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Management of Work-Based Competency Testing at Vocational Schools for Light Vehicle Body Engineering

Dadan Budiman¹, Emay Mastiani²

^{1,2}Islamic University of Nusantara, Bandung, Indonesia

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ABSTRACT

Work-Based Competency Testing (Uji Kompetensi Keahlian/UKK) plays a strategic role in ensuring the competence and quality of vocational high school (SMK) graduates. However, the implementation of UKK in Light Vehicle Body Engineering programs often faces challenges, particularly the limited and suboptimal involvement of the world of work, which reduces the relevance of competency standards to industry needs. This study aims to analyze the management of work-based competency testing in vocational schools and to examine how industry involvement is integrated into each management stage. This research employed a qualitative approach using a case study design conducted at SMKN 8 Bandung and SMKN 14 Bandung. Data were collected through in-depth interviews, direct observations, and documentation studies. The data were analyzed using an interactive model consisting of data reduction, data display, and conclusion drawing. The findings reveal that work-based UKK management is systematically implemented through the stages of planning, organizing, implementing, and evaluating, with active participation from industry partners. Industry involvement from the initial planning phase to the final evaluation stage enhances the alignment between competency testing and industry standards, increases the credibility of the certification process, and contributes to improving graduate quality. The study concludes that effective work-based competency test management strengthens the link and match between vocational education and industry demands.

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Corresponding Author:

Emay Matiani

Universitas Islam Nusantara, Bandung, Indonesia

Email: abdulholik@uninus.ac.id

1. INTRODUCTION

Vocational education plays a strategic role in preparing skilled human resources who are ready to meet labor market demands. In the context of globalization and rapid technological development, vocational secondary schools (SMK) are required not only to equip students with theoretical knowledge but also to ensure that graduates possess competencies aligned

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with industry standards [1], [2]. Strengthening the alignment between education and the world of work (link and match) has therefore become a central issue in vocational education reform.

One of the primary instruments used to ensure graduate competence in vocational schools is the Skills Competency Test (Uji Kompetensi Keahlian/UKK). UKK is designed as a standardized assessment mechanism to measure students' mastery of occupational competencies based on nationally determined criteria [3], [4], [5]. Ideally, UKK functions as a quality assurance tool that reflects actual industry standards. However, in practice, several challenges persist. Previous findings indicate limited industry involvement, excessive administrative orientation, and assessment practices that are not fully aligned with real workplace demands [6]. These problems reduce the effectiveness of UKK as a mechanism for improving graduate quality and weaken its role in strengthening the link and match.

Several prior studies have discussed industry collaboration in vocational education. Research highlights that partnership with industry significantly enhances the relevance of competency assessment and graduate employability [7]. Other studies examine UKK implementation as part of quality assurance systems in vocational schools [8]. Nevertheless, these studies generally focus on policy implementation or evaluation aspects without comprehensively analyzing the management process of UKK integrated with systematic industry involvement. Moreover, empirical studies specifically examining work-based UKK management in the Light Vehicle Body Engineering program remain limited.

The Light Vehicle Body Engineering field requires high levels of practical skills, precision, and adaptation to technological developments in the automotive industry [9], [10]. The dynamic nature of this sector demands competency testing mechanisms that directly involve industry standards and practitioners. The limited research in this specific program indicates a research gap, particularly regarding how work-based competency testing is managed through structured management functions (planning, organizing, implementing, and evaluating) with active industry engagement.

From a theoretical perspective, this study is grounded in vocational education management theory, which emphasizes the application of management functions—planning, organizing, actuating, and controlling—in educational programs to ensure effectiveness and quality outcomes. It is also informed by the concept of work-based learning and industry-based assessment, which argue that competency certification should reflect authentic workplace performance standards. Integrating these theoretical perspectives provides a framework for analyzing how competency testing management can strengthen the link and match between schools and industry.

Based on the identified problems and research gap, this study aims to analyze the management of work-based Competency Testing in vocational schools offering Light Vehicle Body Engineering programs. Specifically, it seeks to examine how industry involvement is integrated into each stage of competency test management and how this integration contributes to improving graduate quality.

