

THE IMPACT OF TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING PROGRAMS OFFERED BY POLYTECHNICS ON MALAYSIA ECONOMIC DEVELOPMENT BASED ON THE GRADUATE'S JOB PERFORMANCE

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Abstract

Technical Vocational Education and Training (TVET) is the corner stone of Malaysia's technological advancement, in providing skilled and semi skilled workforce for various sectors, having a direct impact on the development of economy and the eradication of poverty in the country. The objectives of this study is to: learn of the caliber of graduates who are capable of carrying out the jobs they are trained and hired for; learn more about the quality of polytechnics TVET programs in light of its historical developmental processes and meeting the challenges of time; study the impact of programs in economic development; learn of the best practices of the similar programs of the same caliber in other technological advanced countries of the region; partnerships between skills development service providers and employers, assessment of the initiatives that can be taken into consideration to improve the employability among people of various skills; suggest measures of improvement based on findings while comparisons are made with the selected technologically advanced countries of Asia; and recommend improved training programs based on Assessment Research where competent graduates who can meet the challenges of the 21st century becomes the target of the programs. The findings of the study and the comparison of the similar programs in technologically advanced countries of Asia will provide suggestions for the authorities and policy makers to incorporate changes and strategies for the improvement of the TVET programs in Malaysia. The immediate contributions of this study will provide Polytechnics the reasons to revise and improve the existing programs while reviewing the best practices of the countries of the region. The research method for the purpose of this study is Assessment Research indicating the process of collecting, synthesizing and interpreting information to aid in decision making of the future academic programs of Polytechnics that can be also used for planning academic programs and setting up goals, selecting more relevant instructional strategies and monitoring students' progress toward the attainment of the goals.

Introduction

The Malaysian technological and economic development has brought about changes in the standards of the living of its people. Malaysia's development in a relatively short period of history signifies its commitment to eradication of poverty. The statistical data from the Ministry of Information, Communication Centre shows that the poverty rate in 1957 averaged 29.7% has reduced to 1.9% in year 2002[1]. However today, the Third Long Term Plan Framework (RRJP3) reports that the living standard of Malaysians is expected to continue to improve in the coming decade. Actual per capita income is expected to increase by more than 5% per year following a period of rapid economic growth. Due to low poverty levels, the government will focus its attention of becoming high income nations by year 2020[2].

The Economic Transformation Program (ETP) is a comprehensive effort that will transform Malaysia into a high-income nation by 2020.

The ETP is one of the governmental strategies to make the vision 2020 become a reality. Through the transformation plans, a 6% annual growth in the Gross National Income (GNI) is expected that will allow Malaysia to become a high-income nation causing the creation of about 3.3 million new jobs. The **12 NKEAs** are: Oil, Gas and Energy; Palm Oil & Rubber; Financial Services; Tourism; Business Services; Electronics and Electrical; Wholesale and Retail; Education; Healthcare; Communications Content and Infrastructure; Agriculture; and Greater Kuala Lumpur/Klang Valley[3]. With projection of NKEAs and the creation of 3.3 million new jobs, necessitate the need for human capital with skills for each of the NKEAs to be developed. Thus technical and vocational education and training of the polytechnics becomes even more significant in ensuring the successes of ETP and the Malaysia 2020 Vision of becoming a high-income nation. The programs of studies offered by Polytechnics are aligned with the need of economic development in Malaysia.

The History and Evolution of Polytechnics Development in Malaysia

Early development stage

The first Polytechnic (Ungku Omar in 1969) was established under the United Nations Development Plan (UNDP) and The First Malaysian Plan of (1966-1970)[4]. The main purpose of establishing Polytechnic Ungku Omar (PUO), to provide training to high school drop outs with Sijil Pelajaran Malaysia (SPM) and Sijil Pelajaran Vocational Malaysia (SPVM) to train skilled technicians in engineering sectors, middle executive officer and semi-professionals to the private and public sectors of Malaysia [5]. A total of 233 students had enrolled into diploma and certificate programs in PUO. The 4 academic departments consist of Civil Engineering, Electricals Engineering, mechanical Engineering and Commerce. In year 1971, polytechnic managed to produce 202 graduates at the certificate levels [6].

