Assessing Instructor Perception of Skill Assessment at Technical Training Institutes in Malaysia

[1]Kahirol Mohd Salleh, [2]Nur Liyana Khalid Khan, [1]Nor Lisa Sulaiman,
[1]Mimi Mohaffyza Mohamad and [1]Lai Chee Sern
[1]Faculty of Technical and Vocational Education,
Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Malaysia
[2]Department of Polytechnic Education, Ministry of Higher Education, 62200 Putrajaya, Malaysia

Abstract: Technical and Vocational Education (TVE) is an educational sector that emphasizes on skills and producing work force who are capable and highly-skilled. To fulfill the demand for such work force, competent instructor who are skillful in assessing skill are very much needed to train students at technical training institutes. This research was conducted to identify the level of understanding among instructor on the skill assessment aspect at Technical Training Institute in Malaysia. The level of understanding was evaluated from the cognitive aspects that include knowledge, understanding, application, analysis, synthesis and assessment that fulfill the criteria stipulated by the Qualification Agency (MQA). A total of 123 instructors were selected as the research samples. They were chosen by using the purposive sampling method. Data obtained were analyzed descriptively using mean and standard deviation. The findings show that the level of understanding among the instructor at the technical training institutes is high. In addition, the instructors are also capable of mastering all six sub-domains in the cognitive domain.

Key words: Skills assessment, technical skills institute, Technical and Vocational Education (TVE), cognitive, conducted

INTRODUCTION

A strong economic growth is very influenced by comprehensive knowledge and skills among employees. To ensure a national is strongly developed and maintain its competitiveness especially in the industrial sector, expertise and being skillful is very much emphasized. The need of skilled workers requires Malaysia to establish skill training institutes in order to cater the increasing demands for such workers. Priority and emphasis are given to education opportunity and training to support the economic development of the nation. Comprehensive human capital development programmes fulfill the objective to make work force as the capital to gain its returns in the forms of education, principle of citizenship and health (Hamat and Nordin, 2012). Thus, in order to produce capable work force, learning and training institutes that inculcate technical skill aspects is very much in demand in Malaysia. One of the initiatives to produce efficient future skilled workers is through technical and vocational education Besides good academic qualification, graduates also need to be highly skilled and knowledgeable in order to fulfill the current job demands (Salleh *et al.*, 2010).

Technical and vocational education is an education sector that prioritizes advanced skills to produce capable work force who are highly-skilled in many areas especially the ones related to industry. Among technical and vocational learning institution that emphasizes advanced skills in Malaysia are Institusi Kemahiran Belia Negara (IKBN), Institut Latihan Perindustrian (ILP), Institut Kemahiran Mara (IKM) and other skill training institutes. The existence of such skill training institutes is a preliminary preparation to train future effective and dynamic work force, in line with the rapid and challenging technological advancements. This research force consists of trainees who graduate from skill training institute such IKBN, ILP, IKM and other who have completed their apprenticeship.

Technical and vocational education also functions as a catalyst to the rapid development of industrial-based economy. Technical and vocational education is a skill-based education or training programme to produce fully and semi-skilled workers. Under such circumstances, acute precision on many aspects is very important including assessment, competency and workability of trainees. In ensuring the nation to achieve it's economic development aims, due to capability of work force, the

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Corresponding Author: Kahirol Mohd Salleh, Faculty of Technical and Vocational Education,
Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Malaysia

assessment aspect specifically on evaluating the work force needs to be scrutinized. Therefore, this research was to identify the understanding among instructor on evaluating future skilled workers of the nation who could help to Malaysia to achieve its aim in the industrial field.

In an effort to fulfill the economic needs of the country, awarding Malaysian Skill Certification (SKM) has been carried out to Institusi Kemahiran Belia Negara (IKBN) and also Institut Latihan Perindustrian (ILP). According Malaysian Qualification Framework produced by the Malaysian Qualifications Agency (MQA), the criteria and standard for SKM are stipulated in the National Occupational Skills Standards (NOSS). They are developed by Skills Development Department (JPK) under the Ministry of Human Resource. In order to improvise the process of the certification, SKM will be synchronized with more advance qualifications that will enable the certificate holders to improve themselves from semi-skilled to fully-skilled and then to supervision, executive and management.

National Occupational Skills Standards (NOSS):
National Occupational Skills Standards (NOSS) is a document that outlines the standard needed from employees who work in Malaysia. NOSS provides the standard of a field and work level as well as step or route to achieve the standard. Main features of NOSS are: based on job requirement, follow career structure of a job and prepared by industrial experts and skilled workers who carry out a job.