This research is expected to provide both theoretical and practical benefits. Theoretically, it contributes to the development of vocational education management models by integrating industry-based assessment within structured management functions. Practically, it offers strategic insights for vocational school leaders, policymakers, and industry partners in

designing more relevant and effective competency testing systems. Ultimately, the findings are expected to support efforts to enhance graduate competitiveness and strengthen vocational education quality.

2. METHOD

This study utilised a qualitative approach with a case study design. The qualitative approach was chosen to gain an in-depth understanding of the management of work-based Competency Tests (UKK) at vocational schools offering Light Vehicle Bodywork Technical Skills programmes. The case study design allows researchers to comprehensively explore UKK managerial practices in a real-world context, including the involvement of the world of work at every stage of implementation [11].

This research was conducted at SMKN 8 Bandung and SMKN 14 Bandung in the Light Vehicle Body Engineering Programme. The locations were chosen based on the consideration that both vocational schools had implemented Competency Tests (UKK) involving the world of work and had established cooperation with relevant business and industrial sectors.

The research subjects were determined purposively, including the school principal, deputy principal for curriculum or industry relations, head of the skills programme, productive teachers, and assessors from the world of work. Year 12 students were involved as supporting informants to obtain an overview of the implementation of work-based UKK.

Data collection was conducted through in-depth interviews, observations, and documentation studies. In-depth interviews were conducted in a semi-structured manner to explore information related to the planning, organisation, implementation, and evaluation of work-based UKK [12]. Observations were conducted to directly observe the UKK implementation process and the involvement of the world of work. Documentary studies were used to examine supporting documents, such as UKK documents, MoUs on cooperation with the workplace, assessment instruments, and the results and certificates of student competence.

Data analysis was conducted interactively and continuously through the stages of data reduction, data presentation, and conclusion drawing. Data obtained from interviews, observations, and documentation were analysed by grouping information based on the research focus, namely planning, organising, implementing, and evaluating work-based UKK. The analysis process was carried out simultaneously from data collection to obtaining comprehensive research findings [13].

3. RESULTS AND DISCUSSION

3.1. Results

The results of the study indicate that the implementation of the Competency Test (UKK) at vocational schools offering Light Vehicle Bodywork programmes has actively involved the world of work. The world of work not only acts as an examiner, but is also involved in determining competency standards and evaluating UKK results. This was confirmed by one of the following informants:

"UKK can no longer be solely a school matter. We always involve industry players from the outset so that the competencies tested are truly in line with the needs of workshops in the field." (KS)

Work-Based UKK Planning

During the planning stage, the school coordinates intensively with the world of work to align the competencies to be tested. UKK planning is carried out through joint meetings between the school and industry partners to develop job sheets, assessment standards, and graduation criteria. The head of the skills programme said:

"Before the UKK is implemented, we sit down with industry representatives to determine the types of work that will be tested. We adapt to developments in vehicle body technology currently used in workshops." (KPK)

Assessors from the world of work also emphasised the importance of industry involvement from the planning stage:

"If the UKK standards are not adjusted to the conditions in the workshop, graduates will be shocked when they start work. That is why we help determine the jobs that are tested." (ADI)

Table 1. Differences in the planning of the two vocational schools

No	Aspect	SMKN 8 Bandung	SMKN 14 Bandung	Description
1	Planning reference	Education Department Standards, Standard Operating Procedures	Adaptive, involving industry partners (Auto2000)	More innovative at SMKN 14
2	Test package format	Individual standard panel	Painting package differentiation: full body, motorbike, car panel	Responding to students' interests and competencies
3	Implementation Score	3	4	

The planning of UKK materials at SMKN 8 Bandung still focuses on meeting the standards set by the Education Office and school SOPs with a standardised individual test panel format. Meanwhile, SMKN 14 Bandung shows more adaptive planning by involving industry partner Auto2000 and applying differentiated test packages according to the interests and competencies of students, thereby obtaining a higher implementation score.

Organisation of UKK

The organisation of UKK is carried out with a clear division of roles between schools and the world of work. Schools are responsible for the readiness of facilities, participants, and administration, while the world of work acts as an external assessor. This was conveyed by the deputy head teacher for curriculum:

"We have clearly divided the tasks. The school prepares the venue and equipment, while the assessment is carried out entirely by assessors from the industry." (WaKS)

The results of the observation show that the UKK committee structure is organised systematically so that the implementation of the UKK can proceed according to procedure.

