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Assessing Employability Skills of Technical-Vocational Students in Malaysia

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Abstract: Technical-Vocational Education and Training (TVE) system plays important role in providing highly skilled workforce to fulfill the needs of industries. An empirical research of TVE system is necessary to identify effective TVE system to successfully equip students with technical skills that would enable them to fulfill the current work demands and professional expectations. The objective of this paper is to present the findings of TVE system implementation in one of the technical training institution in Malaysia. Research sample has been selected using a simple random method from the third year students. A total of 162 students participated in this research. The result shows that mean score for overall employability skills was quite high. Two aspects of the employability skills, namely, thinking skills and resource management competence and system & technology competence were slightly lower than the mean score. Respondents have slightly higher than the mean scores on basic informational competence interpersonal competence. The mean score of personal quality is the highest among all the aspects of variables of employability skills.

Key words: Technical-vocational education and training, employability skills, vocational training in Malaysia

INTRODUCTION

Entering 21st century, many important changes take place in the society's social life. This is the result of the changes, development and sophistication of technology from previous times. Information and communications technology has been playing an important role in promoting products to world market and it in turn improves efficiency of economy. Globalization also speeds up growth of technology and brings changes at work to give impact to skills of individuals[1,2].

It is anticipated that more works are likely to be generated in areas of information processes, usage of computers and control systems. The new generation of works require highly skilled workforce to use new technologies. Works in present times are characterized as: change in production, from any amount to high value production; increase of workforce emulation; management of information; and extensive re-structuring[3]. Other important characteristics that describe jobs in the present time include among others material size which is smaller that during previous time, equipments of nano technology, rapid growth of sciences and appreciation of workers on the basis of spirit of job networking and team-work.

The on-going changes at workplace, the work itself and the development of advance technology surely will require workforce to have advance knowledge in the areas of works, high skills and positive attitudes. The advancement of new technologies changes the way works are done and brings about a shift of workforce requirement from low skills to workforce being well-informed and high skilled (K-Worker). Current workplace needs workforce with high technical skills as well as ability to relate to others[4]. To overcome such challenges in work environment that always changes, society needs education and training which is at par with the requirements. In view of the current changes at work place an the work itself, current and future generation of workers have to be well trained and technical-vocational education plays a big role in producing workforce needed by the industries[5]. Technical-vocational education and training (TVE) system is designed to help students become successful workers. Unlike the academic system, TVE system is a system designed with the purpose of fulfilling the manpower demands of the industries by providing needed skills required at work places[6,7].

Technical-vocational education and training in Malaysia: Malaysia is a fast developing country, especially in manufacturing and industrial sector.

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Malaysia is one of the Newly Industrialized Countries in Asia along with Korea, Singapore and Taiwan[8]. To support the growth of her industrial sector, Malaysia needs highly skilled workforce. To fullfill this needs Malaysia has developed many vocational and technical training institutes. In fact, vocational and technical training institutes in Malaysia was first established in 1906, when a technical school to train and produce technicians required by Keretapi Tanah Melayu and Civil Work Department was established[9]. The government of Malaysia gives high priority to the development of TVE system to enhance skills of its workforce as per the demand and requirement of work and industry, especially keeping in perspective Vision 2020. Malaysia has a number of universities and colleges of higher learning in the area of technology. Beside this, at the post-secondary school level, technical training institutions such as polytechnic, skills institute and industrial training institute have been developed. Currently, there are approximately 194 technical-vocational institutions and there is a plan to increase this number during the next five year plan.

Need for skilled workers in Malaysia: Malaysian labor force increased from 9.6 million in 2000 to 11.3 million in 2005 and by 2010 it is expected to reach 12.4 million. Among all employment sectors in Malaysia, manufacturing sector will experience the largest increment in employment. More people will be employed in manufacturing sector compared to other sectors. It is estimated that by 2010, 30% of the employment will be in manufacturing. Unemployment rate in Malaysia has been quite steady. It was 3.1% in 2000, 3.5% in 2005 and it is expected to remain at 3.5% in 2010. The Economic Planning Unit of Malaysia (EPU) reported that the number of workers increased at an average of 3.2% a year, from 9.6 million in 2000 to 10.5 million workers in 2003. An estimate of manpower requirement in industrial sector, especially in manufacturing was 2.8 million in 2003. This sector renders 270,700 opportunities of new works as a result of growth of domestic industry. This amount to average 3.4% in a year and in 2003 becoming 27..9%. for entire work sectors[10].

