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Assessment Practices for Competency Based Education and Training in Vocational College, Malaysia

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Abstract

Vocational and Education Training (VET) aimed at providing the labour market with skills in the sub-professional level and no more second-class education. Rebranding vocational school to Vocational College (VC) is a major transformation in vocational education in Malaysia. Among the features that are emphasized in this transition is the method of learning in an environment of Competency Based Education and Training and the change from conventional to authentic assessment. Therefore this study is to identify what forms of assessment being undertaken by vocational teachers in order to meet the demands of CBET and authentic assessment. Three teachers in the field of electrical and electronics engineering were interviewed to identify what practices has been used in the assessment. Since the implementation of VC is very new, findings shown that certain assessment process still in traditional way and need improvement.

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1. Introduction

The purpose of Vocational Education and Training (VET) are to provide the labor market with sub-professional level. The basis of vocational education is a combination of formal education and experience in the workplace. This training is conducted at schools and also tertiary level (Karmel, 2007). Technical and vocational education system in Malaysia has undergone many changes since its inception. Start from 2013 a total of 79 secondary vocational schools have been upgraded to a fully Vocational College compared to only 10 schools in 2012 (MOE, 2011). Transformation of vocational education is to achieve developed country status by 2020.

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Highlighted element is toward employability as well as soft skills, vocational skills, entrepreneurship, industry experience, vocational theory and skills to master several business languages as well as English, Mandarin and Arabic. However, there are still 10 schools that still maintained the status as the Technical School. New vocational education will emphasize the technical or practical industry practices and reduce academic composition (MOE, 2009).

Vocational competency standards will be adopted widely in Vocational College to replace the Modular Certification System. Students will be awarded the Diploma in Vocational after four years of the course. The purpose of the vocational competency standard is to produce workforce with (i) possess vocational skills, knowledgeable, self-esteem and accredited (ii) versed and adhere to industry standards and employability needs and (iii) are recognized and accepted by Higher Learning Institutions inside and outside the country (MOE, 2009).

Standard format for curriculum consists of three components: content standards, the standard of learning (learning standards) and achievement criteria (performance criteria). Content standards are specific statements about what students should know and can do in a school period covers the knowledge, skills and values. Learning standards is a setting criterion or indicators of quality of learning and achievement can be measured for each of the content standards and achievement criteria are statements that specializes what should be assessed and the required level of performance (MOE, 2009).

The level of student competence is measured by Standards Reference consists of standards of performance (academic), and competencies (vocational). The purpose of performance standards is the process of obtaining information about the extent to which students know, understand and can do or have mastered what they have learned based on statements in accordance with performance standards established performance levels as envisaged in the document. Competency standard is a process of obtaining information about the extent to which students have competence on an assignment in accordance with a predetermined level of competency (knowledge, skills and values) as intended (MOE, 2011).

1.1. Assessment in Vocational Education and Training

Competency Based Education and Training (CBET) is a new agenda in vocational education in Malaysia. But in the United Kingdom (UK) and United States of America it has gone through several phases and a long history. CBET emerge from the chaos in education in the 1960s in the U.S. as demand for curriculum reform, significant investment by the federal funds for curriculum development as well as dissatisfaction with teacher training. Educational reforms associated with industry / business that focus on outcomes specifications objective-type behaviour (Tuxworth, 1989). While in the UK interest in competency-based education began because of several factors. Among them is the unemployment rate has increased, young people are not prepared for work and training to working adults are insufficient. Furthermore attention has been given to the level of skills in the workplace (Jeanette, 2001). Thus in 1986 the National Council Vocational Qualifications (NCVQ) was established. This system was based on competency assessment and relevant to employability.