Table 1. Differences in the organization of the two vocational schools

No	Aspek	SMKN 8 Bandung	SMKN 14 Bandung	Keterangan
1	Model Organizing	Individual, standard test panel	Team, complete vehicle project	The UKK model at SMKN 14 is collaborative in nature.
2	The role of teachers and assessors	Teachers supervise implementation, while external assessors play a dominant role in assessment.	Teachers as facilitators, assessors evaluate the process and results	More comprehensive involvement of assessors at SMKN 14
3	Implementation score	2	4	The organisation of UKK at SMKN 14 is more optimal

The organisation of UKK at both vocational schools shows differences in the division of roles and implementation models. SMKN 8 Bandung implements an individual UKK model with a standard assessment panel, in which the role of external assessors is more dominant in the assessment. Meanwhile, SMKN 14 Bandung implements a team-based UKK model with a complete vehicle project that requires collaboration among students. In terms of roles, teachers at SMKN 14 function as learning facilitators, while assessors from the world of work assess both the **process and the results of student** work. These differences have an impact on the level of implementation of the UKK organisation, with SMKN 14 Bandung showing a higher implementation score than SMKN 8 Bandung.

Implementation of UKK

The UKK is conducted in the school's practical workshop, adopting an industrial work environment and standards. Students are tested through practical tasks that resemble real-world work. Productive teachers explain:

"The children are tested as if they were working in a real workshop. We pay attention to everything from their use of tools and precision in their work to their work attitude." (GP)

One of the students also shared their experience of participating in the UKK:

"This UKK is different from regular practice. We feel like we are really working in a workshop, because those who assess us are directly from the industry." (S)

Table 3. Implementation of the UKK

No	Aspect	SMKN 8 Bandung	SMKN 14 Bandung	Description
1	Implementation model	Individual, standard test panel	Team, complete vehicle project	Collaborative at SMKN 14
2	The role of teachers and assessors	Teachers supervise, external assessors dominate	Facilitator teachers and assessors evaluate the process and results	
3	Implementation Score	2	4	

The implementation of UKK at both vocational schools showed differences in the form of tasks, work standards, and assessment processes. SMKN 8 Bandung implemented UKK through separate practical tasks with assessments that focused more on the final results. In contrast, SMKN 14 Bandung implemented UKK based on whole vehicle projects with assessments of the process and work results as a whole, thereby creating a working atmosphere that was closer to real-world industry conditions.

UKK Evaluation and Follow-up

The UKK evaluation is conducted through a meeting between the school and the industry after the UKK has been completed. The evaluation covers the competency achievements of the students, implementation constraints, and recommendations for improvement. The school principal stated:

"After the UKK is completed, we evaluate it together with the industry. From there, we know which competencies need to be strengthened in learning." (KS)

Industry assessors also provided their views on the UKK results:

"In general, the students' abilities are quite good, but they still need to improve their accuracy and speed of work." (ADI)

Table 4. UKK Evaluation and Follow-up

No	Aspek	SMKN 8 Bandung	SMKN 14 Bandung	Description
1	Corrective measures	Addition of facilities, instilling discipline	Development of project-based SOPs, new test packages	More visionary at SMKN 14
2	Strategic orientation	Gradually, realistically	Transformative, in line with industry trends (EVs, etc.)	
3	Implementation Score	2	3	

Based on the Act (follow-up) aspect, SMKN 8 Bandung has demonstrated internal and gradual improvements, such as adding practical facilities and instilling work discipline in students, which are oriented towards meeting the basic requirements for implementing UKK. Meanwhile, SMKN 14 Bandung has implemented a more visionary and transformative follow-up strategy through the development of project-based UKK SOPs and new competency test packages tailored to developments in the automotive industry,

including trends in electric vehicles (EVs). This difference in orientation shows that SMKN 14 Bandung is not only focused on short-term operational improvements but also on strengthening the system and long-term relevance, resulting in a higher implementation score compared to SMKN 8 Bandung.