In the first two years at 8th MP, all the main work groups had high workforce growth, especially in the field of middle level professionals and technical. This shows that a work wide opportunity will appear for skillful workforce in industrial sector particularly in manufacturing. According to EPU, the number of jobs in the areas of professional and technical grew at an average of 4.8% a year during the period 2000-2003. Further, EPU estimates that by the end of 2005, there will be a 20.3% increment of workforce in this category and equal to 15.3% representing job opportunity for technicians in the field of electronic and electrics, such as telecommunications. In line with that, Minister of Human Resource also express that in the year 2005, Malaysia needs 183,000 skilled workers in all sectors to accommodates development programs, especially in industrial sectors of manufacturing which is showing a fast growth.

Malaysia needs high skill workforce to support growth of the industry. Result of Asian Development Bank (ADB) study on industrial workers in several countries (including Malaysia), revealed that graduates of TVE system has yet to achieve the standard desired by industries, either in terms of job quality or preparation for work. Industries, especially consumers of TVE system, were quite unhappy with graduates of TVE mainly in the aspect of personal quality[11]. Other studies opined that discontentment was due to lack of workers having employability skills desired by the employers[12-16]. With dynamically changing job market and progressive technological change, employees are expected to keep abreast of global economics. In view of all this, implementation of TVE system as workforce provider deserves to be evaluated[7].

To be recognized as an economically developed country by 2020, Malaysia needs to restructure its workforce structure. Malaysia needs to increase its workforce by having highly skilled workers at middle level. Malaysian future workforce has to be able to cope with the changing nature and demands of works. Above all, our future workforce has to have the employability skills required by all industries. Vocational and technical education can play a major role in providing future workforce with employability skills. Thus, a study was needed to identify the extent of employability skills possessed by students form technical training institute in Malaysia The main objective of this case study is to identify employability skills of students at a technical training institute in Malaysia, an institution of TVE in Malaysia. Specifically, the study attempted to identify: (a). the level of employability skills of students at a technical training institute in Malaysia; (b) the differences of employability skills level among male and female students; and (c) the differences in employability skills level among students of Production of Technological and Industrial Electronics area.

MATERIALS AND METHODS

Population and of sample: This is a descriptive study using a survey method. The population consists of 1004 students attending two diploma programs at a technical training institute in Malaysia. One hundred and forty-five (14.4%) of them were female students and 859 (85.56%) were male students. They attended a diploma in Production Technology program (450 students) and a diploma in Industrial Electronics program (554 students). The sample was selected from the list of registered final year students of both diploma programs with a total of 256 students selected. It consists of 127 student of fifth semester and 129 student of sixth semester. A total of 162 students (63.28%) participated and returned the questionnaires.

Research instrument: To assess students' employability skills, we used the instrument adapted from SCANS[5]. The items in the instrument included most of the elements of employability skills perceived necessary by corporations and industries in Malaysia. The employability skills instrument contained seven constructs namely: (1) Basic skills, (2) Thinking skills, (3) Resource management skills, (4) Informational skills, (5) Interpersonal skills, (6) System and technology skills and (7) Personal quality skills. The reliability estimate of the instrument ascertained using Croncbach alpha was 0.96.

RESULTS AND DISCUSSION

What is the level of employability skills of students at a technical training institute in Malaysia? A descriptive analysis of students' employability skills is shown in Table 1.

Table 1: Mean scores and S.D. of students' employability skills

Skills Aspects	n	Mean	SD
Basic	162	3.78	59
Thinking	162	3.67	67
Resource Management	162	3.63	65
Informational	162	3.85	67
Interpersonal	162	3.82	64
System & Technology	162	3.81	66
Personal Quality	162	3.94	63
Total	162	3.80	55

The finding showed that the overall employability skills of students at a technical training institute in Malaysia are quite high (M = 3.80, SP = 0.55). Three aspects of employability skills, thinking skills and resource management competence had mean score values of about average, (M = 3.67, SD = 0.67) and (M = 3.63.18, SD = 0.65) respectively. The employability scores for basic skills on the other hand were slightly higher than thinking skills and resource management skills, but it is slightly lower than the overall mean employability skills. Students' employability skills for four other skills were slightly higher mean scores than the overall mean score. These include informational competence (M = 3.85, SD = 0.67), interpersonal competence (M = 3.82, SD = 0.64) and system & technology competence (M = 3.81, SD = 0.66). Mean score value of personal quality was the highest (M = 3.94, SD = 0.63) among all aspects of employability skills. This showed the system and strategy of teaching and learning in a technical training institute in Malaysia was able to increased students' personal quality to an appropriate level

Two hypotheses were tested in this study:

1. There are no significant differences of employability skills level among male and female students;
2. There are no differences in employability skills level among students of Production of Technological and Industrial Electronics area

H_{o1}: There is no significant difference of employability skills level between male and female students.