The concept of competence is the key to vocational and education training (VET) (Mansfield, 1989). Definition of competent refers to products or educational training and experience, rather than a natural feature such as intelligence (Gipps & Stobart, 2003). Competency in VET refers to individuals who are able to consistently implement the knowledge and skills based on the required performance standards at work (NCVER, 2012) and have the ability to meet the performance standards in the workplace (Fletcher, 1994; Griffin, Gillis, & Calvitto, 2007). Competence at work refers to (i) the performance of technical skills that can be accepted (ii) organizational tasks (iii) provide appropriate feedback and reaction when there is a problem or mistake (iv) fulfill a role in all of the work (v) the transfer of knowledge and skills to new situations (Gillis & Bateman, 1999). Thus the concept of competence is emphasized by several authors is the ability to perform tasks in the workplace.

Assessment mechanisms in Vocational College geared to accreditation and recognition. Therefore the methods of assessment have also undergone changes from the appearance, form, nature and function of vocational subjects

assessment to assessment envisaged in the Vocational Education Transformation which is from conventional practice to authentic (MOE, 2009). Therefore, the evaluation has taken over the existing assessment system. Existing systems based on examinations that require students to memorize to pass the exam. Some critics felt that the assessment should be more emphasis on authentic assessment of problem solving as happens in real (Waugh & Gronlund, 2013).

A traditional assessment is measure whether students have achieved the objectives that have been defined. Therefore, the focus is more likely on the content and orientation of the result (product oriented), implemented in a summative evaluation, examination-oriented and assessment methods using the reference norm. Because assessment is a key factor affecting student learning methods in formal education, the traditional method of assessment is to promote passive learning, surface and teacher-centered learning (Ellery, 2008). In addition conventional assessment also measured quantitatively, made exclusively for the measure of how much you have learned and been absorbed by the students in learning.

Authentic assessment emphasized the application of knowledge and skills in a real world context (Waugh & Gronlund, 2013). Authentic assessment, alternative assessment and the performance assessment have been widely used to describe the assessment. Conceptually this terminology has the same meaning, but according to Waugh & Gronlund (2013), there is difference from each other. Performance assessment requires students to demonstrate achievement of knowledge and skills to perform a set of tasks such as carrying out experiments and operate the machine but alternative assessment is another option other than paper-pencil test.

In VET, performance assessment used to measure student competency. Here is the difference between "performance-based" and "competency-based" as stated by Norton et al. (1976). Performance based refers to the method used by the teacher to demonstrate the lessons, knowledge and skills. Behavior can be observed and the objectives written as, "students can write", "students will perform", "and students will be able to explain". In addition, the performance reminds us that knowledge, content and teaching strategies in teaching is not enough. Overt action is important. However, competency based emphasizes a minimum standard. It adds on criterion levels, value orientations, and quality to the definition of the movement. While competency advocates note three levels for criteria; cognitive, performance and consequence (Norton, Harrington, & Gill, 1976). Therefore, performance based focusing on an objectives and competency based focusing on criteria.

New forms of assessment is different from the traditional approach in six key areas (i) basic outcome-based standards (ii) an assessment of the individual (iii) the evaluation form competent / incompetent (iv) assessment in the workplace (v) there is no time to prepare assessment (vi) no specified course of learning (Fletcher, 1994). Here is the difference between Competency Based Program and Traditional Program as stated by Blank (1982). The traditional approach is usually based on text books, reference materials, and other materials that do not meet the requirements of employability, students rarely know what they are learning, the program is built based on the chapter, unit blocks and other segments of the book which gives some meaning only to employability, depending on the instructor teaching giving lectures and demonstrations, teacher-centered, students only receive little feedback from the instructor, usually require a group of students to spend the same amount of time on each unit of instruction, depending on the paper-pencil exams and usually comparable normative student performance. Competency approach was specifically set student achievement that have been identified as crucial in employability, student-centered teaching, providing high quality, good design, using the media to help trainees master the tasks given, have the time to respond during the learning process. Require each individual trainee to perform their duties to a high level of proficiency in a job like before receiving credit for achieving each task, the performance compared to fixed standards

The traditional method according to Norton et. al (1976) are (i) most of the teacher education program either general or vocational training is based on the time and credit hours than competence or performance (ii) less attention has been given to diagnose the level of ability and more specific requirements for students who have followed the program (iii) courses offered to students is less clear in paragraph just to be included in the college catalog (iv) emphasis on behavior objectives, so a lot of the objectives set out as a general goal.