Education Reformation in Malaysia

In 1974, a Cabinet Committee of Education was formed to study and review the education system in Malaysia. A report produced in 1979, gave prominence to the role of polytechnics where more polytechnic campuses should be built and more programs should be offered so that technician and mid-level workforce can be produced[7]. At the same time, the National Industrial Plan (1985-1995) claiming that Malaysia is on its way to be an industrial country meant more factories and industries will be opened and more skilled workers of different fields will be needed[8]. Since its inception until 1995, polytechnics have undergone through drastic developmental changes, where 12 polytechnics campuses were built all over Malaysia from 1987 to 1998, were, with the maximum capacity enrolment of 5000 student per semester[9]. The programs offered breeding fast, more departments were created and more new programs were developed to fulfill the needs of various semi-professional workers in various industries. Since then, up to year 1999, a large number of students (31,844) were enrolled and 7,342 graduates of various technical skills were produced by these polytechnics[10].

Efforts relevant to Standards since 2000

Some of the efforts are as follows:

i. Competency Standards for Polytechnic's Graduates

Competency Standards for Polytechnic's Graduates was developed by the Division of

Curriculum Development in year 2008 and published in 2010 for the uses of polytechnics especially in developing and reviewing the curricula of any of its programs. The Competency Standards for Polytechnic Graduates consist of performance specifications of attainment of knowledge, skills, attitudes and abilities that needed to be successful in the workplace. Therefore, this Competency Standards as a framework in the development of Polytechnic curricula at the diploma and advanced diploma levels, thus facilitating the production of highly competent and knowledgeable graduates[11]. Undoubtedly, the development of these standards assured the quality of programmes and graduates, boosting national and international standing, increase market access, enhance graduate mobility, and attain prestige, and distinction. In year 2010, there were 11 Competencies Standards for Polytechnic's Graduates published and also produced in CD form and used as guidance in reviewing the curriculum of the existing programs.

ii. Curriculum development and review

Fig. 1 below shows the curriculum development process which have be to follow through everytime any new curriculum need to developed.

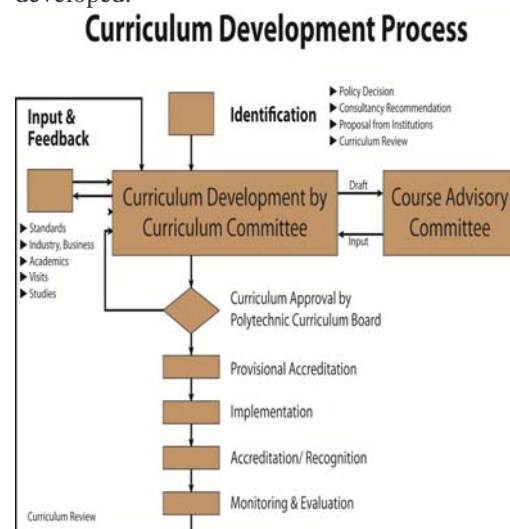


Figure 1: The Curriculum Development Process [12]

In April 2008, a Curriculum Advisory Committee was formed responding to the needs for strengthening the Department of Polytechnic Education ties in academics and collaborative activities with the industries. Curriculum Advisory Committee refers to a group of individuals appointed responsibilities to evaluate, monitor, and review a program of study. The committee was composed of experts from universities, government officials, industry representatives, and members of

professional bodies and associations who have the experience, knowledge and expertise in related areas. It is further reviewed by the Board Curriculum Committee, established under the Education Act 1996 (Act 550).

Fig. 2 below shows the standard procedure that guide the curriculum developer in writing the syllabus for a certain program. As for the content, it must fit with the eight (8) domains of learning outcomes stipulated in the Malaysian Qualification Framework as follows:

- a. knowledge;
- b. practical skills;
- c. social skills and responsibilities;
- d. values, attitudes and professionalism;
- e. communication, leadership and team skills;
- f. problem solving and scientific skills;
- g. information management and lifelong learning skills; and
- h. managerial and entrepreneur skills.