Student's gender was used as independent variable in *t*-Test as one of the two variable samples to compare student's view of employability skills during study at a technical training institute in Malaysia. Scores obtained from seven aspects of skill were treated as dependent variable. Results are shown in Table 2.

From the Table 2, it can be seen that male and female students differed significantly in two aspects of employability skills, the basic skills [t (160) = 2.571, p < 0.05] and personal quality [t (160) = 2.405, p < 0.05].

The clear differences were observed in the mean scores of both groups. Female students scored significantly higher than male students on basic skills and personal qualities. Mean scores of female students for basic skills (M = 4.07, SD = 0.56) and personal quality (M = 4.22, SD = 0.59) while the mean scores for basic skills and personal qualities of male students were 3.73 and 3.89 (respectively).

No significant differences were observed between male and female students on other aspects of employability skills such as thinking skills, resource management competence, informational competence, interpersonal competence and system & technology competence.

Ho2**:** There is no significant difference in employability skills between diploma students of Production Technology and Industrial Electronics.

Statistical procedure, t-Test is used to determine the differences in students' view for seven aspects of employability skills, used as dependent variable in two groups of students in Production Technology and Industrial Electronics programs

As shown at Table 3, there were significant differences of six out of seven aspects of students' employability skills of both programs, Production Technology and Industrial Electronics. The six employability skills show the following values, as for basic skills [t (160) = 2.045, p < 0.05], thinking skills [t (160) = 2.433, p < 0.05], informational competence [t (160) = 2.764, p < 0.05], interpersonal competence [t (160) = 2.962, p < 0.05], system & technology competence [t (160) = 2.081, p < 0.05] and for personal quality it is [t (160) = 1.982, p < 0.05]. There was no significant difference of resource management competence between the two groups of students.

The objective of this study was to identify employability skills possessed by students as a results of system and teaching and learning strategy in techno-vocational education and training at a technical training institute in Malaysia. The present growth of work and current economical demands put challenges to education and training sectors to develop and provide graduates who not only have knowledge and a certain competency, but are also equipped with skills that would improve individual potency for work in the future. Therefore, through effective education and training, students will have ability to adapt to the work environment actively and will be ready for facing dynamic demands and career opportunities.

Currently, work needs flexibility, ability and initiative to handle a variety of duties (Gibb and Curtin, 2004). Furthermore, is the need of knowledgeable worker with high technical skills, ability to work out adjustments, be socially alive, communicative, receptive to learning and also have values of personal quality. In many literatures, these characteristics are recognized as employability skills[4,5,17]. The employability skills in their totality, not only benefit work, but can push progress and contribute to success of organization broadly[14,18]. In the process of teaching and learning a technical training institute in Malaysia, employability skills are not taught as a subject to equip students, but the skills obtained by students are acquired as implication of the system and approach to teaching and learning in class, laboratory, or library.

Employability skills should not be taught to the students, but studied and developed by student on their own during training and education[19]. Consequently, appropriate assessment strategies and also the self-assessment form of study can give picture as to how far the appropriate skills have been possessed by the students during training at a technical training institute in Malaysia.

The present study gives a picture that system along with teaching and learning strategy implemented in a technical training institute in Malaysia, indirectly equips students with basic skills, thinking skills and resource management competence. While for the informational competence, interpersonal competence, system interest and system & technology competence, the impact is higher. Meanwhile, analysis reveals that mean score of personal quality is high (M = 3.94, SD = 0.63). This data has proven that system and teaching and learning strategy in a technical training institute in Malaysia, have indirectly given major support to increasing the personal quality of a technical training institute in Malaysia's student. Despite, having more details regarding employability skills of a technical training institute in Malaysia's student, analysis continued to be performed by making hypothesis of two studies. Result of inferential analysis by using t-Test, showed that two skills namely, basic skills and personal quality have significant differences between male and female students.

