

## Enhancing Vocational Education: How Synergy between Program Management and Teacher Performance Drives Quality Learning

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**Abstract:** Vocational High School (SMK) management differs significantly from that of Senior High Schools (SMA), particularly in managing technical programs and teacher responsibilities. This study investigates the effects of vocational program management and teacher performance on learning quality in public SMKs in Bireuen Regency, Aceh. Using a quantitative approach, data were collected via surveys from 176 teachers and analyzed using Structural Equation Modeling (SEM). Results show that both teacher performance and vocational program quality positively and significantly influence learning quality, with teacher performance also exerting an indirect effect. These findings underscore the importance of integrated program planning and teacher development to enhance student learning outcomes in vocational education. The study highlights the need for systemic alignment between program content and educator competencies to support the learning needs of SMK students. While focused on a specific regional context, the findings offer relevant insights for broader vocational education reform initiatives.

**Keywords:** Teacher performance; Vocational programs; Learning quality; Vocational education.

## INTRODUCTION

Vocational High Schools (SMK), as part of the national education system, aim to prepare students to work professionally in specific fields. According to Law No. 20 of 2003 on the National Education System, vocational

education is secondary education that prepares students to enter the workforce and pursue higher education. In this context, vocational programs in SMKs play a crucial role in ensuring that the curriculum and learning processes are aligned with industry needs. The success of these vocational programs heavily depends on the quality of instructional implementation, which is determined by teacher performance (H. Soro, S., Dariah, D., Prasetiawati, E., & Jamilah, N., 2024).

Vocational programs in SMKs are expected to be a solution for enhancing the competitiveness of graduates in both local and global job markets. These programs emphasize not only technical skills mastery but also life skills development, including critical thinking, creativity, and work ethics. However, the implementation of vocational programs often faces several challenges, such as a lack of curriculum flexibility, limited facilities, and minimal partnerships with businesses and industries (Komariah & Kurniady, 2022). Strong industry partnerships are a key element in creating relevant and applicable work-based learning (Reeve & Gallacher, 2005).

One of the essential elements that significantly influences the quality of learning is teacher performance. In the context of vocational education, the role of teachers becomes even more strategic, as they are responsible for delivering instructional content and shaping students' competencies to match the demands of the labour market. Teachers are increasingly expected to integrate theory with practice and to develop innovative and adaptive teaching strategies to meet the challenges of technological advancements and labour market shifts (Dighliya, 2024). Therefore, improving teacher performance has become a key priority in improving the quality of learning in public vocational high schools (SMKs) in Indonesia.

However, empirical studies reveal several challenges that hinder the optimization of teacher performance. These include limited teacher participation in professional training and development, heavy workloads, and insufficient support from school principals and other educational staff (Thahir M. et al., 2021). Such conditions lead to stagnating innovation in the teaching process, ultimately affecting the overall quality of vocational education. Furthermore, low levels of job satisfaction among teachers have also been identified as a factor negatively impacting their productivity and effectiveness in fulfilling their duties (Yudhistira, P., Daryana, A. P., Girsang, D. R., & Damanik, M. J., 2025).

From an educational management perspective, teacher performance can be seen as the outcome of effective human resource management practices. These include recruitment, training, career development, and performance evaluation. As educational leaders, school principals are responsible for fostering a supportive work environment, providing continuous professional

development, and ensuring that all teaching staff operate effectively in alignment with the school's vision and mission (Nurdin & Ismaya, 2018). Effective school leadership is thus a key determinant in improving learning quality through sound teacher performance management.

The quality of learning in public SMKs is determined by the interaction between teachers and students and by how vocational programs are designed and implemented as part of a responsive and adaptive curriculum development process aligned with labour market demands. However, critiques of vocational education in Indonesia highlight that SMK graduates often lack competencies in logic, aesthetics, ethics, and kinesthetics. Moreover, the learning process at SMKs is frequently focused on memorization and cognitive aspects without sufficient attention to innovation, emotional development, and spiritual growth (Reeve & Gallacher, 2005).

Within the framework of Total Quality Management (TQM), educational quality is defined as the continuous effort to meet the needs and expectations of customers—in this case, students and the wider community. Unlike in the industrial sector, applying TQM in education focuses primarily on learning processes and the interaction between teachers and students (Nurdin & Ismaya, 2018). Therefore, a holistic approach is required to improve teacher performance and learning quality, including professional development, effective management of vocational programs, and strengthened partnerships with the business and industrial sectors.

This study aims to analyze the influence of teacher performance and vocational program management on the quality of learning in public Vocational High Schools (SMK). Specifically, it seeks to explore the relationship between the quality of human resource management in SMKs and the effectiveness of vocational programs in enhancing student competencies. The findings of this study are expected to contribute to the development of vocational education policies, particularly in efforts to improve learning quality in public SMKs.

Against this background, this article is intended to provide new insights into the importance of synergy between teacher performance and vocational programs in creating high-quality learning. This study will also outline practical implications for vocational education managers, especially in addressing the challenges of globalization and the Fourth Industrial Revolution, which demand adaptation and innovation in various aspects of education.

