

Enhancing Graduate Competitiveness Through Competency Assessor Training: Implications for Certification System Development

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ARTICLE INFO

Keywords:

competency assessor training;
certification system;
graduate competitiveness

Article history:

Received 2025-06-07

Revised 2025-07-13

Accepted 2025-12-31

ABSTRACT

This study investigates the influence of competency assessor training on the development of a certification system and the enhancement of graduate competitiveness at the Professional Certification Body (LSP) P1 SMKN 1 Ciamis. Strengthening assessor capacity is essential to ensure objective, credible assessments that align vocational graduates' skills with industry demands. A descriptive quantitative design was used, involving a saturated sample of 30 competency assessors. Data were collected through a validated and reliable questionnaire (Cronbach's Alpha = 0.957), measuring perceptions related to training effectiveness and graduate competitiveness. Data analysis employed descriptive statistics, Pearson correlation, and regression analysis using SPSS. Findings revealed strong, statistically significant correlations between the quality of assessor training and both the alignment of certification standards with industry needs ($r = 0.793$, $p < 0.05$) and the improvement in graduate competency test outcomes ($r = 0.819$, $p < 0.05$). The regression model confirmed that key training variables significantly predicted graduates' competitive advantage (Sig. < 0.001). Results confirm that well-designed assessor training programs contribute directly to strengthening certification quality and enhancing graduates' job readiness. These findings support the need for sustained investment in training to ensure reliable certification outcomes that meet labor market expectations. Competency assessor training plays a critical role in improving vocational certification systems and graduate competitiveness. The study provides empirical evidence for policymakers and educational institutions to enhance training strategies and workforce alignment.

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1. INTRODUCTION

Improving the quality of human resources that are competitive and meet global standards is necessary to realize a professional workforce that has skills, expertise, and competence. According to Sistermans in (Andrew G.D. Holmes, 2021) Against the backdrop of a highly competitive global economy, employers of graduates and professional organizations are increasingly calling on educational institutions to ensure their graduates have relevant competencies and skills. Competence here is a group of related abilities (skills and knowledge) that have been determined by methods and criteria but rather

a combination of abilities measured through specific methods and criteria to determine a person's level of mastery. In the context of vocational education, this means that certification ensures that graduates not only understand theory, but also master practical skills in accordance with industry standards. This serves as a bridge between the education curriculum and the demands of the real world of work. determine the level of a person's mastery of these abilities (Wagenaar, 2014). Correspondingly, (Khan & Ramachandran, 2012) recommends that, the term competence should be used strictly for the skill itself while competence is the ability to perform that skill and the attributes of the performer. Thus, competencies can be viewed much more broadly than skills.

Competency is seen as a set of related abilities (skills and knowledge), which includes methods and criteria for determining the extent to which a person demonstrates mastery of those abilities. This provides a fairly comprehensive job description of what should be part of a particular competency (Lurie & Garrett, 2017). Competence here is a sign of recognition given and determined by a third party. This certification can be carried out and is proof of trust that aims to convince end consumers (Miller, et al., 2023).

In the process of certifying work competence, the availability of Competency Assessors is required as an important part of the assessment process, because the quality of competency tests carried out will be determined. Competency assessors have a strategically important position and role. Therefore, graduates have a greater chance of being accepted for employment because they have the necessary skills to raise the standards of the national market (Aljumah, 2023).

Proof of certification results provides assurance that the certification process or competency test conducted by the Professional Certification Body (LSP) has met the standards and requirements. In this regard, a Competency Assessor Training Program was created for the Development and Implementation of the Professional Competency Certification System.

BNSP is an independent body responsible to the President who has the authority as a personnel certification authority and is tasked with carrying out professional competency certification for the workforce (BNSP, 2025). The Competency Assessor Training Program in System Development and Implementation of Professional Competency Certification is designed to improve the implementation of the Certification Competency Assessor Training and have an impact on improving the implementation of work competency certification throughout the country.

One important component of the assessment process in the implementation of competency-based assessment or competency testing is the availability of Competency Assessors. The quality of the competency test conducted will be largely determined by the position and role of the assessor. Assessors who have the necessary ability and authority can decide whether a person meets the competency standards being assessed. A "trained" and "certified" assessor is required based on the assessor position mentioned above.