3.2. Discussion

Research findings indicate that the management of work-based Competency Tests (UKK) at vocational schools offering Light Vehicle Bodywork programmes **is carried out through stages of planning, organising, implementation, and evaluation** that actively involve **the world of work**. These findings are in line with the concept of education management that **emphasises the importance of** integrated managerial functions **in ensuring the quality of** vocational education graduates [14], [15], [10]. The involvement of the world of work from the planning stage strengthens the principle of linking and matching education and industry needs. [16].

At the planning stage, **the involvement of the world of work in the preparation of** job sheets and UKK assessment standards demonstrates an effort to align graduate competencies with real job requirements. This finding supports the view of vocational education theory, which emphasises that competency standards must be based on industry needs so that graduates are adequately prepared for work [17], [18]. In line with previous research, **collaboration between vocational schools and the world of work** in planning competency assessments has been shown to increase the relevance of vocational learning and reduce competency gaps among graduates.

The organisation of UKK, characterised by a clear division of roles between schools and the world of work, demonstrates effective management practices. Schools act as organisers and facilitators [19], while the world of work acts as an external assessor to ensure the objectivity of assessments [20]. This finding reinforces the theory of education quality management [21], which places the involvement of external stakeholders as an important factor in the quality assurance system. [22]. Previous research has also shown that the presence of industry assessors can enhance the credibility of UKK results and the confidence of the world of work in vocational school graduates. [23].

During the implementation stage, UKK is carried out by adopting industry standards and work culture, so that the assessment process **not only** measures **technical skills, but also the** attitudes and **work ethic of** students. [24]. This is in line with the competency-based assessment approach, which emphasises holistic assessment of knowledge, skills, and work attitudes. [25]. These findings confirm previous research results, which state that work-based UKK provides authentic experiences for students and improves their readiness to enter the world of work.

The evaluation and follow-up of UKK, conducted jointly by schools and the world of work, show that UKK functions not only as a tool for measuring competence but also as a basis for improving learning. These findings are in line **with the principle of continuous improvement in** education **quality management**, where evaluation results are used to improve the learning process and management of skills programmes. [26]. Previous research also

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confirms that UKK evaluations involving the world of work can provide more objective and applicable feedback for schools. [27].

Overall, the findings of this study reinforce the understanding that work-based UKK management is an important strategy in improving the quality of vocational school graduates, particularly in the Light Vehicle Body Engineering programme. Unlike previous studies that tended to examine UKK in general, this study makes a new contribution by presenting contextual and programme-specific UKK management practices, thereby serving as a reference for other vocational schools in developing UKK that is relevant to industry needs.

4. CONCLUSION

This study affirms that the effectiveness of work-based competency testing in vocational schools is determined not merely by procedural implementation, but by the quality of managerial integration between schools and industry partners. The research highlights that embedding industry participation within structured management functions strengthens the strategic role of competency testing as a quality assurance mechanism in vocational education. Through systematic collaboration, competency testing becomes more aligned with workplace realities and contributes to enhancing the institutional credibility of vocational schools.

The implications of this study are both managerial and policy-oriented. For school leaders, the findings emphasize the necessity of transforming competency testing from an administrative obligation into a strategic management process supported by sustainable industry partnerships. For policymakers, the results suggest that regulatory frameworks should encourage deeper industry engagement at all stages of competency testing management. For industry stakeholders, the study reinforces their role as co-educators in ensuring that competency standards reflect current technological developments and labor market demands.

This research is limited to two vocational schools in Bandung and focuses specifically on the Light Vehicle Body Engineering program. The qualitative case study approach provides in-depth contextual insights but does not aim for broad statistical generalization. Therefore, variations in institutional culture, regional characteristics, and industrial ecosystems may influence the applicability of the findings in other contexts.

Future research may expand the scope to multiple regions, different vocational programs, or comparative cross-sector studies to develop a more comprehensive model of work-based competency test management. Quantitative approaches could also be employed to measure the direct impact of work-based UKK management on graduate employability and career progression. Additionally, further studies may explore the integration of digital assessment systems and emerging automotive technologies, such as electric vehicles, within competency certification models.

In a broader societal context, this research contributes to strengthening the relevance of vocational education in supporting workforce readiness and national competitiveness. By promoting collaborative and industry-responsive competency testing management, vocational institutions can better prepare graduates who are adaptive, skilled, and aligned

with evolving labor market needs, thereby benefiting students, industry, and society as a whole.

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