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# Industrial-based competency and expertise assessment: study of management assessments at smk center of excellence and vocational education and training (vet)

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**ABSTRACT**

Vocational education must be able to establish a good working relationship with the world of business, industry, and work. Sustainable and mutually beneficial cooperative relationships between the industrial world and educational institutions must be connected simultaneously. To achieve this, industry-based competency and expertise assessment is needed by involving industry practitioners as an examination team. This study aims to deepen the management model of industry-based competency and expertise assessment in Vocational Education and Training (VET) and Center of Excellence Vocational Schools. The approach in this study uses a qualitative approach with field research methods conducted at SMK YPM 3 Taman and a literature review on research related to assessment in Vocational Education and Training (VET). The type of research uses the type of case study and text analysis. Data collection techniques used participant observation, unstructured interviews classified as in-depth interviews, and documentation review. Data analysis techniques used modified analytic induction techniques and Miles' interactive model data analysis techniques. While checking the validity of the data through credibility, dependability, confirmability, and transferability. The results of this study show that the apprenticeship scheme and the requirements for the implementation of competency and expertise assessment in vocational schools of expertise centers (SMK-PK) are divided into two assessments, namely: internal competency and expertise assessment with productive teacher assessors as examiners and external competency and expertise assessment with industry practitioners as examiners. Meanwhile, the management of industry-based competency and skills assessment in vocational education and training (VET) is based on competency-based training (CBT).

**Keywords:** *Assessment, Industry, SMK Center of Excellence, Vocational Education and Training*

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## INTRODUCTION

Vocational education is one of the sectors in the scope of education that aims to produce competent human resources and experts in their fields (Lytvyn et al., 2020; Spöttl & Windelband,

2021; Suharno et al., 2020). However, the implementation of vocational education faces several crucial challenges that hinder acceleration. One of them is the high unemployment rate among vocational education graduates (Dinatri, 2019), which makes it difficult for them to find jobs that match their expertise (Nurtanto et al., 2020). This is contrary to the basic concept of vocational education and training, which should prepare graduates who are ready to enter the workforce (Brown et al., 2017; Rojewski, 2009). Vocational education must be able to answer the needs of business, and industry and work for human resources based on the required expertise (Moses, 2016). The expertise offered by vocational education must be by the market share of human resource needs (Lawitta et al., 2017). Therefore, vocational education must be more connected with the industrial world and requires active involvement from various related parties so that graduates can be easily accepted in the labor market (Retnowati et al., 2018; Rintala & Nokelainen, 2020).

There are differences in the vocational education model in various countries. For example, vocational education in Australia is centered on vocational education and training (VET). Although in 2016 there was a crisis, the VET qualification system led to fragmentation of knowledge and skills because it consists of competency units and a fragmented qualification system on training packages developed by industry (Wheelahan, 2016). In Indonesia, vocational education is broadly grouped into two education models: formal and non-formal education (Watrianthos et al., 2022). Formal education is divided into two formats of educational institutions, namely in the lowest stage through vocational high schools (SMK) and the middle to upper stages through vocational colleges. Meanwhile, non-formal education is obtained through courses or training that are officially verified by the Indonesian government. To support vocational education that establishes a continuous cooperative relationship with one of the industrial partners, the government launched the SMK Center of Excellence program for both private and public Vocational High Schools (SMK) that have met the criteria and passed the selection stage of the program (Soeprijanto et al., 2022).

Meanwhile, vocational education in European countries such as Eastern Europe in Estonia still has challenges such as economic development and the labor market (Musset et al., 2019). The competencies offered in vocational education in Estonia are based on the skills required by industry and the world of work. The shifting needs of competencies and skills of human resources follow the pattern of global economic and industrial development. While Russia is generally pursued through Vocational Education and Training (VET), which is an official institution and has been verified by the government. Special attention is paid to the presentation of a heterogeneous vocational training offer aimed at different audiences, including newly created institutions conditioned by individual professional changes (Zolotoreva & Oleynikova, 2014).

Vocational Education and Training (VET) serves as the development and application of knowledge and skills for middle-level jobs required by society over time (Moodie, 2002). Wellington argues that vocational education is technocratic, specific, practical, and managerial while general education is democratic, egalitarian, critical, and collaborative (Aditomo, 2019; Wellington, 1993). Vocational Education and Training (VET) is also based on occupational levels, making it subject to shifts in occupational hierarchies and economic structures (Moodie, 2002).