The target of this activity is to improve the ability of prospective assessors to assess learners' abilities in accordance with the standards set by LSP P1. In addition, it is expected that participants will gain the ability to complete assessment tasks systematically and objectively.

This is in line with the competency standards of SMK/MAK graduates developed from national education objectives and graduate profiles in the formulation of competency areas. SMK/MAK is part of the national education system that has the goal of vocational education, which is to produce skilled workers who have the ability to meet the demands of the business/industrial world, and are able to develop their potential in adopting and adapting to the development of science, technology, and art (Kemdikbud, 2018).

The education revitalization program involves competency certification, which is expected to produce superior and competitive graduates who can quickly enter the labor market. One way that can be used to demonstrate that a person has competence and professionalism in their work is to obtain a certificate of competence.

As a vocational high school graduate who hopes to become a competent and professional member of the Indonesian workforce, one must have international qualifications and work standards to be ready

to enter this wider labour market. The government must set and enforce national work standards in order to meet work competition among countries that agree to the ASEAN Economic Community (AEC). The Ministry of Manpower encourages all sectors to develop work competency standards needed by the job market, as Indonesia only has 1,188 Indonesian National Work Competency Standards (SKKNI) set, 925 in force and 263 revoked.

In accordance with (Ministry of Manpower), (2025) Indonesian National Work Competency Standards (SKKNI) are formulations of work abilities that cover aspects of knowledge, skills, and/or expertise as well as work attitudes that are relevant to the implementation of the duties and requirements of the position being determined. The SKKNI will later be used as a reference for the preparation of competency-based education/training programs and curricula (up to the learning modules), for the learning process at education/training institutions and also used as a reference for the preparation of competency test materials at a professional certification body (LSP). With this concept, the ability of graduates of education/training institutions will be in accordance with industry needs and graduates will also be able to have a certificate of competence after passing the competency test at the LSP.

Competency certification is the process of providing competency certificates that are carried out systematically and objectively through competency tests with reference to work competency standards, both specific, national and international. A certificate of competency is awarded based on a person's competence which is a specification of work attitude, knowledge and skills/expertise. Having a certificate of competency means that a person receives written recognition of their work after passing a competency test.

Competency certification is a process used to assess and recognize an individual's ability in a particular field. This process not only provides formal recognition of skills, but also increases graduates' confidence in the job market (Hidayati, 2023). With certification, graduates can demonstrate to potential employers that they have the competencies needed to carry out their duties and responsibilities in the workplace.

In line with the opinion of Sunarya, Lutfiani, & Pratiwi (2020), the certification program has been regulated in Government Regulation (PP) No. 23 of 2004 concerning the National Professional Certification Body. Article 1 of the PP explains that work competency certification is the process of issuing competency certificates carried out systematically and objectively through competency tests that conform to Indonesian national and/or international work competency standards. Furthermore, in point 2, it is also explained that the Indonesian National Work Competency Standards are formulations of work abilities that cover aspects of knowledge, skills and/or expertise and work attitudes that are relevant to the performance of tasks and job requirements stipulated in accordance with the provisions of applicable laws and regulations.

Competency testing is an authentic method of verifying a person's ability. Competency testing must meet the criteria of validity, effectiveness, efficiency, fairness, flexibility and reliability. It must be administered in an open and transparent manner without discrimination. In accordance with the standards to be tested, people who have educational background and work experience can take the competency test. Portfolio checks, written tests, practicals, observations, or a combination of these can be used to evaluate skills. In addition, competency tests are one of the evaluation tools specifically designed to assess students' competencies, which can reflect real and accurate assessment results (Sutopo, Rahman, & Mulyana, 2024).

However, to ensure that the competency certification system works well, trained and qualified competency assessors are required. Competency assessors play an important role in assessing and certifying individuals who have met the set competency standards (Sari, 2023). Prasetyo's research (2022) shows that competency assessor training programmes are key to quality certification. Therefore, competency assessor training programs are very important to improve the quality of assessment and certification carried out.

Competency-assessor training programs not only provide the knowledge and skills needed to conduct assessments but also equip assessors with an understanding of the competency standards that

apply in the industry (Prasetyo, 2022). Thus, trained assessors can provide objective and accurate assessments, so that graduates who get certified really have recognized competencies.