## **Learning Quality**

Learning quality refers to the effectiveness of the educational process in achieving learning objectives that encompass students' cognitive, affective, and

psychomotor dimensions (Sallis, 2014). In teaching and learning, quality is not limited to academic outcomes but also includes the process that fosters behavioural change in learners—such as skills, habits, attitudes, and appreciation for specific values (Ngalimun, 2017). At Vocational High Schools (SMK), the focus of learning quality includes mastery of technical and professional skills relevant to students' areas of specialization (Basri, S. K., & Rauf, R., 2021). This process involves collaboration between teachers and students to create effective and efficient learning experiences that enhance the quality of instruction and the overall educational institution.

High-quality learning must integrate various components, including learning objectives, content, methods, media, and evaluation (Komariah, A., Adriantoni, 2024). Teachers play a key role in ensuring these components work synergistically to achieve learning goals. In SMKs, primary indicators of learning quality include the relevance of the curriculum to industry needs, teacher competence in delivering technical skills, and the availability of adequate facilities and infrastructure. Industrial work practice programs (PKL) are also crucial, as they provide students with direct experience in applying their knowledge and skills in real work environments (Triyono & Susilowati, 2020). The success of learning is measured by the ability of graduates to enter the workforce or pursue further education (Fathurrohman, 2018).

Research on learning quality in SMKs has shown that policy support—such as partnerships with businesses and industries—significantly impacts graduate quality (Widiastuti, 2020). Other studies emphasize the importance of industry-based training for teachers to enhance the relevance and effectiveness of instruction (Prasetyo & Nugraha, 2019). In addition, integrating technology into learning has been proven to strengthen the transfer of knowledge and skills in vocational education (Siringoringo, R. G., & Alfaridzi, M. Y., 2024). These findings affirm that improving learning quality in SMKs requires a collaborative and comprehensive approach involving multiple stakeholders.

### **Vocational Program Management in SMK**

Clarke and Winch (2007) define vocational education as preparing young people and adolescents to enter the workforce. This form of education involves learning processes that focus on technical and practical aspects. Similarly, Sofyan (2018) explains that vocational education is part of the education system designed to equip individuals to work and build careers in their areas of expertise. This definition reinforces the notion that the primary goal of vocational education is to prepare graduates with specialized skills that support their future professions.

The management of vocational programs in SMK involves a series of processes, including planning, organizing, implementation, and evaluation. Key components of this management include developing curricula based on industry needs, human resource management, such as teacher training, and the provision of relevant facilities and infrastructure (Mulyasa, 2013). Furthermore, partnerships with businesses and industries are essential to ensure that the competencies taught align with labour market demands (Triyono & Susilowati, 2020).

Research indicates that effective vocational program management significantly impacts the quality of SMK graduates. A study by Prasetyo and Nugraha (2019) highlights the importance of industry-based training to enhance teacher competencies. Meanwhile, Rahman et al. (2021) found that integrating technology into the learning process can improve the efficiency of vocational programs. These findings suggest that a collaborative and innovative approach is necessary to optimize vocational program management in SMK.

### **Teacher Performance**

Teacher performance in Vocational High Schools (SMKs) refers to the work outcomes teachers achieve in carrying out their educational duties, including responsibilities as instructors and student mentors. This performance reflects the actual behaviours of teachers by established work standards and impacts the quality of educational outcomes. Ahmad Susanto (2016) emphasizes that teacher performance is the professional behaviour demonstrated during the learning process, including interaction with students in the classroom and the management of other tasks. With optimal performance, SMK teachers contribute significantly to the success of vocational-based education.

Indicators of teacher performance cover various aspects relevant to their professional activities. Majid (2019) notes that performance can be measured through planning, implementation, and evaluation of learning. Other indicators include work quality, punctuality, initiative, and workability (Uno & Lamatenggo, 2016). SMK teachers must also be able to align learning with student needs and industry demands and demonstrate creativity in using media and teaching strategies. These indicators underscore the importance of effective classroom management and ongoing evaluation to meet learning objectives.

Research on SMK teacher performance highlights the importance of policy support and professional development. For example, industry-based training improves the relevance of learning and teacher performance (Prasetyo & Nugraha, 2019). Other studies underline that educational technology can enhance teaching effectiveness (Rahman et al., 2021). Additionally, partnerships with businesses and industries have been proven to strengthen teachers'

practical skills, directly impacting the quality of learning in SMKs (Widiastuti, 2020). These findings confirm that improving teacher performance requires a comprehensive and collaborative approach.

Based on the above literature review, the hypothesis formulated in this study is:  $H_a$ : Vocational program management and teacher performance have a direct and indirect effect on the quality of learning in SMKs in Bireun Regency, Aceh.