Research on vocational education in Russia was also found by Olga V. Borisova, et al. They managed to find special attention paid to the prospects of VET development in Russian higher education institutions. Finally, they proved that it is necessary to take into account the specifics of professional development programs, retraining, and business education when using techniques and approaches to the learning process and knowledge evaluation in Russia (Borisova et al., 2016). Vocational education and training (VET) can be an instrument of social engineering to achieve goals such as accelerating economic growth, reducing youth unemployment, and benefiting from economic globalization (Psacharopoulos, 1997). Skepticism about the effectiveness of vocational education and training (VET) should be removed. Vocational education and training (VET) are capable of meeting the general demand for labor and VET is general rather than specialized training (Eichhorst et al., 2013).

The model of vocational education and training (VET) in terms of linking with global economic and industrial development should be adopted in Indonesia. The competencies and skills required by the industry must match the competencies and skills offered by vocational education. It is the identity of vocational development that is a key aspect in playing an integral role in learning and skilled students (Klotz et al., 2014). The concept has the advantage of absorbing specific job-relevant skills and making the workforce better prepared for specific jobs as well as making themselves more productive (Tilak, 2003). To achieve this, industry-based competency and expertise assessment as a vocational identity aims to form a competent and skilled workforce.

The operational management assistance focuses on competency and expertise assessments for final-year students as well as teacher and student internship programs (Gervais, 2016), even if students refer to different teachers, there are other reasons to support interpreting teaching quality as a school-level property (Aditomo & Köhler, 2020). Industry-based competency and skills assessment is a summative assessment of graduation and certified examinations several public and private vocational schools have not been able to implement competency and skills assessment as a summative assessment based on industry standards (Vaporizki, 2019). So that the test is only limited to assessments carried out by schools with teachers as examiners. The assessment does not provide enough experience for students and there is no synergy between schools and cooperating industries.

There have been many studies on competency and expert assessment, including research by Katharina Wolf on "Leniency and halo bias in industry-based assessments of student competencies: a critical, sector-based analysis". The results show that the placement of student internships in the industry will provide opportunities for students to apply skills, knowledge, and experience in the real field. However, it was found that there was a bias in measuring student performance by industry supervisors. The industry supervisor's assessment of student competence is close and very positive. This was due to different types of placement sites applying different standards when assessing student performance. Three statistically different placement types (small business, non-profit, and professional) were identified, which influenced the strength and risk of bias in the assessment results (Wolf, 2015).

Another study on "Needs Analysis for Developing Project-Based Learning Outcomes Assessment Models in Electricity topic at the Center of Excellence Vocational High School" surveyed 10 vocational schools of the Center of Excellence program (SMK-PK) in DKI Jakarta, West Java, Banten, and Lampung. The results stated that vocational schools need guidebooks related to project-based learning assessment. In addition, most teachers need industry involvement in making project-based learning assignments (Soeprijanto et al., 2022).

This study has differences and novelty from these studies. The previous two studies focused on assessments involving industry practitioners as performance and project assessment partners. Meanwhile, this study will focus on the pattern and scheme of managing industry-based competency and expertise assessment in the final grade involving industry practitioners as partners. This research was conducted in one vocational high school program center of excellence (SMK-PK) in Sidoarjo Regency. Through this research, a model of industry-based assessment of competencies and skills used in SMK-PK that is relevant to current industry needs will be found. Building strong cooperation with companies and industries to understand their competency needs is also supporting data that will be found in this research. In addition, this research also juxtaposes the management pattern with the management pattern of industry-based competency and skills assessment in Vocational Education and Training (VET).

## METHOD

The approach in this study uses a qualitative approach with two different methods, namely field research methods with the type of case study in vocational schools. The research location is SMK YPM (Ma'arif Education Foundation) 3 Taman, the school was chosen because it is one of the best SMK-PK (Vocational High School Center of Excellence) in Sidoarjo Regency which is located at Jl. Raya Ngelom Megare No.30, Ngelom, Taman District, Sidoarjo Regency, East Java Province. The SMK is also a vocational school whose mission is to produce graduates who adhere to ahlussunnah wal jama'ah. This means that the skills taught in the vocational school

not only reflect Islamic religious values, but are also to the needs and demands of the labor market and the needs of human resources in society, to create graduates who are not only competent in religious aspects, but also ready to contribute to the world of work by existing demands (Karim, 2020). The second method used in this research is the literature review method with text analysis techniques on research literature on vocational education and training (VET). VET literature is focused on aspects of competency assessment and industry-based expertise applied in VET.