Development of the NOSS curriculum is an adaptation of strategy used in the curriculum development of Developing a Curriculum (DACUM). It is curriculum development process besides career analysis to enable the expertise of a skilled worker to decide knowledge, skills, standard, instrument and one's attitude in a career. There are two components in the DACUM process. They can be divided into duty and activity in completing a task. Among others, duty and skills developed by NOSS comprises the following elements: designing training course, developing teaching and learning process, controlling training, supervising, leading, training and educating, practicing precision based on training, managing assessment, managing training facilities training, producing co-curriculum activities and maintaining administrative matters.

There are five levels of skills as stipulated in the NOSS. Application of five skills quality framework has modified three levels in the system of skill certificate that was previously used (Salleh and Sulaiman 2015). There are
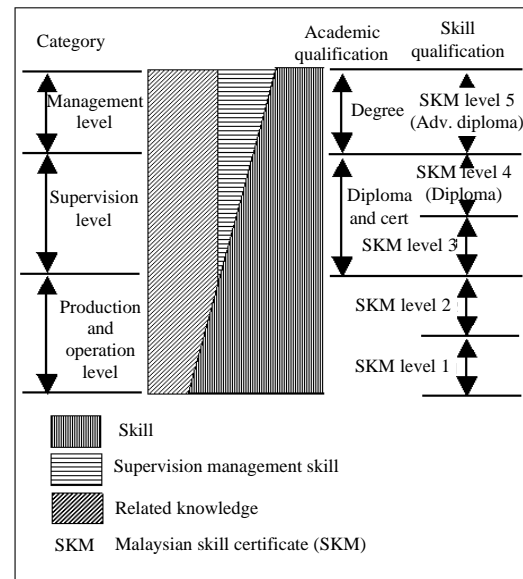

Fig. 1: Qualification framework for skill certification in Malaysia

three divisions executed in the framework. These divisions involve: production and operation level, supervision level and management level. Production and operation level comprises of SKM level one and two. Meanwhile, the supervision level includes diploma level and finally the administrative level encompasses degree level and considered as the highest level. This research includes the first level of the framework and this involves the production and operation level. The explanation to the framework is explained in Fig. 1.

Skills assessment system according to NOSS:
Assessment is a process to evaluate the skills, knowledge and work attitude of an individual or competency of a worker who goes through various suitable techniques. The worker's competency can be used the basis for assessment in an organization (Hanna and Dettmer, 2004). Assessment also involves aspect of an individual as demanded by an organization. The objective of assessment in NOSS is to mould an assessment system that is transparent, fair, comprehensive and fulfill the characteristics of skills as have been stipulated. It also functions to inculcate a sense of responsibility to everyone involves in ensuring the quality of the SKM.

NOSS enhances assessment system that is applied by introducing new assessment system as an addition to the existing assessment system. This system has been applied since January 2006 and enforced to all qualified technical training institute.

MATERIALS AND METHODS

The research design carried out was descriptive observational research that used questionnaire as instrument. This method was employed in order to obtain a clear picture of how skill assessment was implemented. The location of the research was the Institut Latihan Perindustrian (ILP) in Pasir Gudang, Malaysia and Institut Kemahiran Belia Negara (IKBN) in Pagoh, Malaysia. Both institutions offer courses that award the Malaysian Skills Certificate (SKM) as included in the National Occupation Skills Standards (NOSS) and developed by the Skill Development Department (JPK).

The research population consisted of the instructor of ILP and IKBN. A characteristic expected from the population was they should be instructor of technical training institute who teach SKM level one and level two only. Purposive sampling was used by referring to the sampling procedure or process where a group subjects to be studied have similar features prior to being selected as research respondents. The selected samples were the instructor at ILP Pasir Gudang and IKBN Pagoh. They have experience teaching SKM Level 1 and 2. A total of 123 instructors have completed and returned the research's instrument.

RESULTS AND DISCUSSION

Based on the demographic findings, data shows that 38 or 30.9% of the instructor has certificate level of education, 83 or 67.5% are diploma holders while the remaining 1.6% or 2 of them are first degree graduates. The data shows that majority of the respondents has diploma level of education. As for year of service, 13.8% or 17 of them have served for less than three years. 82 of them or 66.7% has served between 3-7 years. Meanwhile, 24 of the instructor or 19.5% of them have worked for >7 years. Overall, the average number of year of service is between 4-7 years. As for area of specialization, there are 42 staff or 34.1% of the respondents from the production department, 41.5% from the mechanical department while 30 staff or 24.4% are from the electronic and electric department. The overall fraction of the respondents involved in the research shows 80 people or 65% are from the ilp while 43 of them or 35% are from the IKBN. The detailed information of the respondent's demographic data is shown in Table 1.

