INTEGRATED COMPETENCY-BASED ASSESSMENT
IN VOCATIONAL SECONDARY HIGH SCHOOL IN YOGYAKARTA

Budi Santosa

Abstract

Though competency-based assessment/CBA had been undertaken by vocational secondary schools/VSS but it could not guarantee the ability of the VSS students after they worked. On the other hand, VSS students as the owners of the competency certificate who had passed the CBA did not receive respects from the industry properly. Integrated competency-based assessment/ICBA model is a competency based assessment model combining a curriculum development, implementation of competency-based training and implementation of on-the-job training/OJT correctly. Curriculum development involves the world of work in order to meet the industrial needs. Competency-based training carried out in accordance with the principles of learning process on competency standards, flexibility, and mastery learning. OJT Program is implemented by agreement between vocational schools and industry partners. The VSS students will have a good knowledge and skills and will pass when they take part in the CBA carried out by independent institutions on condition that the curriculum development, CBT and OJT are done properly.

Keywords: competency-based assessment, curriculum development, CBT and OJT.

A. Introduction

According to the Decree of National Education System in 2003 the purpose of Vocational Secondary School/VSS (Sekolah Menengah Kejuruan/ SMK) is to prepare students to work and/or to continue their studies. The consequences of these demands are that the education and training system at the VSS should be able to prepare its graduates to have competence in accordance with industry standards both nationally and internationally. It accordance with this regulation, it is necessary for them to achieve the standard skills and competency. As evidence that someone has certain skills and competence, he/she has a certificate to prove that he/she had passed the competence-based assessment conducted by an independent institution.

Since the mid-1990s, VSS in Indonesia has implemented the concept of dual system of education. Education and training can be done in schools and in industries to get the link and match program. Students will spend some time working in companies as apprentices. The dual system is based on the view that, on the supply side, it can alleviate future shortages in critical skills, and, on the demand side, that the private
sector is unable to appreciate the value of training or its national role in providing training (Gill, Fluitman and Dar 2000: 210).

As a consequence of the above regulations, the vocational learning process can be carried out with the approach of competency-based training systems/CBT, a broad-based curriculum/BBC, and the system of production-based curriculum/PBC. Meanwhile, the Decree of the Indonesian Government Number 19 Year 2005 on National Education Standards (NES) states that the scope of the NES includes; content standards, standard processes, competency standards, standards of educators and educational personnel, infrastructure standards, managements standard, financing standards and educational standards of assessment.

In recent years, the assessment of vocational competencies is developed jointly by the Directorate of Vocational Development, National Professional Certification Board/NPCB (Badan Nasional Sertifikasi Profesi/BNSP), and the National Agency for Standardization Education/NASE (Badan Standarisasi Nasional Pendidikan/BSNP), but the recognition of the industrial world cannot be hoped. Every decade, the VSS curriculum is always improved as demanded by the development of science and technology and manpower requirements. Evaluation process in CBT system should be done with competency-based assessment/ CBA. In fact, the implementation of the vocational assessment in Yogyakarta does not use the principles of CBA perfectly, so the recognition of the competence of the industry owned by VSS students is still poor.

Competency tests and certification which are undertaken by the Certification Body for Automotive Technician Profession/CBATP (Lembaga Sertifikasi Teknisi Otomotif/LSPTO) is an official institution under National Professional Certification Board/NPCB (Badan Nasional Sertifikasi Profesi/BNSP). Participants of competency test in the 2006 amounted to 1,157 which successfully graduated 507 participants (44%), whereas in the year 2007 amounted to 1456 participants which successfully graduated 826 people (57%). While participants of competency test in Yogyakarta province in 2006 amounted to 140 participants 25 graduates participants (17.9%), whereas in the year 2007 amounted to 143 participants with 48 participants passed (33.6%). Seeing the number of third-level students majoring in Automotive Vocational Secondary Schools in the Yogyakarta Province in the School Year 2007/2008 amounted
to 4600 people, we might conclude that the number of students who passed the competency test (48 people) is relatively small (3.11%).

The implementation of competency testing in vocational schools has two purposes, (1) to determine whether a person meets the required qualifications and passes the competency test, (2) to confirm whether someone has been able to perform a job according to the standard set Depdiknas (2005a: 77).

When the automotive competency-based assessment/ACBA at Vocational Secondary Schools is not correct, the result will be poor and have not been recognized by the industry. This study would like to develop ACBA model in the Vocational Secondary School in Yogyakarta. This research is aimed at gaining a competence-based assessment model that is more applicable, fair, and more effective in describing profiles of school quality comprehensively, quality assurance, and high public accountability level.