Primary data sources come from informants who can provide extensive information, such as the Principal, Vice Principal for Curriculum, Vice Principal for Public Relations, Head of Patrol, School Assessor, and Company/Industry Practitioners who work with schools, as well as several good students from the class of twelve (XII). Secondary data sources come from documents on the implementation of competency and expertise assessment, attendance of students in several activity programs, and various references related to the problem and research focus.

The data collection techniques in this study used participant observation, semi-structured interviews classified as in-depth interviews, and documentation review of the implementation of assessment activities. Semi-structured interviews were conducted to collect data concerning the questions in Table 1.

Table 1. Interview Questions

| No. | Questions |
|---|---|
| 1 | How is industry-based skills and competencies assessment managed at SMK YPM 3 Taman? |
| 2 | What are the requirements to be able to take part in industry-based expertise and competency assessments? |
| 3 | How is the industrial internship scheme determined by the school and industry practitioners? |

The data analysis technique uses a modified analytic induction technique (Ulfatin, 2015) and Miles, Huberman, and Saldana interactive model data analysis techniques, namely data condensation, data presentation, and verification/conclusion drawing (Miles et al., 2014; Ridder et al., 2014). Checking data validity through credibility, dependability, confirmability, and transferability (Creswell & Poth, 2016).

## RESULTS AND DISCUSSION

Data on the apprenticeship scheme and the requirements for implementing competency and expertise assessments at SMK YPM 3 Taman were obtained through interviews, observations, and documentation studies. The following is observational data on internship schemes and the implementation of industry-based competency and expertise assessments:

Table 2. Observational Data

| No. | Aspects / Activities Observed | Implemented | |
|---|---|---|---|
| | | Yes | No |
| 1 | Apprenticeship schemes are developed based on collaboration and cooperation between schools and industry practitioners. | ✓ | |
| 2 | Schools and industry practitioners work together to develop industry-based expertise and competency assessment schemes. | ✓ | |
| 3 | Schools and industry practitioners work together to determine the material tested in the assessment of industry-based skills and competencies. | ✓ | |
| 4 | The results of discussions and collaboration between schools and industry practitioners on apprenticeship schemes and industry-based assessment of skills and competencies are contained in the school's strategic plan. | ✓ | |
| 5 | Productive subject teacher assessors become examiners in the internal industry-based assessment of skills and competencies. | ✓ | |
| 6 | Industry practitioners become examiners in external industry-based expertise and competency assessments. | ✓ | |

The interview stage was conducted three times with different informants but still in the same position. Researchers conducted interviews with school leaders, industry practitioners, heads of linear programs (Kaproli), productive subject teacher assessors, and grade 12th students.

Apprenticeship Scheme and Requirements for Competency and Expertise Assessment at Vocational School of Expertise Center (SMK-PK)

There are 35 businesses, industries, and workplaces that have signed a written memorandum of understanding (MoU) The existence of a memorandum of understanding is one indicator of the success of vocational schools in establishing cooperation (Baitullah & Wagiran, 2019). The memorandum of understanding includes the fieldwork practice (internship) of SMK YPM 3 Taman students at the business, industry, and workplace. Later, the internship site instructor is asked to provide student attendance reports to the supervising teacher, provide student direction in compiling fieldwork practice reports (PKL), and provide student practical work assessments and feedback on student competency and expertise progress.

Fieldwork practice (PKL) aims to provide experience for students in applying real skills and knowledge in the field. Internship (field work practice) is required in every vocational high school by cooperating with the world of business, industry, and work (Surjono et al., 2023; Wolf, 2015). As a center of excellence school (SMK-PK), based on the instructions of the head of SMK YPM 3 Taman, the internship site for students is chosen by the school. This aims to adjust the place of industry and work based on the competencies and expertise possessed by students. Some vocational schools apply standards in establishing cooperation by placing their students in business and industry. To build synergy with the industry, vocational schools must find the right internship practice that is relevant to the organized expertise program (Firdaus, 2012). It must be

underlined that so far many vocational schools have not found the right internship practice that is relevant to the expertise program.

Observations and interviews with the head of public relations and the head of the linear program found the fact that in some internship places, there are student internship practices that are not appropriate and relevant to the expertise program they have. With a large number of students, SMK YPM 3 Taman tries to establish cooperation with the world of business, industry, and work ranging from micro, small, and medium enterprises (UMKM), educational institutions, and government offices to large well-known companies. Based on this fact, the school applies an internship scheme based on student skills (ranking during the first year) as well as special requirements requested by the internship site. This aims not to disappoint the industry regarding the competence and expertise of the students. However, in practice, some internships give practical assignments to students that are not by the competencies and expertise they have.