Results also indicate that system and teaching and learning strategies in a technical training institute in Malaysia had positive impact on development of basic skills and personal quality more strongly in female than in male students. Meanwhile, five others aspects: thinking skills, resource management competence, informational competence, interpersonal competence and system & technology competence, were not significantly different for both male and female students

A t-test was conducted to determine the difference of employability skills between students of Production Technology and students of Industrial Electronics programs. Based-on the analysis, results show that only resource management competence aspect is not significantly different in any of the two diploma programs. Whereas, six others employability skills are significantly different. Result also indicate that employability skills of students of Industrial Electronics diploma program is higher compared to students' of Production Technology diploma program in six skills aspects, leaving resource management competence. Indeed, it can be said that system and teaching and

Table 2: Difference of skill of employability based-on student's gender

Skills Aspects	Gender	n	Mean	SD	dk	*T*	*p*
Basic	M	138	3.73	59	160	-2.571	.011*
	F	24	4.07	.56	160		
Thinking	M	138	3.67	.67	160	.033	.974
	F	24	3.67	.66	160		
Resource Management.	M	138	3.61	.63	160	-1.071	.286
	F	24	3.77	.75	160		
Informational	M	138	3.83	.67	160	-1.452	.149
	F	24	4.04	.66	160		
Interpersonal	M	138	3.79	.65	160	-1.308	.193
	F	24	3.98	.58	160		
System & Tech.	M	138	3.79	.68	160	-1.180	.240
	F	24	3.96	.58	160		
Personal Quality	M	138	3.89	.63	160	-2.405	.017*
	F	24	4.22	.59	160		

Note: *$p \leq .05$ (Significant at level .05)

Table 3: Means and standards deviations employability skills based on programs

Skills Aspects	Field	n	Mean	SD	dk	*t*	*p*
Basic	PT	80	3.69	.56	160	-2.045	.042*
	IE	82	3.88	.62	160		
Thinking	PT	80	3.54	.63	160	-2.433	.016*
	IE	82	3.79	.68	160		
Resource Manag.	PT	80	3.56	.61	160	-1.473	.143
	IE	82	3.71	.69	160		
Informational	PT	80	3.72	.65	160	-2.764	.006*
	IE	82	4.00	.66	160		
Interpersonal	PT	80	3.67	.55	160	-2.962	.004*
	IE	82	3.97	.69	160		
System & Tech.	PT	80	3.70	.57	160	-2.081	.039*
	IE	82	3.92	.73	160		
Personal Quality	PT	80	3.84	.61	160	-1.982	.049*
	IE	82	4.04	.64	160		

Note: *$p \leq .05$ (Significant at level .05)

learning strategy at Industrial Electronics diploma program give more positive impact when compared with Production Technology diploma program of six employability skills aspects.

Results of study show that there are skills acquired by students as a result of education and training at a technical training institute in Malaysia. Besides acquiring technical skills, students also had the opportunity to acquire employability skills. Out of seven employability skills, only two skills namely, thinking skill and resource management competence have mean score as moderate. While other skills such as, basic skills, informational and interpersonal competence, system & technology competence and personal quality tend to have high mean score values. By the result, it can be concluded that a technical training institute in Malaysia has succeeded to equip its students with adequate employability skills to enter the world of work. Nevertheless, there still is room for improvement for a technical training institute in Malaysia in terms of improving the effort to cater better to the students for honing their employability skills.

There are significant differences in all aspects of employability skills, with the exception of resource management competence among students of both the programs in a technical training institute in Malaysia. It could be due to the absence of any integrated learning management system among programs. However, when looked from characteristics point of view, both the programs are different. The Production Technology Program tend to lay more emphasis on teaching factual processes or on objects that are physically tangible, so that the skills having the character of psychomotor learning is developed. Conversely, Industrial Electronic program has the character of abstraction to it, thereby enhancing cognitive learning.

Result on the whole indicate that students in a technical training institute in Malaysia have acquired slightly higher degree of employability skills during their education and training program, which included

both Production Technology and Industrial Electronics programs. System and teaching and learning strategies in a technical training institute in Malaysia have equipped their students with skills needed for current workplace environment, especially industrial sectors that need both technical as well as employability skills.

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