Industries need good skill and competencies from their employees, so Vocational Secondary Schools must prepare the student to have competence-based standard reflect the expectations of workplace performance. VSS must conduct ACBA properly with the result that students get a good competence and certificate of course. To conduct ACBA properly the VSS must use key concepts of methods and quality. The key concepts of methods and quality have the rule of assessment and evidences. They are; transparency, validity, reliability, authenticity, currency and sufficiency (Fletcher, 2000: 72). The objectives of the study were to improve the model of automotive competence-based assessment/ACBA in Vocational Secondary School in Yogyakarta.

There are problems currently being faced by the vocational secondary school in competency-based assessment. First, VSS has assessed the students using the test competency model but unfortunately, when the students pass the assessment and get the certificate, the industries still do not recognize their competency. Second, assessment and certification in VSS are good but irrelevant to industry needs. Third, assessment model in VSS uses competency standard but has no collaboration with industries. Fourth, industry’s assessor has participation in VSS assessment but it is not in real assessment.
This study is to answer the question; how to implement integrated competency-based assessment models that is effective for vocational student automotive department in accordance with the principles CBA that can provide assurance of competence and recognized by business/industry.

B. Vocational Education

Vocational education according to Prosser is a process of teaching and learning that has aims to prepare the student get jobs. First, vocational education would be efficient in proportion as the environment in which the learner is trained is a replica of the environment in which he must subsequently work. Second, effective vocational training can only be given where the training jobs are carried out in the same way, with the same operations, the same tools, and the same machines, as in the occupational itself. (Scott, 2004: 390-391). Vocational education is an educational institution that has the goal to prepare students with the skills and knowledge to enter employment in order to gain higher economic level. To achieve efficiency and effectiveness, vocational education must provide training to students with the situation and atmosphere as in the real workplace.

According to Miller 1985, principles and programs in vocational education are; (1) vocational education is a part of the public system of comprehensive education, (2) curricula for vocational education are derived from requirements in the world of work, (3) persons are prepared for at least job entry through vocational education (Scott, 2004: 396). Principles in vocational education include; comprehensive education, curricula are derived from requirements in the world of work, and prepare the student get to work. Comprehensive education means that education includes theory and practical material including form work attitude. Vocational education curriculum comes from the world of work meant that the curriculum was developed based on the needs of employment. Vocational education is aimed at preparing students to enter the world of work. This means that students are educated and trained to have knowledge and skills fit the needs of the world of work.

When the principles of vocational education in schools were implemented properly, it will produce a program of link and match as well as in the industrial needs and in the school supplies. Implementation of vocational education that properly consist
of; an integrated educational program between theory and practice, a curriculum that can meet the demanding needs of industry and education and training that leads to the world of work. When those are achieved, there would be no gap between industrial needs and school.

Vocational education in Indonesia through the development orientation from time to time, namely; (a) the approach to community needs for education/social demand approach, vocational schools are considered capable of producing graduates who want to work, (b) approach to workforce needs/manpower demand approach, implemented in limit, (c) changes the orientation of the supply-driven to demand/market-driven, the subjects/topics of learning to competence, from the measurement of learning outcomes to the level of competence measurement (Dedi Supriadi, 2002: 15). Paradigm shift in vocational education in Indonesia is aiming to change the learning objectives associated with labour needs. This will affect the change of learning approaches used, competency-based curriculum approach, and the measurement of learning outcomes to the level of competence measurement.

C. Curriculum Development

According to Scott (2001: vi), the curriculum is defined in its widest sense, and it refers to programs of teaching and learning which take in formal settings. Meanwhile, the new taxonomy of educational objective as practical tool for educators states; (a) as a framework for designing and classifying educational objectives, (b) as a framework for designing assessments, (c) as a tool for making state standards more useful to educators, (d) as a structure for designing curriculum, and (e) as the basis for thinking skills curriculum. (Marzano 2007: xi). Because science and technology have changed, the curriculum must develop. Vocational curriculum development must have a framework of educational principles.

Additionally, advocates of curriculum reform considered performance assessments a valuable tool for educational reform in that they were considered to be useful vehicles to initiate changes in instruction and student learning. It was assumed that if large-scale assessments incorporated performance assessments it would signal important goals for educators and students to pursue (Good, 2008: 462). Curriculum reform and performance assessments have interrelation. To implement curriculum
reform can be done through improving the performance assessment system. If we will make improvements to the performance appraisal system, then the consequences should improve the system of teaching and student learning.