To minimize the possibility of incompatibility of internship practice assignments with the competencies and expertise possessed by students, SMK YPM 3 Taman implements two policies, namely; First, selecting internship sites based on class rank in each department of expertise. Students who are placed in large well-known companies are selected based on the top rank in each required expertise department. Meanwhile, students who have a bad record at school, acute chronic illnesses, and students who experience learning delays are placed in internships at school. The purpose of this is to facilitate school monitoring of the students concerned and to provide special guidance to those concerned. Although there is an element of discrimination, almost all vocational schools set this as the standard for student internship placement. Second, maximizing the PKL supervising teacher in monitoring student internship practices by cooperating with industry practitioners or the related world of work. Supervising teachers are required to provide weekly internship reports to the Head of Public Relations regarding attendance, student activeness, and problems experienced by students. Students can apply to change internship places with the approval of the supervising teacher and the deputy principal for public relations.

The internship program or fieldwork practice is carried out for 6 months for students of SMK YPM 3 Taman. The implementation of the internship which is carried out for one semester is divided into 2 waves, namely the first wave in the odd semester with a total of 4 classes and the second wave in the even semester with a total of 5 classes. The implementation of a long enough internship is based on government policy through the 8+i formula, namely to achieve the goal of superior vocational schools, industry-based fieldwork practice is carried out for at least one semester (Soeprijanto et al., 2022).

If we look at the indicators of the success of vocational schools based on the decision of the Ministry of National Education to establish cooperation, then all of these indicators have been met by SMK YPM 3 Taman as one of the vocational schools of the center of excellence program

(SMK-PK) in Sidoarjo district. These indicators include 1) The establishment of a special public relations team or cooperation team that aims to establish and build partnerships, 2) The implementation of cooperation through exploring related parties for input before implementing the program, 3) The realization of a cooperation contract through a memorandum of understanding (MoU), 4) The realization of various activities within the framework of successful implementation of the program such as the exchange of students, teachers, and school leaders to add insight and competence and teacher internships to other institutions to improve competence (Baitullah & Wagiran, 2019).

The main point of SMK YPM 3 Taman was to realize a cooperation contract through a memorandum of understanding (MoU) with 2 large industries in Surabaya, namely iNews TV Surabaya and PT Garuda Food Putra Putri Tbk. Through the MoU, SMK 3 YPM Taman can carry out industrial visits, teacher internships, and guest teacher visits for industry practitioners and provide certified competency and expert assessments as summative assessments for the final class as external examiners.

Competency and expertise assessment with industry practitioners as examiners will be carried out if students have fulfilled the conditions set by the school. These conditions include: 1) Completing the internship, 2) Completing the internship report, 3) Completing all productive subject assignments, 4) Passing the religious practice exam, and 5) Internal competency and expertise exams. The implementation of internal competency and expertise exams is carried out in even semesters in the final class after the implementation of the religious practice exam. These requirements are inseparable from the policies of the foundation that oversees SMK YPM 3 Taman, namely the Ma'arif Sepanjang Educational and Social Foundation (YPM). As an Islamic-based school, passing the religious practice exam is an absolute requirement to be able to take part in internal competency and expertise assessments. The following is a brief scheme of the requirements that students must carry out to take part in industry-based competency and expertise assessments:

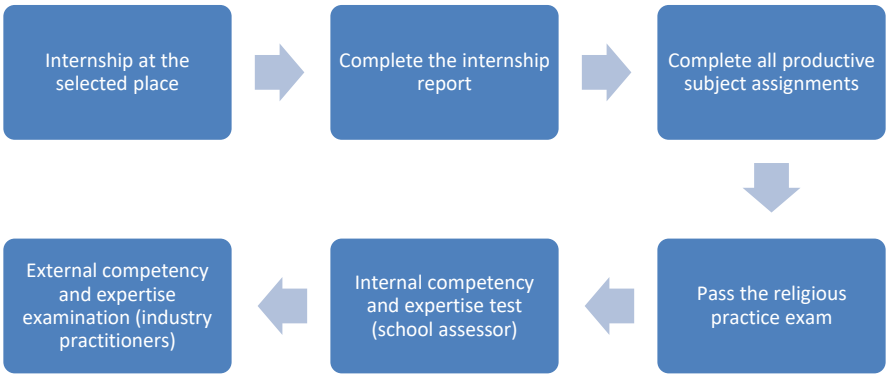


Figure 1. Industry-based Competency and Skills Assessment Scheme

Management of Industry-Based Competency and Expertise Assessment in Vocational High School Expertise Center (SMK-PK)