In line with this, the competitive advantage of graduates is not only determined by their academic knowledge, but also by practical skills and certifications that are relevant to industry needs (Wahyuni, 2023). In this context, competency assessor training programs can contribute significantly to improving the quality of graduates, so that they are better prepared to compete in the job market.

In addition, the development of a good competency certification system can also help educational institutions in improving their reputation and attractiveness in the eyes of prospective students (Rizki, 2022). By having a recognized certification system, educational institutions can attract more students who want to get quality education and are recognized by the industry.

In this study, the importance of competency assessor training programs in developing a competency certification system and its impact on the competitive advantage of graduates will be discussed. This research aims to provide a clear picture of how assessor training can improve the quality of certification and, in turn, increase the competitiveness of graduates in the job market.

Through a systematic and data-driven approach, this research is expected to contribute to the development of education and training policies in Indonesia. Thus, the graduates produced not only have theoretical knowledge, but also practical skills that are relevant to industry needs.

Although the role of competency assessor training is widely recognised as fundamental to an effective certification system, there is still a need to empirically test and measure the specific impact of competency assessor training programmes on the development of competency certification systems and the improvement of graduates' competitive advantage. Specifically, the extent to which investment in this assessor training directly correlates with improvements in certification quality and the enhancement of graduates' competitiveness at LSP P1 SMKN 1 Ciamis requires further in-depth examination.

This study aims to analyse the impact of competency assessor training programmes on the development of competency certification systems at LSP P1 SMKN 1 Ciamis, test the influence of competency assessor training programmes on enhancing the competitive advantage of graduates at LSP P1 SMKN 1 Ciamis, identify the correlation between the quality of assessor training and improvements in certification system quality and graduate competitiveness, and assess the significance and contributions of the research.

This research holds crucial significance as it provides in-depth empirical insights into the urgency of competency assessor training in efforts to enhance certification quality and graduate competitiveness in the job market, particularly within the context of vocational education. Its contribution is highly important as it strengthens and expands understanding of the specific mechanisms through which improvements in assessor quality directly impact individual competitiveness in the job market, filling a gap in the literature that often merely assumes this relationship. It provides data-based evidence for Professional Certification Body (LSP), vocational education institutions (SMK/MAK), and policymakers to justify investments in assessor training programmes. The findings of this research can serve as a foundation for formulating more effective education and training policies in Indonesia, ensuring that graduates not only possess theoretical foundations but also practical skills relevant to industry needs. Additionally, for LSP P1 SMKN 1 Ciamis, it enables valid internal evaluation of the effectiveness of their assessor training programmes, which can be used as a basis for continuous improvement and enhancement of certification service quality.

2. METHODS

This study adopts a descriptive quantitative approach, which aims to describe real phenomena based on numerical data and draw conclusions using statistics, in line with the views of Sulistyawati, Wahyudi, & Trinuryono (2022). This study focuses on the effectiveness of competency assessor training programmes in developing certification systems and their impact on the competitive advantage of graduates. The respondents of this study were 30 competency assessors from the Professional Certification Body (LSP) P1 at SMK Negeri 1 Ciamis, West Java Province. The sampling technique used was saturation sampling,

which is a non-probability sampling method where all members of the population are included in the sample. This ensures that all relevant assessors at LSP P1 SMKN 1 Ciamis are included in the study. Data was collected using a survey method via a questionnaire.

The questionnaire was designed to collect relevant information, including Demographic Questions, Perceptions of the Training Programme, and Assessments of the Competitive Advantages of Graduates. The questionnaire was distributed directly to the 30 competency assessors at LSP P1 SMKN 1 Ciamis. Data collection was conducted within a specified period to ensure all respondents had sufficient time to complete the questionnaire.

Given that a saturated sampling technique was used, where the entire population (30 assessors) were respondents, the expected response rate was 100%, provided that all assessors were willing and able to be reached to complete the questionnaire. No special steps were taken to increase the response rate in this context, aside from ensuring the questionnaire was easily accessible and allowing flexible completion times.