The development of new curricula and program is more effective if it is based on the principles of democratic guidance and on the well-founded distribution of work. The emphasis is on the partnership based on competence, and not on administration (Krull, 2003: 8). Meanwhile, according to Tyler’s (1969) in Connelly 2008: 480), rationale of curriculum design: (1) stating educational objectives; (2) selecting and (3) organizing learning experiences; and (4) assessing the achievement of objectives. To develop a curriculum has based on the educational and assessing objectives.

According to Norton (2008: 6-7), DACUM (Developing a Curriculum) is particularly well suited for educational institutions and training agencies that are implementing or are planning to implement competence-based education (CBE) or performance-based training (PBT) programs. Meanwhile Scott (2004: 1) states that career and technical education curricula include materials that focus on the development of foundational skills, such as basic skills, thinking skills, and personal qualities, as well as a common core of workforce competencies and the specific skill competencies required for each occupational area. Career and technical curricula could be developed by implement PBT and CBE that focus on specific skill competencies.

According to Scott (2001: 148), alignment of assessment with curricula has a requirement to implement a curriculum. It is called a curriculum-based assessment system and it has 3 principles. They are; (a) all processes used to develop assessment task must begin and end with curriculum, (b) the overall process model assures that every step in assessment development is systematically and carefully linked to the curriculum, (c) the process must produce assessment that are seamless with both curriculum and teaching.

Meanwhile DiRanna (2008: 7) states that alignment between curriculum, instruction, and assessment leads to better student understanding. This means that the curriculum, assessment, and instruction/teaching have a deep relationship. It takes an assessment-centered teaching framework. This framework has assessment-instruction
cycle. An assessment-centered teaching framework is relationship between curriculum, assessment, and instruction/teaching.

A large body of research shows that curriculum-based measurement produces accurate descriptions of student development in reading and math, when teachers use curriculum-based measurement to inform their instructional decision-making, their students achieve better. (Good 2009: 425). Meanwhile Akhyar (2008) found that there is a positive and significant relationship between learning styles of students with competence-based assessment. In this case curriculum development will influence to learning styles and assessment model.

D. Competence-based Training/CBT

Competence as a knowledge, skill, ability, personal quality experience, or other characteristic that is applicable to learning and success in school or in work (Wheeler, 1993: 30 in Palomba, 2001: 1). The ability to do something work that is supported with the knowledge and skills is a key of competence. Competence-based training is a model of training and education that based on workplace competence standard. VSS students can be trained by practice of real competencies in the world of work. Assessment of competency-based training has to base on standard competencies of industry driven.

In Indonesia, the key competencies in the National Competences Standard are: (a) to get work description, (b) to develop human resources training program, (c) to assess performances and (d) to accredit profession. In the book of Ketrampilan Menjelang 2020 untuk Era Global (Depdiknas 1997a: 15), states that the system of competency-based skills standards set by industry is used as the basis for the preparation of curricula, teaching materials, testing and certification. CBT is an approach of vocational education learning to prepare the student gets skill those fullfil industry standards.

The characteristics of competency-based education/training is one model of learning-oriented approach to the ability of individual students, mastery learning and always refers to the existing competence in the work world. The model is the perfect learning applied to vocational schools because their graduates expected to get a job.
Biemans (2005:7) states that there are five common characteristics of competencies: (1) competencies are context-bound, (2) they are indivisible (knowledge, skills and attitudes are integrated), (3) they are connected to activities and tasks, (4) competencies require learning and development processes, and (5) they are interrelated. Therefore, in their opinion, the concept of competence is valid, although the relationships with other concepts such as key qualifications and expertise can be quite strong. The characteristics of learning in vocational education have to enhance knowledge, skills, and attitudes to entrance in the world of work.

Heijden (2006: 468) found in his research that competence-based approach to employability outlined: (1) is advantageous for both career outcomes and firm outcomes, (2) is advantageous for both present performance on the job as well as career outcomes (long-term performance, implying the process of adaptation and learning), (3) in addition to adaptive behaviour, may include personal elements such as personality, attitudes, motivation, and ability, and (4) represents the combination of specific and more generic competences. CBT is a learning approach which advantageous for career outcomes and firm outcomes includes adaptive behaviour and gets specific competences

**Competence-based assessment/CBA**

Paradigm of assessment as a learning system according to Djemari Mardapi (2007: 6), assessment is part of a way to teach someone, so the assessment should be able to encourage students to learn better and teacher to teach well. Furthermore DiRanna (2008: 7) states that paradigm shift in teaching and learning was begun with assessment. The idea, that alignment between curriculum, instruction/learning process, and assessment leads to better student understanding. It means that the integral relationship between curriculum, instructional, and assessment can increase student understanding and teacher to teach well. Wider the intersection between curriculum, instruction (learning & teaching process), and assessment will become better the student understanding. To extend this intersection, curriculum, instruction, and assessment must be in the same standard domain.