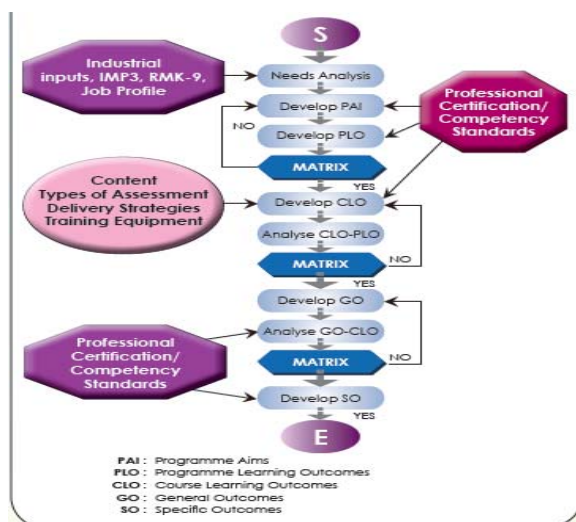


Figure 2: The curriculum writing process [13]

iii. Programs accreditation -Malaysia Quality Assurance and Malaysia Qualification Framework (MQA & MQF)

The Malaysian Quality Agency is responsible for the accreditation on any education programs offered by higher education institution including polytechnics in Malaysia. MQA is making certain that each program followed by a student must obtain an official certificate to ensure that graduates meet quality standards and criteria set in accordance with the requirements of the Malaysian Qualifications Framework (MQF). Thus, polytechnic's programs will undergo the accreditation process with MQA once it is offered by polytechnics and these programs must have the full accreditation before the first cohort student graduated. All the existing programs offered by all

polytechnics are already in the MQA recognition list whereas three new programs including 2 advance diploma programs have received their full accreditation from MQA[14].

iv. Outcomes Based Learning (OBE)

In line with the MQF's needs, in year 2008, the Department of Polytechnic Education has adapted Outcomes Based Education (OBE) approaches in their education system. Programs Education Outcomes, Program Learning Outcomes and Course Learning Outcomes are created for all polytechnic programs. It is a student centered and active learning where teachers are becoming facilitators. It anticipated that the students will master the core courses knowledge. Skills, independent, and soft skills are practically applied during their studies in polytechnics.

iv. Soft skills

A Soft skills module has been added into each program structures besides fulfilling the MQF requirement, it is also meant for students' preparation for the Industrial Training. Student are groomed with soft skills knowledge and skills needed by industries before they undergo industrial training. The soft skills include team works, communication, business etc.

v. Entrepreneurship

New edition of curricula reviewed was distributed and implemented in year 2009, has accommodated a common course of Entrepreneurship which is compulsory to all students across all academic departments in Polytechnics. Entrepreneurship is a form of discipline is the cornerstone to the development and growth of the economy and society[15].

vi. Industrial Training

The polytechnics' industrial training has been improvised where Industrial Training is a compulsory to all polytechnics' students. They have to undergo for one full semester or at least 5 month of attachment with the industries. The objectives of industrial training are to expose students to the working environments, and enforce their academics knowledge in work environment. The Industrial Training Handbook contains procedures and responsibilities of the industries and also information about the polytechnics and suggested skills and knowledge that can be acquired by the students in relation to their course of studies.

Polytechnics Transformational Plan (2010-2015)

Polytechnic Transformation Plan was launched by the Hon. Deputy Prime Minister on February 25,

2010. Transformation direction Polytechnic aims to build capacity for developing new polytechnic human resources to meet the needs of the New Economic Model (NEM), which emphasized the potential of innovation and creativity. The transformation of polytechnics is to produce human capital with first class mentality and meet market needs.

Malaysia needs to increase the percentage of high-skilled workers from 23% to 37% by 2015 [16]. Therefore, the TVET in Polytechnics has a special role to deal with the changing higher education ecosystem that not only requires a high knowledge of human capital but also has high-level skills..

Some of the achievements highlighted as follows:

i. Premier Polytechnics

On February 25, 2010, three of the institutions were upgraded by the Government to premier polytechnic status and there are plans to upgrade others further to university level by 2015. The premier polytechnics are Politeknik Ungku Omar, Politeknik Salahuddin Abdul Aziz Shah and Politeknik Johor Baru [17].. The upgrade sets the momentum for polytechnics nationwide to undergo a major revamp under the Higher Education Ministry's Polytechnic Transformation Plan