Most of the traditional methods of using the percentage of pass marks. Most also use the reference norms, the individual results compared with other individual decision based on the normal distribution or expectations. Traditional methods also set 50% as the assignment covering practical skills and 50% exams include more specific vocational skills (Fletcher 1994).

2. Research Methodology

This study was conducted in three Vocational College. Three teachers who had served in vocational education and have extensive experience in the field were interviewed using a set of interview protocol. Interview data were transcribed into verbatim form. Keywords and phrases related to assessment practices have been extracted, aggregated, and translated into themes. Interview questions are focused on the assessment process, the method of assessment used to determine the competency and the instruments used to assess competency.

3. Result and Discussion

Although the implementation of the CBET in Vocational College still new in Malaysia but there is a need to rethink about the concept of assessment to ensure that the development and use of assessment procedures are valid and reliable to measure the competency. The discussion is related to transformation of VC, which is from modular systems to CBET approach, what forms of assessment have been used and how the implementation of the assessment is made. This research also focuses on how teachers' evaluate practical.

Based on interviews conducted by the researcher, the assessment process practiced constrained with traditional assessment, whereas the VET transformation programmed is towards authentic assessment. Concept introduced by the Ministry of Education was still unclear to be implemented, although some road shows have been made across the country. Most of the teachers also unclear the concept of CBET. Some answers given were "not sure of the concept" while others are "do not know how to determine competency".

The absence of standards provide to teachers complicates them to determine students competency. According to Griffin et.al (2007) and Ling (1999) students' competency should refer to standard reference and not in dichotomous scale either competent or not yet competent. Besides, the students' performance must compare to established criteria.

Forms of assessment undertaken in each vocational college are different, but still comply with the 60% continuous assessment and 40% final exam. According many researchers (Fletcher, 1994; Gillis & Bateman 1999; Griffin et al. 2007; NCVER 2012) and also recommended by NVQ, competency evaluation should occur at the workplace. However, there are various methods that can be used to assess competency (Jeanette 2001). Gillis & Bateman (1999) have divided the competency assessment to two main methods, performance and objective assessment. Performance assessment requires candidates actively create and produce reaction products as well as demonstrate knowledge and skills in the form of portfolios, simulated workplace activities, role play, practical demonstrations, observation by a qualified assessor in the workplace, open questions, valuing the partner / Self and presentations, written tests, projects, case studies, witness testimony (witness testimony), documents or products produced in the workplace, an oral test, and simulation activities in the workplace (Jeanette 2001; Gillis and Bateman 1999). An objective assessment refers to paper-pencil test such as multiple choice questions. Competency assessment practiced in KV is based on theoretical and practical through two methods; the objectives and performance assessment as shown in table 1. Continuous assessment covers 60% of the total marks. Frequently assessment forms are tests, quizzes, presentations, folio preparation, group discussion and practical. While the final exam covers practical and theory test will be made by the Examination Board of Malaysia.

Table1 : Evaluation practices conduct in vocational college

Assessment form	Types of test	Percentage	Method of test administration
Quiz Test Presentation Portfolio Group Discussions Practical	Written Assessment Performance Assessment	Continuous Assessment 60%	Questions prepared and evaluated by teachers.
Practical and theory test	Performance and Written Assessment	Final Exam 40%	Questions prepared by the exam board, administered and evaluated by the teacher.