As one of the vocational high schools that successfully participated in the Center of Excellence program (SMK-PK), SMK YPM 3 Taman continues to improve in the management of the institution, especially in terms of establishing cooperation with industries that are by the competencies and expertise offered by the school. Observation data shows that SMK YPM 3 Taman consistently registers as a center of excellence vocational high school program from 2020 to 2023. However, SMK YPM 3 Taman only passed the selection and was accepted into the SMK-PK program in 2023 based on the Decree of the Director General of Vocational Education of the Ministry of Education and Culture number 33/D/O/2023. A review of the document of the school center of excellence (SMK-PK) in 2023 stated that SMK YPM 3 Taman successfully collaborated with four well-known industrial partners, namely PT Digital Solusi Master, PT Panal Kreasi Nusantara, PT Telekomunikasi Indonesia Tbk and PT Elang Medika International Television (iNews Surabaya). These industry partners collaborate with SMK YPM 3 Taman in the field of Arts and Creative Economy.

There are three majors of expertise offered by SMK YPM 3 Taman, which include Visual Communication Design (DKV), Business Institution Office Management (MPLB), and Institution Financial Accounting (AKL). There are a total of eight LSP (professional certification body) certified teacher assessors conducted by the Jakarta National Education Standardization Agency (BNSP). An interview with the head of the linear program shows that there is one teacher who has been certified to pass the qualification exam and is recognized as a coach (workplace trainer) by the Chamber of Commerce and Industry (KADIN) in Germany. This shows that the quality of teacher resources at SMK YPM 3 Taman is well organized. The school plays an active role in facilitating and accommodating all teacher activities aimed at improving their competence and expertise (Hall & Hord, 1987; Kusaeri et al., 2022; Lunggito et al., 2015).

Realizing competency and expertise assessments or what is commonly referred to as industry-based competency and expertise exams, SMK YPM 3 Taman carries out competency and expertise assessments in two stages. The first stage is an internal competency and expertise assessment (UKK Internal) with assessment participants being all twelfth-grade (XII) students. The assessment examiners are directly from productive subject teachers who have become assessors or in quotes have been certified by LSP-BSNP Jakarta. The material tested in the competency and expertise assessment for visual communication design (DKV) majors is about broadcasting and video presentations that have been made individually. The material for accounting and financial institutions (AKL) is about finance, while for office management and business institutions (MPLB) is about archives, correspondence, and leadership agenda.

The internal test assessors will select fifteen students in each class based on the highest score. Later, the selected students will take part in external competency and expertise assessments with industry instructors who will be able to come to school as examiners. The limitation regarding the number of students who can take the competency and expertise assessment is that the industry is not able and willing to test all students. In addition, the school also anticipates students who are late in learning and have deficiencies in public speaking. One student stated that students are very lacking in mastering good and organized public speaking because the material is not taught. Industry practitioners also stated that some students in the external competency and skills assessment lacked public speaking skills.

The implementation of external competency and expertise assessments with industry practitioners as examiners is carried out after internal competency and expertise assessments. Two industries collaborate with SMK YPM 3 Taman in the assessment of competencies and expertise, namely PT. Televisi Elang Medika Internasional (iNews Surabaya) as an industry practitioner examining visual communication design (DKV) majors and PT. Garuda Food Putra Putri Jaya Tbk is an industry practitioner examining institutional financial accounting majors (AKL) and office management and business institutions (MPLB) majors. The institutional financial accounting major (AKL), was tested by industry practitioners in the personnel and public relations resource section, while the office management and business institutions (MPLB) major was tested by industry instructors in the HRD section and recruitment staff.

The material tested in this external assessment of competence and expertise is material that has been agreed upon by relevant industry practitioners. Based on the results of discussions between productive teacher assessors and industry practitioners of PT Elang Medika International Television (iNews Surabaya), the external competency and expertise assessment material for visual communication design (DKV) majors is divided into five themes. The five themes are making school/company profile video advertisements, making public service advertisement videos and posters, making commercial advertisement videos and posters, making short films, and interactive learning media. One chosen theme must be presented in front of industry practitioners directly. Meanwhile, the external competency and expertise assessment material for accounting and financial institutions (AKL) majors is a presentation on finance. Then the external competency and expertise assessment material for office management and business institutions (MPLB) majors is a presentation on archiving, correspondence, and leadership agendas.