ii. Work-based Learning Advanced Diploma

Since 2010, five advanced diploma programs were offered by Polytechnics. Majority of them are work-based learning (WBL). WBL is a form of pedagogy that blends classroom instruction with structured real life working experiences and preparing the students towards a competitive edge in today's workplace [18]. These programs gives the student a lot of opportunities to acquire the needed knowledge as well as to undergo industrial training during their fourth and fifth semester in order to exposed to the real working world of the related field. This will give the students added value and ensure they the knowledge and skills are acquired from this programs relevant to the needs of the industries

iii. Professional Certification

METrO Polytechnic is new polytechnic education concept which were launched on 21st July 2011 with the objective of maximizing education and training opportunities [19]. Strong cooperation with professional bodies and industries are ties as professional certification are offered and some professional bodies agree to implement short courses at these polytechnics, for example Halal Development Centre (HDC) and Islamic Banking & Finance Institute of Malaysia (IBFIM)[20].

Today

Quick Facts of the Department of Polytechnic Education shows that in 2011 there are 30 polytechnics all over Malaysia with total capacity of 77,000 students per semester, 89,292 students enrolled and 33,310 graduates are produced[21]. . There are 4 advanced diploma programs, 55 diploma programs and 28 certificates programs of various skills and fields are offered by polytechnics[22]. . After 42 years of service (1969-2011), about 366,434 graduates are produced [23]. These figures show the importance of polytechnics to the nation and its contributions in providing semi-professional workers seems to be the main provider of semi-professional workers in Malaysia.

However, behind all these achievements there are still some loopholes in the system. Polytechnics graduates employability rate in average is still below the Key Performance Indicators of the Department of Polytechnics Education i.e. 85% of the graduates will be offered a field related job within 6 months after they have completed their study [24]. The rate of employability often depends on the quality of polytechnics graduates. An assumption could be made that the higher the employed number, the more quality the graduates have and therefore more graduates are employed in related industries.

The Significance of the Study

TVET is the corner stone of Malaysia technological advancement, in providing skilled and semi-skilled workforce for various sectors impacting the development of economy and the eradication of poverty in the country.

Contribution of the Study

It is anticipated that the findings of the study and the comparison of same caliber of training programs in the selected technologically advanced countries of Asia, will contribute to the quality of TVET programs in Malaysia.

Objectives:

1. To learn of the caliber of graduates who are capable of carrying out the tasks and responsibility for the job they are hired;
2. To know the quality of polytechnics TVET program, in light of its development process;
3. To investigate the impact of programs in the area of economic development;
4. To show the impact of the TVET in the political stability of the country;
5. To demonstrate the significance of the program in the area of health and social welfare;
6. To find and report the impact on the eradication in poverty reduction and employment opportunities in Malaysia;

7. To learn of the performance factors of the similar programs of the same caliber in other countries;
8. To suggest measures of improvement based on finding and comparisons made with the selected technologically advanced countries of Asia;
9. To suggest area for improvement in light of the findings for the future program developments; and
10. To recommend the training of competent graduates to meet the challenges of the 21st century.

To ensure both the human and professional aspects of vocational education, 2 major dimensions should always guide the design of the relevant schemes and systems; EDUCATION AND WORK. The education dimension caters more for the individual needs and human aspect, while work or economic dimension caters for more societal needs and labor markets requirement.

Employment: Technical and Vocational Education and Training (TVET) or Vocation Education in brief, should be dealt with the more comprehensive concern of Human Resources Development, a concept that comprises the supply side or sources of human power, as well as the linkages and channels between the supply and demand sides of human power. The supply side covers, formal and non-formal education and training systems, including vocational education. The linkages between the supply and demand sides of human power, on the other hand, occupational classifications and standards, employment requires performance and job satisfaction.

Job Performance Job performance is the way employees perform their work. An employee's performance is determined during job performance reviews, with an employer taking into account factors such as leadership skills, time management, organizational skills and productivity to analyze each employee on an individual basis. Job performance reviews are often done yearly and can determine raise eligibility, whether an employee is right for promotion or even if an employee should be fired [25]. Thus, job performance deals with the workplace. It's also part of Human Resources Management which is most commonly refers to whether a person performs his/her job well. Another key feature of job performance is that it has to be goal relevant. Performance must be directed toward organizational goals that are relevant to the job or task a person is assigned to.