Level of understanding among instructor in skill evaluation: Analysis on the staff's understanding is divided according to sub-domains in the cognitive

Table 1: Demography of the research's respondents (n = 123)

Items	Frequency	Percentage
Education level		
Certificate	38	30.9
Diploma	83	67.5
First degree	2	1.6
Total	123	100.0
Specialization		
Production	42	34.1
Mechanical	51	41.5
Electric and electronic	30	24.4
Total	123	100.0
Year of service		
<3	17	13.8
4-7	82	66.7
>7	24	19.5
Total	123	100.0
Training institution		
ILP	80	65.0
IKBN	43	35.0
Total	123	100.0

Table 2: Distribution of mean scores and standard deviation of the instructor's level of knowledge (n = 123)

Domain/Item	M	SD
Knowledge		
Knowledge related to 'Assessment Method' as a subject or module	4.33	0.47
Knowledge on basic course/advanced related to assessment	4.33	0.49
Knowledge on types of assessment and their purpose	4.07	0.62
Knowledge on different types of assessment method	3.89	0.76
Ample knowledge related assessment method	3.85	0.75

domain. The sub-domains involved are knowledge, understanding, application, analysis, synthesis and assessment. Based on the overall mean scores, each cognitive domain is arranged according to the understanding of the instructor of the skill assessment. The items are arranged from the highest mean score to the lowest. Each analyzed item shows that the mean score is at the highest degree of agreement. The standard deviation for all competency domain is low and shows that the respondent's answers are not highly deviated from the mean obtained from the analysis. Results of the analysis of the overall mean scores according to sub-domains in the cognitive domain are presented in Table 2. Based on Table 2, the findings for the knowledge domain show the highest score when the respondents agree with the use of knowledge related to 'Assessment Method' as a subject or module (M = 4.33, SD = 0.47). Based on Table 3, the analysis shows that the highest mean is recorded for the first item. (M = 4.19, SD = 0.53). The findings for the skill domain show that the respondents agree that understanding of the summative and formative method implemented is important in this domain.

Based on Table 4, the findings for the sub-domain application show that the respondents agree that instructor should adhere to every aspect of assessment when assessing students (M = 4.29, SD = 0.57).

Table 3: Distribution of mean score and standard deviation of the instructor's level of understanding (n = 123)

Domain/Item	M	SD
Understanding		
Understand the summative and formative method implemented	4.19	0.53
Understand theories of assessment	4.18	0.44
Understand concepts of assessment	4.15	0.41
Understand each of the assessment item used	4.13	0.48
Understand assessment format used	4.05	0.48

Table 4: Distribution of mean score and standard deviation for the instructor's level of application (n = 123)

Domain/Item	M	SD
Application		
Adhere to every aspect of assessment when assessing students	4.29	0.57
Apply multiple assessment method for skill assessment program	4.28	0.45
Adhere to the requirements in the assessment form that are frequently used accordingly to the aspects of skill assessed	4.24	0.55
Apply weight age aspect that are frequently used accordingly to student's workload	4.07	0.52

Table 5 shows the analysis of the findings for sub-domain analysis. The data show that the respondents agree that the assessment method used should be systematic and clear about how it should be used and implemented (M = 4.12, SD = 0.49). Based on Table 6, analysis of the highest mean for the sub-domains synthesis shows that the respondents agree to identify problems in student's mastery of skill based on assessment method used (M = 4.15, SD = 0.36).

Based on Table 7, the findings for sub-domain assessment show that the respondents agree that assessment aspects used are able to generate student's skills (M = 4.34, SD = 0.48). For sub-domain understanding, five related items are analyzed. Each analyzed item shows that the mean score is at a high value. Among the six sub-domains, sub-domain application has the highest mean score (M = 4.22, SD = 0.42) while sub-domain knowledge has the lowest mean value (M = 4.10, SD = 0.51). Nevertheless, the mean difference between the highest sub-domain and the lowest is only 0.12 which is very minimal. A complete information regarding overall mean scores for each sub-domain is shown in Table 8.