Industry practitioners who test external competency and expertise assessments are still accompanied by productive teacher assessors because the objectivity of practitioner assessments is less by teacher assessment criteria. Students who pass the competency and expertise assessment by industry practitioners will get a certificate of their respective expertise which is stamped and

signed by examiners from related industry practitioners. The following is a scheme of internal and external assessment of competence and expertise:

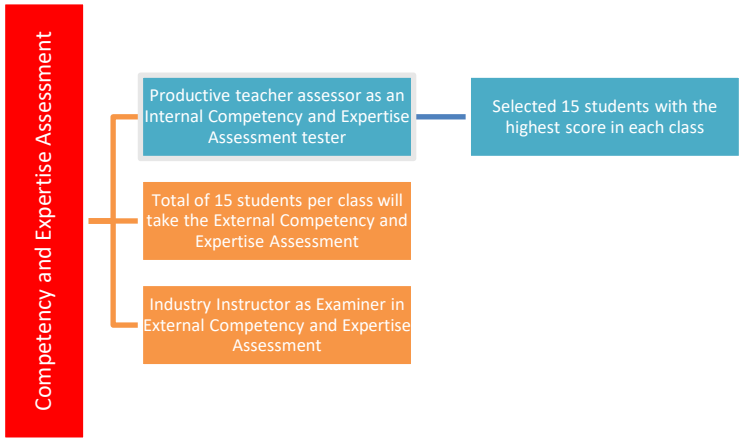


Figure 2. Competency and Expertise Assessment Scheme (Internal and External)

The internal and external competency and expertise assessment model is the result of discussions and exploration in the implementation of related cooperation for input before implementing the program by industry instructors. Discussion and exploration in implementing programs with industry instructors is one indicator of the success of vocational schools in collaborating with industry (Lan, 2020). The program is structured and scheduled annually in a curriculum that is compiled and developed by SMK YPM 3 Taman in collaboration with industry practitioners. The programs that are arranged only aim to provide the maximum possible competence and expertise to students so that later they can fill the need for skilled and competent human resources in their fields both in the business world, industry, and work.

To improve students' competencies and work skills with the market share of human resource needs, the government 1989 launched a link-and-match program (Tamrin et al., 2018). For several decades, the program has not been able to achieve its goals if the statistical data results show that the high unemployment rate is accompanied by data that many vacancies are not filled and the quality of the workforce is less competent (Soeprijanto et al., 2022). The results of the data analysis indicate that there is a mismatch between vocational education and the demands of the industrial world (Ali et al., 2020).

In response, the government issued the 8+i formula to achieve the goals of superior vocational schools with details: 1) The curriculum is compiled by schools together with industry in line with strengthening aspects of soft skills, hard skills, and work characteristics according to the needs of the world of work, 2) Learning is pursued based on real projects from the world of work (project based learning), 3) Increasing the number and role of teachers or practitioners from industry and

experts from the world of work, 4) Industry-based field work practice for at least one semester; 5) For graduates and for teachers or instructors, competency certification must be in accordance with the standards and needs of the world of work, 6) Teachers or instructors need to emphasize updating technology through regular training, 7) Conduct applied research that supports teaching factory based on cases or industry needs, and 8) Commitment to the absorption of graduates by the world of work (Soeprijanto et al., 2022; Vachruddin et al., 2022).

In 2021, the 8+i link and match formula developed into a priority program of the Directorate General of Vocational Education, namely the Vocational High School Center of Excellence (SMK-PK) program (Kemendikbudristek, 2021). The formula is also a general requirement to become a vocational high school center of excellence (SMK-PK). The requirements also do not limit the SMK majors that can participate in the program. In addition, special requirements are related to the selection of industrial partners and SMK-PK must implement a new paradigm, namely learning that is oriented towards strengthening competence, character, and work culture (Fathurrahman, 2021). Until mid-2023, there were 1123 SMK Centers of Excellence in Indonesia (Kemendikbudristek, 2023).

Management of Industry-Based Competency and Skills Assessment in Vocational Education and Training (VET)

The development of VET has become a strategic issue in building human personality as individuals who are socialized and able to compete nationally and internationally. The current decade has seen a significant return of interest in vocational education and training (VET) among the international policy community (McGrath, 2012). The challenges faced in this global era by various organizations are oriented towards practical and short-term goals in meeting the needs of the world of work, its concepts, and implications. VET policy development needs to link with other policies and issues such as education policy, youth policy, economic policy, corporate policy, and other policies (Syahrul, 2013). The implementation of VET can be done through formal education and training carried out by secondary schools and universities, as well as non-formal or pre-employment training that can be carried out by the community or industry to produce certain skills (Rusmulyani, 2021).