Assessment is a process, which requires the collection of evidence on which to base a decision on a student/trainee’s progress or achievements in the instructional objectives of the subject (Gonczi, 1998: 244). Meanwhile Miller (2008: 2) states that assessment is a broader term than test and encompasses the general process of
collecting, synthesizing, and interpreting formal and informal measurement data. Furthermore, Finch (1999: 271) states that assessment as the determination of the merit or worth of a curriculum (or portion of that curriculum). It includes gathering information for use in judging the merit of the curriculum, program, or curriculum materials. Test represents one form of assessment used to judge student achievement. Assessment is a process of collecting, synthesizing, interpreting data in the learning process as an implement of the curriculum. The data of the curriculum consist of competences standard.

The objectives of CBA according to Fletcher (2000: 13) are: (1) to certificate competence to nationally agreed standards, (2) to confirm competence against company specific standards, (3) to confirm outcomes of learning. CBA is an assessment based on competencies standards of industry to get a certificate. To obtain a certificate, a person must follow the competency test. A certificate of competency is one proof of ownership of competence. The aims of CBA are to confirm outcomes of learning, to measure of competencies, to get a certificate, and to select and to recruit. In this case, the whole purpose of learning is based on competency standards prevailing in the industry.

Cumming (2004: 90) states that there are many factors to get an assessment successfully in the vocational education and training: (1) a strong curriculum base influencing assessment, (2) the incorporation of school-based assessment in all certification, (3) preference for standards-referenced assessment. In vocational schools, competency-based assessment becomes one of the important points in order to prepare students entering the working world. Schools will be successful when able to perform well competency-based assessment. One indicator of good competency-based assessment is to have a strong curriculum, namely the curriculum that has a relationship with an assessment system.

Key concepts of methods and quality in CBA according to Fletcher (2000: 72-76) are: (1) rules of assessment (validity, reliability, and transparency), (2) rules of evidence (authenticity, currency, sufficiency). A CBA method includes performance appraisal that valid, reliable, transparency, authentic, current, and sufficient.

Competency-based system use standards skill set by industry and used as the basis for the preparation of curricula, teaching materials, testing, and certification
Competency is determinated by the government should be based on industrial needs. Competence required in the job is a competency standard in the workplace, so that the right competency test used is based on the criteria of the job competencies. Competency test based on the criterion-referenced standards, the candidate will gain competency standards according to standardized sets.

The strategies that can be taken to optimize the implementation of competence-based assessment at the Vocational Secondary School is to improve the quality of graduates, namely to optimize collaboration/partnership schools for all elements, the main which can become a distributor of raw materials and production facilities/practices as needed (Jafar 2008). Strategies to increase quality of CBA are both by optimizing partnership between school and workplace and make a change in the market needs.

**On-the Job Training/OJT**

Streumer (2006, 369) states that the current attention for OJT: (a) to increase the flexibility of learning programs in the workplace, (b) to transfer of classroom-based learning, since work site and learning site are identical, (c) to changing nature of work provides more possibilities for the integration of learning and working. Furthermore according to Doug in Gonzi (1998: 222) conceptualization of competence requires a holistic approach which integrates knowledge and skills with realistic workplace practices. On-the job training have purposes to bring nearer between learning in the classroom and in the workplace.

Furthermore Rauner (2008: 752) states that an empirical analysis of vocational work concentrates on those structures in the empirical reality of work that are less affected by the so-called half-life of knowledge: in contrast to the rapid change of the technical elements of the work system, the goals to be achieved through the technical means as utility values are not subjected to such swift change. So, to get a skill with realistic workplace practices, students must conduct on-the job training in the industry.

Fletcher (2009: 100) found that secondary school curriculum tracking was significantly related to occupational earnings. In fact, students from the CTE track were expected to have higher earnings than their general track. Further, those in the dual track were expected to have higher earnings in comparison to those in the general track.
Walsh (2008:3) found that theory of vocational personalities and work environments may contribute to an understanding of subjective well-being. Vocational Secondary School must proactive to improve the interrelationship with industries by conditioning the attitudes and work discipline of students as well as had even more industry relationship.