The research findings show that in general, the instructors at ILP and IKBN have mastered six levels in the cognitive domain namely knowledge, understanding, application, analysis, synthesis and assessment. The cognitive domain has six sub-domains that are formed in stages from the lower order first stage to the higher order sixth stage. Sub-domains knowledge and understanding are at the lower order, application and analysis are at the middle order while synthesis and assessment are at the higher order in the cognitive domain.

Table 5: Distribution of mean score and standard deviation of the instructor's level of analysis (n = 123)

Domain/Item	M	SD
Analysis		
Analyze assessment method used to ensure it is systematic and clear about how it should be used and implemented	4.12	0.49
Analyze assessment method used to ensure they are uniformed for all modules	4.12	0.54
Analyze assessment method used to ensure student's skill can be identified	4.11	0.46
Analyze assessment findings based on assessment method used	4.11	0.46

Table 6: Distribution of mean score of the instructor's level of synthesis (n = 123)

Domain/Item	M	SD
Synthesis		
Identify problems in student's mastery of skills based on assessment method used	4.15	0.36
Identify suitable assessment technique used when making assessment	4.13	0.34
Manage various skill assessments on students	4.11	0.47
Use variety of assessment approaches when assessing students	4.02	0.41

Table 7: Distribution of mean score and standard deviation of instructor's level of assessment (n = 123)

Domain/Item	M	SD
Assessment		
Assessment used able to generate student's skills	4.34	0.48
Assessment carried out fulfill the learning aspects according to specialization	4.32	0.47
Assessment used facilitates assessor to assess students	4.24	0.43
Difficulties/problems exist in the assessment method used	3.94	0.67

Table 8: Distribution of mean score and standard deviation of the instructor's level of assessment (n = 123)

Item	M	SD
Application	4.22	0.42
Assessment	4.21	0.40
Understanding	4.14	0.33
Analysis	4.11	0.33
Synthesis	4.11	0.30
Knowledge	4.10	0.51
Overall	4.15	0.38

The analysis carried out show that sub-domain application has the highest mean score compares to other sub-domains. The research findings show that the level of understanding among the instructor is very good in the cognitive domain. This explains that the instructor at ILP and IKBN has a high understanding level by applying assessment method used when doing assessments. This finding is supported by Hanna and Dettmer (2004), Gauld (2001) stated that understanding requires the ability of an individual to understand a message and explain it back using his own method. Without the ability to summarize existing knowledge, the understanding aspect cannot be generalized to the areas. By having experience, understanding can be achieved by absorbing information, practicing, interacting and responding. The findings show

that responses and interaction between instructor and students could improve understanding of the staff on assessment.

By referring to all six sub-domains in the cognitive field, it is found that sub-domain knowledge has the lowest mean score compares to other sub-domains. This is opposite to Gauld (2001) and Wang (2014) who explained that knowledge is very important to teachers or coaches to qualify them to be in any field especially in the technical area. This could be influenced by the lack of exposure to theories related to assessment. Nevertheless, the value is still at a high level in interpretation of mean scores. This clearly shows that overall, all instructor at both institutions involved have a high understanding level when conducting skill assessments.

The findings discovered that the instructor's level of understanding is high because they apply all knowledge that they have when conducting skill assessments based on standards stipulated by the JPK. With these standards, the instructor is more focused in applying skill assessment process on students. Advanced nations like Singapore and Hong Kong have a committee that control and monitor the implementation of trainings of technical and vocational skills.

To ensure quality of graduates produced fulfill the job market demands, assessment methods will be evaluated in every few years. When such evaluation is carried out, instructor will be called to be given briefings or seminars regarding any changes or improvements conducted. This seminar usually takes place in every 2-3 years. Such event enhances the level of understanding among the instructor on various aspects including the skills assessment aspect. The improvement of the understanding level of the instructor on conducting skill assessment goes in tandem with the improved standard and quality of the instructor and graduates of the institutions. Controlling the quality of the instructor is very important to ensure graduates of the institutions could achieve concurrent needs of industry and job market. This finding is supported by Chong and Ho (2009) who stated that something unique in maintaining the status of a training institute is in controlling the quality of its instructor. A quality instructor will ensure that he has a high level of understanding on assessment. The instructor should get suitable training related to assessment in vocational field and should undergo intensive training in assessment process.

CONCLUSION

In conclusion, the research findings show that the level of understanding on skill assessment among the instructor in technical training institutes is generally high. It is discovered that the instructor could master all six sub-domains in the cognitive domain. This shows that all instructors have a high level of understanding when conducting skill assessment.

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