Before industry-based, it is commonly known as Competency Training (CBT) which turns out to be an innovation from VET in Europe, Australia, Germany, and Asia. CBT training can not only be applied in formal institutions but can also be applied to non-formal institutions in human resource development (Rusmulyani, 2021).


Figure 3. Competency Based Training
Source: (IRSEC, 2017)

CBT is based on a disaggregated view of the workplace, such that to "be competent" consists of a collection of workplace tasks and roles that have been defined independently of each other in units of competency. And, those units of competence are further broken down into different components. CBT is based on a highly fragmented, atomistic, and instrumental view of knowledge. In describing discrete workplace requirements, CBT assumes that the same unit of competency can be used and described independently of context (Wheelahan, 2016).

Australia has developed and implemented a competency-based training system over the past decade or so. Competency-based training is perhaps the most important feature that distinguishes Australian VET from most other VET systems in the Asia Pacific region. Competency-based training is aimed at trying to make VET programs much more relevant to meet the needs of the Australian industry and companies (Robinson, 2000). Vocational education has become an instrument in Australia to create a more effective workforce in an era of technological change and fierce international competition (Cornford, 1999). CBT is therefore intended to align VET with Australia's economic policy objectives, and the way to achieve this is by using CBT to directly align training outcomes with specific job requirements. Therefore, one way to measure the extent to which this has been successful is to measure the extent to which graduates secure jobs related to their qualifications (Wheelahan, 2016).

Even as far back as 2005, employer associations were pressing for further changes to the Australian government-funded vocational education and training (VET) system with the focus highlighted on employable skills and critical technical skills shortages in both traditional and emerging sectors. But ultimately found unpersuasive employer associations' insistence that the VET system creates employees who embody their particular understanding of employability skills. In adopting the concept of employable skills, associations have signaled a further decline

in employer responsibility for VET while hoping to maintain dominant influence over content, delivery, and assessment through publicly funded schemes (Sheldon, 2005). However, in 2014, a study of government-led partnerships between schools and industry, commissioned by the Queensland Gateway to industry schools and involving more than 120 schools, investigated how two commonly used partnership principles were understood by Gateway to industry partners and led to twelve school-industry partnerships from four industry sectors being analyzed in terms of efficiency and effectiveness principles derived from the public-private partnership literature. It was found that some evidence of partnership activities related to efficiency and effectiveness could be assigned to Gateway school projects. The implication is that school-industry partnership stakeholders will benefit from the application of partnership principles related to implementation and management to ensure partnership sustainability (Pillay et al., 2014).

In contrast, Singapore's VET structure is very simple with two institutions, the Institute of Technical Education, which offers certificate and higher certificate level vocational training, and the Polytechnic, which offers diploma, advanced diploma, and specialist diploma level para-professional training.

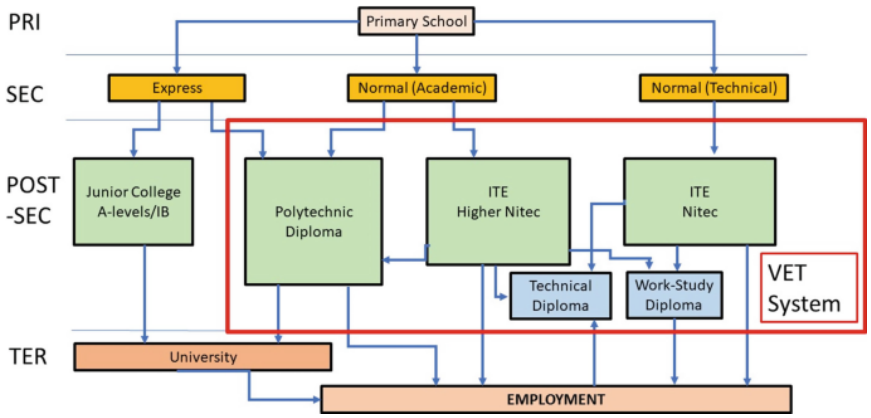


Figure 4. Vocational Education and Training in Singapore
Source: (Varaprasad, 2022)

The system is designed to be very open with multiple upward pathways for students to continue their training and education up to university. Although the government is the main provider of training and education. However, the institutions are relatively autonomous and governed by boards whose members are appointed by the government. The institutions not only offer programs but are also authorized to award their qualifications, which means they set and implement national standards of training and education. Therefore, constant and rapid changes in the labor market

pose a fundamental challenge to VET institutions in terms of faculty readiness, curriculum changes, and facility upgrades (Varaprasad, 2022).