Practical activity is very significant in VET system. The nature of practical work is closest to actual job. Usually practical work is done in conjunction with the procedure. But how do teachers provide the practical lab sheet and how they judge? Practical work is one of the performance assessments. However, performance assessment requires human judgment in giving the performance of a complex scoring (Gipps & Stobart 2003). From the interview conducted, the development of practical paper is based on experience and knowledge of the teachers themselves, through the search engine and refers establish institute. Practical were judged based on the process and final product using rubric. The effective assessment requires specification criteria and procedure that is fair to all (Grondlund, 1998). To achieve high validity in the assessment, as well as producing scores and grades can be trusted; many researchers claim rubric is a way to improve the reliability of the evaluation. Rubric was developed by teacher themselves. Figure 1 is an example of an evaluation form on practical assessment. This document contains the scale scores and examples of criteria that are evaluated. This rubric is too holistic to evaluate competency. Holistic means rates an activity entirely without regard to the separate pieces, is more products oriented and is used when the components of an activity are too interrelated for easy division (Jackson & Larkin, 2002). The use of holistic approach to scoring is often wasteful of the information available, reducing the validity of the assessment (Crooks, T.Kane, & Cohen, 1996) Thus, the generic criteria are only distinguished by comparative terminology (Gillis & Griffin 2005). Assessors do not have a specific reference to value and this way will cause the assessor will assess on their own views. Thus the interpretation of the individual consistency across assessor and other assessments will be different (Gillis & Griffin, 2005). Decisions taken by individual teachers are filled with noise when unclear criteria are used. Clarity and consistency about what is judged also affected (Gillis & Griffin, 2005). Based on the implementation of assessment practices in Australian competency grading system is appropriate in reference criteria used for assessing competencies and generic reference is not suitable due to limited to a general aptitude measurement (Gillis and Griffin 2005).

Formative feedback is one of the principal means by which students learns and improve. In practice, feedback not just commentary about what has been done, but suggestions for what can be done next (Pickford & Brown, 2006). Researchers found that most teachers did not give feedback after every practical work. Students only receive marks without receiving any comments from teachers. Interestingly, report also kept by teachers until end of the semester. However according to Wotjas (1998) in (Pickford & Brown, 2006) many students are poor at using feedback and they only interested in the mark. Sometimes they don't even bother to read what their teachers have written. In particular, comments given to practical work in the present will help students make adjustments in an ongoing manner. Competency-based assessment provides an opportunity for students to receive feedback on their performance (Blank, 1982).

Moreover, a set of standards should be considered in assessing the quality of legality, fairness, reliability and ease of use (Messick, 1995). Effective assessment of practical skills should be valid, reliable, consistent, fair,

inclusive, manageable, authentic, testing, beyond dispute, accompanied by developmental and informative feedback, motivating, efficient, enjoyable, elegant in its simplicity, easy to calculate, uncomplicated, time saving and synoptic (Pickford & Brown 2007). As Stokking (2004) also stated the quality of assessment must valid, reliable, acceptable and practical. Therefore to get good quality results and accurate assessment of evaluation there is a need to develop analytical standard reference criteria for teachers and student as well.

- 3-follow and exceed the criteria set
- 2-according to the criteria set
- 1-according to some of the criteria set
- 0-not according to the criteria set

Criteria Evaluated	Rating Scale 0 1 2 3
Work Process 40%	
-Make adjustments and hardware tools.	
-Writing mnemonic code based on a given ladder diagram	0 1 2 3
-Insert command mnemonic code into Consul Program	
Work Product 30%	
PLC can execute instructions is correctly (1 and 2 lights on a scale of 1, 3 and 4 lights on a scale of 2, 5 lights on a scale 3	0 1 2 3
Attitude 5%	
-Preparation	
- Tools management	0 1 2 3
- Ability to incorporate directions	
- Time Precision	
Safety 5%	
-Personnel and co-workers	0 1 2 3
-Machine	

Fig. 1. Criteria to evaluate performance

4. Conclusion

Testing or examinations have always been a part of the educational process and the process is a closed up and never ends. Overall, the assessment is still ongoing in the traditional rather than authentic, lack of source to develop a quality lab sheet, there should have a standard system to determine student competency, the criteria used too holistic that it is difficult to determine the level of student competence, scoring rubric too general and no feedback given to students regarding to their work. Therefore, a set of standards instrument of a criterion reference should be considered in assessing competency so that validity and reliability of the instrument is increase. Moreover standard criteria can help teachers assess students fairly, and help students make their own assessment. Quality assessment should be valid, reliable, fair and consistent.

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