To ensure consistency in measurement and interpretation of results, measurements were taken based on the perceptions of competency assessors regarding improvements in the capabilities of certified graduates following the assessor training programme and improvements to the certification system. Measurements were taken using a Likert scale questionnaire, covering indicators such as graduates' technical and non-technical skills, employability in the job market, and productivity levels in the workplace.

To ensure the validity of the data collected, several steps were taken. The questions in the questionnaire were developed based on a review of relevant literature on assessor training, certification systems, and competitive advantages, and were adapted to the relevant indicators for each variable. After the data were collected, item validity testing was conducted using SPSS software. The questionnaire used in this study demonstrated high validity, meaning that each question (item) in the questionnaire accurately measured the construct or concept it was intended to measure. In addition to validity, the reliability of the instrument was also tested, and the results showed that the questionnaire had high reliability, indicating that the instrument was consistent and stable in measuring the same concept when the measurement was repeated. This means that the responses given by the respondents were consistent and reliable.

The collected data were then analysed using SPSS software. The analytical techniques applied included Descriptive Analysis to describe the demographic characteristics of the respondents and provide an overview of perceptions regarding the variables under study, and Pearson Correlation Tests to examine the relationship between the competency assessor training programme and the competitive advantage of graduates, as well as relationships between other variables. The results of this test confirm the existence of a significant positive correlation. With careful data collection procedures and strict validation steps, this study was able to produce accurate and reliable data.

3. FINDINGS AND DISCUSSION

In this section, the results of data analysis obtained from research on competency assessor training programs in the development of competency certification systems and their impact on the competitive advantage of graduates will be presented. The results obtained from questionnaires distributed to 30 respondents who are competency assessors at the Professional Certification Body P1 SMKN 1 Ciamis will be presented in the form of descriptive statistics, followed by correlation analysis to identify the relationship between the variables studied. The discussion will interpret the results of the analysis, relate them to theory and previous research, and provide insight into the practical implications of the findings.

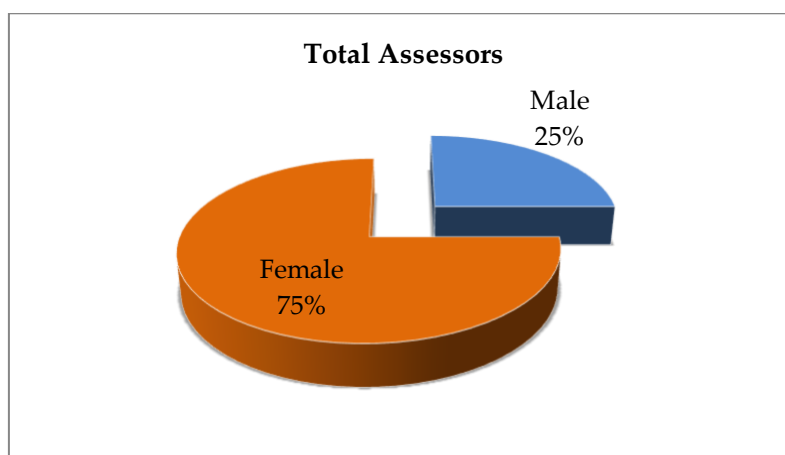


Figure 1. Total of LSP P1 Assessors in SMKN 1 Ciamis

BNSP regulation number 09/BNSP.301/XI/2013 concerning Guidelines for Implementing Competency Assessment is the basis of competency assessment conducted at the Professional Certification Body. The process of granting competency certificates is carried out systematically and objectively through competency tests that refer to the Indonesian National Work Competency Standards (SKKNI) is a formulation of work ability that includes aspects of knowledge, skills, and work attitude related to carrying out job duties and requirements determined in accordance with applicable laws and regulations.