In the European region, the management of industry-based assessments is also carried out in the Basque Country and Navarre (Spain), industrial regions where local governments have made a strong commitment to strengthening vocational studies. Following Rosenfeld's classification of the missions of VET institutions (formal education, continuous training, and enterprise services), Albizu et al. analyzed the relationship between such institutions and industrial SMEs in the Basque Country. They state that vocational training centers are important agents in the regional innovation system, contributing through their main channels to improving the competitiveness of firms and stimulating their innovation processes (Albizu et al., 2011). Furthermore, a study by Lavía, Olazaran, Albizu, and Otero (2012) showed that firms that conducted more ongoing training with VET centers expressed greater agreement on the effects of training on workers' motivation, productivity, and contribution, although the level of agreement on the direct effects on innovation of the ongoing training offered by these training centers was somewhat lower. More recently, Lavía, Otero, Albizu, and Olazaran (2016), using a new sample from the Basque Country, have studied in more detail the presence of VET employees in the UKM of industry and their participation in innovation activities.

The current paradigm shift shows that the implementation of VET is not only in formal institutions but can also be implemented in non-formal institutions so that the community as individuals can work. How the community can develop itself into a dignified human being in managing natural resources based on local wisdom values? Changes in the phenomenon of today's workplace can be influenced by four characteristics, namely First, from a shift in quantity to quality. Second, there is an increase in the amount of human resource competition. Third, data processing with ICT (information and communication technology) or multimedia-based learning. Fourth, the restructuring of employee work organizations (Rojewski, 2002). For this reason, vocational education and training (VET) is expected to offer some skills to improve the marginalization of young people in entering the workforce (Tukundane et al., 2015). Vocational technical education and training is the study of science and technology that emphasizes the acquisition of practical skills, attitudes, understanding, and knowledge in various sectors of life (Dave et al., 2011).

Evaluation of the application of Industry-Based Competency and Skills assessment in Vocational Education and Training (VET) can be done by considering several factors, such as consistency with industry standards, that industry-based competency and skills assessment must be consistent with applicable standards in related industries. The evaluation must ensure that the assessment is in line with industry needs and developments so that students can have relevant skills and be ready to work (Sarastuen, 2020). Then it is necessary to consider the clarity and accuracy of the assessment instruments used in VET. Assessment instruments must be able to measure students'

skills and knowledge accurately and objectively (Francisco & Loeb, 2020). Furthermore, the quality of assessment conducted in VET should cover various aspects of skills, including practical skills, technical knowledge, and professional attitudes. Assessments should be honest, fair, and transparent (Sarastuen, 2020). In addition, it is necessary to assess the extent to which assessments are relevant to the needs of students and industry. Assessments must be able to identify and measure the skills required for a career in specific industries so that students can have skills that can be applied well in the world of work. There is also a need to address the sustainability of the implementation of industry-based competency and skills assessments in VET. It is important to evaluate whether or not these assessments are widely adopted and integrated into the VET curriculum as a whole (Francisco & Loeb, 2020). It is also important to involve feedback from various stakeholders, including students, teachers, assessors, industry representatives, and other relevant parties. Their opinions and experiences can provide valuable insights into the effectiveness and impact of assessments in preparing students for the world of work.

## CONCLUSION

Vocational education must be required to establish a good working relationship with the world of business, industry, and work. Sustainable and mutually beneficial cooperative relationships between industry and educational institutions must be connected simultaneously. The operational management assistance focuses on teacher and student internship programs as well as competency and expertise assessments for final-year students as summative assessments for graduation and certified examinations. As a center of excellence school (SMK-PK), SMK YPM 3 Taman carries out competency and expert assessments in two stages, namely the first stage is the internal competency and expertise assessment (UKK Internal) with assessment participants being all twelfth-grade students with productive teacher assessors as examiners. In the second stage, the internal testing assessor will later select fifteen students in each class based on the highest score. Later, the selected students will take part in an external competency and expertise assessment with industry instructors who will be able to come to school as examiners. Competency and expertise assessment with industry practitioners as examiners will be carried out if students have fulfilled the conditions set by the school. These conditions include completion of internships, completion of internship reports, completion of all productive subject assignments, and passing religious practice exams, and internal competency and expertise exams. The internal and external competency and expertise assessment model is the result of discussions and explorations in the implementation of related cooperation for input before implementing the program by industry instructors. Discussion and exploration in implementing programs with industry instructors is one indicator of the success of vocational schools in collaborating with industry. Before industry-based, commonly known as Competency Based Training (CBT) which

turned out to be an innovation from VET both in Europe, Australia, Germany, and Asia. CBT training can not only be applied in formal institutions but can also be applied to non-formal institutions in human resource development.

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