E. Preliminary study

Preliminary study has been conducted by researcher in the Yogyakarta Mercedes Benz Training Centre, in the Yogyakarta State 2 of Vocational Secondary School, and in the Yogyakarta Certification Body for Automotive Technician Profession/CBATP (Lembaga Sertifikasi Profesi Teknisi Otomotif/LSPTO) to get an integrated competence-based assessment model that recognized by industry.

a. Yogyakarta Mercedes Benz Training Centre

CBA model is an integrated model of training programs and competency-based assessment. The participants attend a training program for one year, both theory and practice, including some aspects on behaviour also investigated starting from early in the morning until they go to bed because they are accommodated in dormitories. One class is not more than 20 people. Participants usually come from Secondary school and some from the VSS. During the first six months they were trained in the training centre, and then for 3 months they were followed on-the-job training in the automotive workshop and were always accompanied by the instructor. At the end of the training program, participants would take the test both theory and practice. In this test the participants were given the opportunity to re-take the test again if they failed. For those who successfully follow this program will be given a certificate, and almost all graduates found a job, either in the Mercedes Benz workshop or other workshops.

b. Yogyakarta CBATP

As the only certification body legalized by the Government, Yogyakarta Certification Body for Automotive Technician Profession/CBATP has done the competency test for vocational students, teachers, lecturers, and mechanics. Principally, anyone can take the competency test to obtain a certificate. Valid certificate is issued nationally, but not all companies, especially in the field of
automotive, recognize the validity of the certificate, for example Mercedes Benz Company. The CBATP Assessors come from industries and teachers. If the assessors come from industry, they must have experience in the field for at least 5 years; follow the methodology of training competency test conducted by the National Board of Professional Certification/NBPC and pass as assessors by NBPC. When assessors come from vocational school, they must have certificate competence and of course follow the methodology of training competency test conducted by the NBPC and pass as assessors by NBPC.

c. SMK Negeri 2 Yogyakarta

As one of the formal vocational education institutions, VSS has a curriculum, facilities, teaching staffs, including teaching methodologies and test competence technique. The students studied for 3 years and starting from the first level, they are trained skill programs appropriate to their interest and talents. Learning materials consist of normative components, adaptive and productive. In the first and second year, they fully study in the classroom. While at third level during the 3.5 months they learn in the workshop / industry (on-the-job training). At the end of their studies, they must take theory and practical exams. Some theoretical subjects and vocational subjects are tested nationally. Some assessors are invited to participate in the implementation of vocational exam. For students who pass the exam will receive a degree and a certificate of competency signed by the school principal.

Integrated Competence-Based Assessment/ICBA

Figure 1 illustrates the conceptual framework of the study. There are four primary topical areas that were discussed in this literature review. The figure also illustrates the relationship of the four primary topic areas to the successful Vocational Secondary School in Yogyakarta in which the overall students are recognized by industries.
From the literature review and framework, to improve the quality of competency-based assessment it can be done through the implementation of curriculum development, competency-based training, and on-the-job training that is adequate. Curriculum development in vocational school may be performing well if it is done by involving industries. Curriculum development is done by analyzing the competencies needed by the world of work.

Competency-based training in vocational schools should be done correctly. CBT has the right to learn according to the principles of competence standards of industry, flexibility, mastery learning, using various means and media of learning, and based on the ability of individual students.

On-the-job training should be based on agreements between schools and industry about the curriculum that will be implemented. Curriculum that has been synchronized between schools and industry becomes a key point to successful OJT program. What is learned when students follow the OJT is what he or she will face when he or she gets a job later. OJT Program is a method to realize the concept of link & match. It is an effort to meet the industrial needs. OJT program will be succeeding when the vocational secondary school has a good industrial relationship.

Competency-based assessment is a consequence of the implementation of competency based training. Integrated CBA model is implemented by combining the input and the learning process. Learning inputs in this regard is to develop appropriate curriculum needs of the industry. The learning process is to include the implementation of competency-based training and OJT program.

When CBT and OJT programs are implemented well on vocational schools, the students will have a good knowledge and skills according to industrial needs. They will
be successful if they follow the competence-based assessment/CBA conducted by independent institutions. That could happen, because the students who have attended CBT and OJT programs correctly will have a good knowledge and skills appropriate to industrial standards.

F. Conclusion

The result of assessment process in the Vocational Secondary School depends on the curriculum development, implement of competence-based training and on-the-job training. This study is used to improve the performance of the school and the good student competencies. The best students who are qualified at knowledge and have skill-based in the workplace will get a national certificate.

References


**Budi Santosa**, Teacher at Yogyakarta 2nd State Vocational Secondary School, Student in Graduate School of Yogyakarta State University, Automotive Assessor in Yogyakarta Certification Body for Automotive Technician Profession/ CBATP (Lembaga Sertifikasi Teknisi Otomotif/LSPTO)