Professional certification schemes are specific certification requirements for professional categories, defined by standards and rules. Competency Tests at LSP P1 SMKN 1 Ciamis have been carried out from 2019 to 2024 with the following details:

Table 1. Total Participants in the Competency Test at LSP P1 SMKN 1 Ciamis

No	Scheme	Certificates That Have Been Issued						Total	Notes
		2019	2020	2021	2022	2023	2024		
1.	KKNI Level II Office Automation and Governance	117			104	105		326	Competent All
2.	KKNI Level II Culinary	30			130	113		273	Competent All
3.	KKNI Level II Hospitality	99			70	70		239	Competent All
4.	KKNI Level II Multimedia	34		34	36	134		238	Competent All
5.	KKNI Level II Institutional Accounting and Finance	153		24	177	167	141	662	Competent All
6.	KKNI Level II Software Engineering	32		31	35	36		134	Competent All
7.	KKNI Level II Online Business and Marketing					107		107	Competent All
8.	Occupation Office Administrative						104	104	Competent All
9.	Occupation Helper Cookery						70	70	Competent All

No	Scheme	Certificates That Have Been Issued						Total	Notes
		2019	2020	2021	2022	2023	2024		
10.	Occupation Guest Service Agent						66	66	Competent All
11.	Occupation Content Creator						34	34	Competent All
12.	Occupation Junior Programmer (Junior Coder)						32	32	Competent All
13.	Occupation Trainee Kasir						102	102	Competent All
Total									1838

Source: LSP P1 SMKN 1 Ciamis

Discussion

Based on the analysis results, various significant relationships between variables in the dataset were identified, including some very strong correlations. The significance of the positive correlation indicates the existence of unidirectional interdependence between the variables studied

Table 2. Validity Test

Case Processing Summary			
		N	%
Cases	Valid	30	100.0
	Excluded	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

All assessors participating in the study provided validated data, with no exclusions from the analysis process. This indicates that the dataset utilized for analysis was comprehensive and free of missing values. According to (Sugiyono, 2017) Validity is the degree of accuracy between the data that occurs on the object of research and the data that can be reported by researchers. Thus, valid data is data that does not differ between the data reported by the searcher and the data that actually occurs on the search object.

Table 3. Reliability Tes

Reliability Statistics	
Cronbach's	
Alpha	N of Items
.957	35

The Cronbach's alpha reliability coefficient of 0.957 confirms the superior level of internal consistency of the questionnaire instruments used in this study. This value further indicates that the questionnaire items are highly reliable and show strong intercorrelation.

The analysis shows that the questionnaire instrument used in this study has adequate validity, supported by valid responses from all respondents. In addition, the questionnaire instrument also shows a very high level of internal consistency, indicating that the constituent items have strong

reliability in measuring the intended construct. Thus, this study has a solid methodological foundation for further data analysis.

Based on the calculations carried out by analyzing the data using SPSS software, the following data were obtained:

Table 4. Significant Correlation

Quality of assessor training materials and alignment of certification standards with industry needs	Highly significant correlation (correlation coefficient = 0.793, probability value < 0.05).
Quality of assessor training materials and level of confidence	Significant correlation (correlation coefficient = 0.667, probability value < 0.05).
Qualifications of assessor training instructors and accountability of the certification process	Significant correlation (correlation coefficient = 0.459, probability value < 0.05).
Improvement of competency testing standards and accountability of the certification process	Significant correlation (correlation coefficient = 0.490, probability value < 0.05).
Development of a Competency Certification System and transparency in competency assessment	Highly significant correlation (correlation coefficient = 0.577, probability value < 0.05).
Development of a Competency Certification System and Competitive Advantage of Graduates	Significant correlation (correlation coefficient = 0.630, probability value < 0.05).
Training resources and materials and alignment of competency units in the certification scheme	Highly significant correlation (correlation coefficient = 0.667, probability value < 0.05).
Graduates' mastery of hard skills and their ability to solve problems	Significant correlation (correlation coefficient = 0.667, probability value < 0.05).
Assessors' satisfaction with training and the quality of assessments conducted by assessors	Significant correlation (correlation coefficient = 0.579, probability value < 0.05).
Improvement in assessors' understanding of competency standards and improvement in assessors' assessment skills	Significant correlation (correlation coefficient = 0.618, probability value < 0.05).
Improvement in the relevance of the certification scheme and Improvement in the average competency test scores of graduates	Highly significant correlation (correlation coefficient = 0.819, probability value < 0.05).
Productivity levels of graduates in the workplace and Graduates' ability to innovate	Highly significant correlation (correlation coefficient = 0.789, probability value < 0.05).
Users' perceptions of graduates regarding human resource quality and Industry satisfaction levels with graduate performance	Significant correlation (correlation coefficient = 0.738, probability value < 0.05).
Improvement in the public image of LSP and Government support for certification programmes	Highly significant correlation (correlation coefficient = 1.000, probability value < 0.05)

