education in the last century, the situation in 1994 showed that 62.75% of Indonesian workers had completed 6 years of primary school. Even worse, about 25% did not complete the elementary education.

Despite the relative growth of the informal sector to the formal sector, informal sector is still important in providing job opportunities for secondary schools' leavers, which is increasing in number. Although the agricultural manpower needs has decreased, the absorption of labor in this sector is still the greatest. Hence, the need to improve the quality and quantity of agricultural products for domestic and export markets is critical. The global increasing as well as regional competition faced by Indonesia requires high qualities of Technical and Vocational skills. The industries are seeking ISO certification as part of requirements of world markets; training systems which integrate the continuous improvement quality system.

Technical and Vocational Education for the Future of Indonesia

Based on the "Link & Match" introduced by the *Depdikbud*, school and industry should collaborate to establish an excellent partnership so that the graduates can possess the competencies required by industry. The largest financing operations ever done by the government of Indonesia in Technical and Vocational education is for the vocational (SMK) system. Apart from that, the Teachers' Development Centers (*Pusat Pengembangan Penataran Guru - PPPG*) has an important role in supporting vocational system. The system has approximately invited 500,000 vocational students coming from the State SMK and around 1.3 million from the Private SMK. The conditions at Private SMK are vary from those having their own complete equipment to those borrowing equipment from others' as well as those which have no equipment at all. Thus, there are some vocational schools which are not capable of providing vocational skills in accordance with minimum standards required by the industry.

Cooperation fostered by the industry is not only in terms of the implementation of PSG but also to encourage vocational schools to develop their capabilities in providing work experience for students through industrial training programs. The main objective of the strategy is to ensure of vocational schools have innovation in conducting vocational training and can practice it into commercial activities. There are no laws that prohibit this activity, but there have been numerous examples of how the implementation has worked successfully. For that, it is a need to develop vocational staff training, to let them identify available opportunities, so that they can develop good thoughts to carry it out. Technical and Vocational PPPGs can also play important roles in maintenance, training, and providing entrepreneurship modules.

In the context of vocational schools, there are two proposed strategies. Firstly, performance agreement in vocational schools is proposed. Deal of work is prepared by vocational schools as the basis for setting targets for the year-to-come programs. The agreements are then discussed with the School Council and other related parties. In these agreements, vocational schools have set a target for the PSG, new training programs, quality improvement to be achieved, the relationship with the industry and others. In the early stages, it is hoped that the PPPG could develop a program model and make it 'close to the community', which means vocational schools, surrounded community, and the parties responsible for Technical and Vocational secondary education particularly districts are later able to organize their needed agenda of development programs.

Secondly, by helping of PPPG, vocational schools should be able to plan schools and student's improvement. This process can be structured using the Total Performance Management (TPM) and benchmarking. In this paper, the term used "best practices", which covers the entire effort to improve vocational school's quality. The proper choices of improvement indicators and quality control need to be agreed by all. Generally, this approach brings about some advantages. Among the advantages are, (a) provide a direct responsibility to improve the quality of vocational schools and the staff and (b) vocational schools' administrators use the means adopted by the industry surrounding them. Thus, schools and industry will use the same language and approach. PPPG is not just to formulate a program for teachers' training. With its experience and expertise in curriculum development and pedagogy, PPPG can also help in the vocational training of the administrators and thereby acts as the driving force in improving the quality of vocational schools. PPPG should continue to expand its role in management, leadership, providing infrastructure, and curriculum for the vocational schools.

The most common issue when talking about teachers' problems at vocational schools is lack of qualified teachers. Generally, the teachers do not have enough industrial experience, despite the fact, such experience is necessary to raise the credibility of the Technical and Vocational education programs. From another angle, teachers' salaries and welfare also appear as major problems. Small wages, inadequate infrastructure and non-conducive working environment are referred to as number of factors that could affect teachers' performance and indirectly the quality of vocational schools themselves. One of the proposals that can be implemented by the government is granting out government-project contracts only to the industries which are willing to help the vocational schools. Another way is to give recognition to the industry which is involved in PSG. National tax (levy) to companies that employ foreign workers can also be applied. For example, for all foreign workers employed, the employers must pay US\$100 per month to the government as training fund contribution. Another example is a system of "levy and grant" which is conducted in East Java. There are debates of opinions on the effectiveness and efficiency of the benefits from the accumulated funds when viewed from its output.

One way to improve the prospects of vocational schools' graduates is by setting competency standards as a basis for designing the curriculum and training. In the same way, the maintenance of the skills competencies of national and international levels is essential in improving the status of Technical and Vocational training, and at the same time to encourage young people to be always oriented to the vision of quality. The involvement of Indonesia in international standards system could introduce its young people to the work ethics of other nations, and is hoped that this would increase their awareness about the importance of quality.

Conclusions

In Malaysia, Technical and Vocational education prior to independence had projected the images of manual agricultural and technical skills, for Malay students training to fill positions in the department under the Federated Malay States. After independence, Technical and Vocational education in Malaysia continues to grow, and some reforms have been implemented to improve Technical and Vocational education image. In Indonesia, a similar development occurred but the difference is in terms of financing of vocational education at secondary level where there are many private vocational schools in Indonesia as compared to Malaysia. There are new concepts in Technical and Vocational education, such as the Time Sector Privatization in Malaysia and Link and Match in Indonesia, but the concepts are yet to be implemented optimally because of some constraints. The cooperation between schools and private sector should be made lawful.

The private industry must take social responsibility in giving out the industrial training, as practiced in Germany. The private sector and employers are not only in receiving end, but equally involved in providing the necessary training.

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