Different types of performance

Another way to divide up performance is in terms of task and contextual (citizenship and counterproductive) behavior. Whereas task performance describes obligatory behaviors, contextual behaviors are behaviors that do not fulfill specific aspects of job's required role. Citizenship behaviors are defined as behaviors which contribute to the goals of the organization through their effect on the social and psychological conditions. Counterproductive behaviors, on the other hand, are intentional actions by employees which circumvent the aims of the organization [26].

METHODOLOGY

It is a combination of quantitative and qualitative research. The TVET system and programs implemented by polytechnics provided the quantitative aspect of the research, while the comparison similar program of the caliber in selected technologically advanced countries of Asia contributed the qualitative part of the research.

Programs of the same caliber offered in technologically advanced countries of the Region:

'Hyundai', 'Samsung', 'LG', 'Daewoo' are among the most famous products consumed in South East Asia, Middle East, China, South America and India. These electronics products and cars are all made in Korea [27]. Begin as a tropical country with the GDP per capita of USD2500 in 1970 but in 2008 Republic of Korea has vastly developed into a technologically developed country of with the GDP per capita of almost USD20000[28]. The higher the products and services produced indicates that the quality of production in Korea is also high and efficient. This also implies that TVET in Republic of Korea has reached a higher level of standards and quality.

There are many factors contribute to the success of TVET in Republic of Korea. Few major factors include the government strategies and commitment, factories and industries involvement and cooperation, *jeonmun daehack*, and literacy level of the community.

TVET in Republic of Korea is meant for employment and competition. The government of the Republic of Korea has placed great emphasis on its promotion and development. Enactment of the Basic Law of vocational training in 1976 and enacted the Act of Promoting Workers' Vocational 1997 has very impressive impact on the in-plant training provided by large industries. Basic Law of vocational training in 1976 indicates that companies are obliged to pay a training levy if they did not provide in-plant training, or if their training did not meet the government regulation. In 1976, the Republic of Korea GDP was USD843 but due to government action the GDP has increased to

USD11767 in 1997 [29]. As a result, the rapid growth of economic is sustained. The Act of Promoting Workers' Vocational 1997 indicate that the Minister of Labor provides financial support to employers who implement vocational competency development programs [30]. High commitment of Republic of Korea government enforcing employer involvement in VET policy development and implementations is illustrated by recent creation of sector councils and Meister schools [31].

In sustaining productivity and ensuring its quality, workforce competency and skills are very important. The best practice is by giving the students a realistic experience by applying their knowledge in the factories or industries. Korean *jeonmun daehack* or 'junior college' in English, develop and operate practical site training through 'school-industry cooperative' programs and 'vocational specialty' training plans and job sheets. The impact of this practices, the employment rate of jeonmun daehack graduates in 2004 was 18.1-21.5 percent higher than of four year university graduates [32]. Large factories and industries run vocational schools. They enroll secondary schools graduates and in-service workers for 6 months to 2 years. Practices constitute about 60 to 80 percent of the curriculum line [33]. Site training programs between training institutions and factories give students the best preparatory experience for future employment. Through site training at a local factory where they will most likely work following graduation, students become familiar with the working conditions and fellow employees. In the programs, students are given firsthand experience with every stage of the complicated manufacturing process, resulting in students produced a marketable product [34].

Literacy is one main factor contribute to economic growth. The higher is the literacy rate of a population giving a higher possibility of quality of human capital and a quality workforce too. The educating process will be much easier and effective and competency and skills are easily embedded and developed to students. OECD reviews in May 2009 also illustrates that the strengths of TVET in Republic of Korea is Korean youth of age 15 year olds performs very well in numeracy, literacy and science [35]. In year 2009, OECD indicates that more than 95 percent of 18 year olds graduate from high schools, and 97 percent of age 25 to 34 year olds complete and upper secondary education which placed Republic of Korea at the top chart among OECD countries [36].

Conclusion

Although Malaysia has overcome the poverty issue to some extent, it is no longer able to remain competitive with low-income countries as a

high-volume, low-cost producer. Other countries are more competitive than Malaysia in both low-cost production and in high-value markets. This is not a sustainable position. Statistical data from the Conference Board and Groningen Growth and Development Centre (January 2009), shows that though Malaysia started at similar position as Republic of Korea but Malaysia has fallen behind over the past decade. Thus investigation by comparisons should be made in identifying the success factors of Republic Taiwan & Korea in TVET. Thus comparison is made among these two countries to track the success factors of their TVET programs.

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