Table 5. Regression Test

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1507.440	5	301.488	117.818	.000 ^b
	Residual	209.833	82	2.559		
	Total	1717.273	87			

a. Dependent Variable: Competitive Advantage of Graduates

b. Predictors: (Constant), Accountability of the certification process, Quality of assessor training materials, Suitability of certification standards to industry needs, Quality of assessor training materials, Qualifications of assessor training instructors

Based on the Sig value. (.000), it can be concluded that the overall regression model is statistically significant. This means that at least one of the predictor variables (Accountability of the certification process, Quality of assessor training materials, Suitability of certification standards to industry needs, Quality of assessor training materials, Qualifications of assessor training instructors) significantly affects the dependent variable (Competitive Advantage of Graduates).

Table 6. Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	11.785	2.209		5.335	.000		
	Accountability of the certification process	1.617	.432	.176	3.739	.000	.672	1.488
	Quality of assessor training materials	1.461	.514	.149	2.843	.006	.541	1.847
	Suitability of certification standards to industry needs	5.079	.595	.464	8.532	.000	.504	1.983
	Quality of assessor training materials	1.705	.401	.181	4.257	.000	.828	1.208
	Qualifications of assessor training instructors	2.371	.431	.265	5.498	.000	.642	1.558

a. Dependent Variable: Competitive Advantage of Graduates

In other words, the regression model formed by the predictor variables explains the variation in Competitive Advantage of Graduates very well and this result does not occur by chance. Various significant relationships were identified between the variables in the dataset, including some very

strong correlations. The significant positive correlations indicate a unidirectional, reciprocal influence between the variables under study.

The competency assessor training program showed a significant influence on developing a competency certification system and increasing the competitive advantage of graduates. This finding implies a significant difference in the level of competitive advantage of graduates before and after attending the competency assessor training program. Prasetyo (2022) clearly emphasises competency assessor training as the foundation for quality certification. Research at LSP P1 SMKN 1 Ciamis empirically reinforces this finding by demonstrating a significant positive correlation between participation in training and an increase in the competitive advantage of graduates. This not only underscores the importance of training but also highlights the specific mechanisms through which improvements in assessor quality directly impact individual competitiveness in the job market.

Based on these strong findings, several future research directions could enrich our understanding and provide further guidance on best practices that provide concrete evidence of the operational benefits of investing in assessor training, beyond the impact on graduates. Through this further exploration, we can gain deeper insights into the complexities of the relationship between assessor training, certification systems, and workforce readiness, which will ultimately support the development of a more adaptive and competitive workforce.

4. CONCLUSION

The conclusion from the data analysis of the competency assessor training program at the Professional Certification Body P1 SMKN 1 Ciamis indicates that the program contributes significantly to the development of the competency certification system and increasing the competitive advantage of graduates. Questionnaire data obtained from 30 competency assessors showed high validity and reliability of the instrument, with all respondents providing valid and consistent data.

Correlation analysis revealed significant positive relationships between the various variables studied, including very strong correlations in some aspects. This indicates a reciprocal positive interaction between the variables. Empirically, the competency assessor training program was shown to enhance graduates' competitive advantage, as indicated by significant differences in competitive capabilities before and after participation in the program.

Overall, this study provides crucial insights into the urgency of competency assessor training in efforts to improve the quality of certification and competitiveness of graduates in the job market. These findings provide several practical implications and specific recommendations that can be applied to maximise the benefits of the programme. With trained and qualified assessors, the competency assessment process will be more objective, consistent, and accurate, which will directly result in more credible and recognised certification. Enhancing the competitive edge of graduates means they possess skills that are more relevant and aligned with industry needs, thereby accelerating their integration into the workforce and reducing the gap between education and industry. Credible certification supported by qualified assessors will enhance industry confidence in the quality of graduates from LSP P1 SMKN 1 Ciamis, thereby opening up more job opportunities and partnerships for graduates.

REFERENCES

- Aljumah, A. (2023). The impact of job training on recruitment and employability skills among graduates. *International Journal of Professional Business Review*, 8(10), 1–32. <https://doi.org/10.26668/businessreview/2023.v8i10.2806>
- Andrew, G. D. H., & M. P. (2021). Competence and competency in higher education, simple terms yet with complex meanings: Theoretical and practical issues for university teachers and assessors implementing competency-based education (CBE). *Educational Process: International Journal*, 10(3), 39–52. <https://doi.org/10.22521/edupij.2021.103.3>
- Badan Nasional Sertifikasi Profesi. (2025, January 28). *BNSP*. <https://bnsf.go.id/>

- Hidayati, N. (2023). The role of competency certification in enhancing graduate employability. *Journal of Education and Practice*, 16(1), 1–18.
- Kementerian Pendidikan dan Kebudayaan Republik Indonesia. (2018). *Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia Nomor 34 Tahun 2018 tentang Standar Nasional Pendidikan Sekolah Menengah Kejuruan/Madrasah Aliyah Kejuruan*. Kementerian Pendidikan dan Kebudayaan.
- Kementerian Ketenagakerjaan Republik Indonesia. (2025, March 28). *Direktorat Bina Standardisasi Kompetensi dan Program Pelatihan*. <https://skkni.kemnaker.go.id/tentang-skkni/dokumen>
- Khan, K., & Ramachandran, S. (2012). Conceptual framework for performance assessment: Competency, competence and performance in the context of assessments in healthcare: Deciphering the terminology. *Medical Teacher*, 34(11), 920–928. <https://doi.org/10.3109/0142159X.2012.722707>
- Lurie, H., & Garrett, R. (2017). Deconstructing competency-based education: An assessment of institutional activity, goals, and challenges in higher education. *Competency-Based Education*, 2(3), 1–19. <https://doi.org/10.1002/cbe2.1047>
- Miller, B. T., Camarda, A., Mercier, M., Burkhardt, J.-M., Morisseau, T., Bougrine, S. B., et al. (2023). Creativity, critical thinking, communication, and collaboration: Assessment, certification, and promotion of 21st century skills for the future of work and education. *Journal of Intelligence*, 11(54), 1–32. <https://doi.org/10.3390/jintelligence11030054>
- Prasetyo, A. (2022). Training programs for competency assessors: A key to quality certification. *International Journal of Vocational Education and Training*, 25(1), 96–112.
- Rizki, M. (2022). Impact of certification systems on higher education institutions. *Journal of Higher Education Policy and Management*, 22(12), 1–52.
- Sari, D. (2023). Assessing competency: The importance of trained assessors. *Journal of Assessment in Education*, 10, 2–18.
- Sisternans, I. J. (2020). Integrating competency-based education with a case-based or problem-based learning approach in online health sciences. *Asia Pacific Education Review*, 21, 683–696. <https://doi.org/10.1007/s12564-020-09658-6>
- Sugiyono. (2017). *Metode penelitian kuantitatif, kualitatif, dan R&D*. CV Alfabeta.
- Sulistiyawati, W., Wahyudi, & Trinuryono, S. (2022). Analisis (deskriptif kuantitatif) motivasi belajar siswa dengan model learning di masa pandemi COVID-19. *Kadikma*, 13(1), 68–73.
- Sunarya, A., Lutfiani, N., & Pratiwi, D. S. (2020). Analisis sistem sertifikasi profesi untuk pengembangan kompetensi mahasiswa. *ADI Bisnis Digital Interdisiplin Jurnal*, 1(1), 70–77.
- Sutopo, A., Rahman, A., & Mulyana, D. (2024). Design and validation of a competency assessment for electrical power systems in engineering education. *Al-Ishlah: Jurnal Pendidikan*, 16(4), 4588–4598. <https://doi.org/10.35445/alishlah.v16i4.5861>
- Wagenaar, R. (2014). Competences and learning outcomes: A panacea for understanding the (new) role of higher education? *Tuning Journal for Higher Education*, 1(2), 279–302. [https://doi.org/10.18543/tjhe-1\(2\)-2014pp279-302](https://doi.org/10.18543/tjhe-1(2)-2014pp279-302)
- Wahyuni, S. (2023). Skills and competencies: Preparing graduates for the workforce. *SA Journal of Human Resource Management*, 22, 2–10. <https://doi.org/10.4102/sajhrm.v22i0.2692>