## RESEARCH METHODOLOGY

### Research Design

This study uses an explanatory research method to explain causal relationships and influences between variables through hypothesis testing. It aims to analyze the influence of independent variables, vocational program management (X1) and teacher performance (X2), on the dependent variable, learning quality (Y). This study's subjects include teachers in the flagship classes, school principals, and the management team of the flagship Motorcycle Engineering major classes in SMKs across Bireun Regency. The questionnaire was designed with closed-ended questions directed at teachers and assessed using a Likert scale. This study will measure three variables: vocational program management (X1), teacher performance (X2), and learning quality (Y).

### Population and Sample

The population of this study comprises all civil servant teachers (PNS) at public SMK in Bireun Regency for the academic year 2022-2023, totalling 304 teachers. The sample consists of a proportionally selected portion of teachers from each school. The sample size was determined using Slovin's formula with a 5% margin of error (Sugiyono, 2011), calculated as follows:

$$s = \frac{N}{d^2 \cdot N + 1}$$

Where:

S = sample size

N = population size

$D^2$  = specified precision (0.05)

Based on this formula and assumptions, the minimum sample size obtained is 176 teachers, calculated as follows:

$$s = \frac{304}{0.05^2 \cdot (304) + 1} = 176$$

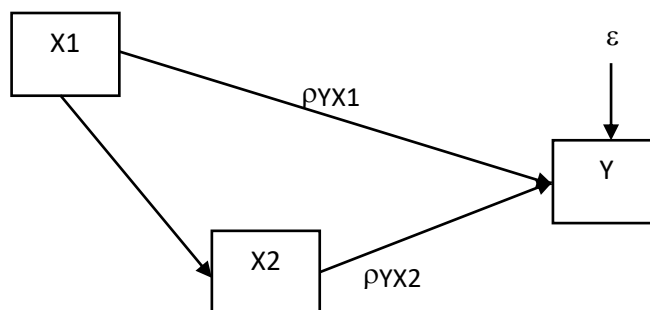
The number of teacher samples from each school was determined proportionally.

**Table 1.** Sample of Civil Servant Teachers (PNS) from each SMK in Bireuen Regency, Academic Year 2022-2023

No	School Name	Teacher Population	Teacher Sample Calculatin
1	SMKN 1 Bireuen	108	$= (108/304) \times 176 = 62$
2	SMKN 1 Peusangan	80	$= (80/304) \times 176 = 46$
3	SMKN 2 Peusangan	15	$= (15/304) \times 176 = 9$
4	SMKN 1 Jeumpa	21	$= (21/304) \times 176 = 12$
5	SMKN 1 Jeunib	39	$= (39/304) \times 176 = 23$
6	SMKN 1 Simpang Mamplam	10	$= (10/304) \times 176 = 6$
7	SMKN 1 Gandapura	25	$= (25/304) \times 176 = 14$
8	SMKN Bireuen	6	$= (6/304) \times 176 = 3$
		304	176

### Data Analysis Method

The research data were analyzed using both descriptive and verificative approaches. The analysis began with the examination of prerequisite conditions and continued with hypothesis testing using path analysis. This method follows a structural model, commonly used to examine causal relationships between variables. In general, the structural model can be expressed by the following equation:  $Y=f(X_1,X_2)$ . The path diagram and structural equation for this study are illustrated in Figure 1.



**Figure 1.** Research Path Diagram

Where:

Y = Learning Quality

X<sub>1</sub> = Vocational Program Management

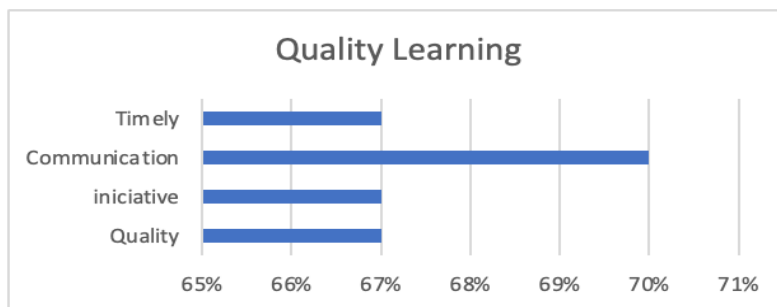
$X_2$  = Teacher Performance

$\epsilon$  = Epsilon, representing residual variables or other factors not included in the model. These may be variables already identified in theory but not studied, unknown factors, or measurement error influences.

## RESULTS AND DISCUSSION

### Learning Quality in SMKs in Bireuen Regency

Based on various measured indicators, the learning quality at Vocational High Schools (SMKs) in Bireuen Regency has shown significant progress. The graph below illustrates assessments across four key dimensions of learning quality in SMKs: Quality, Timeliness, Initiative, and Communication. The overall learning quality in SMKs in Bireuen was recorded at 68%, slightly above the expected average standard of 66%. This indicates that all aspects of learning quality are sufficiently met but have not yet demonstrated any outstanding performance. The following is the result of descriptive-analytical research on the overview of learning quality, as illustrated in Figure 1.



Source: Data Processed (2025)

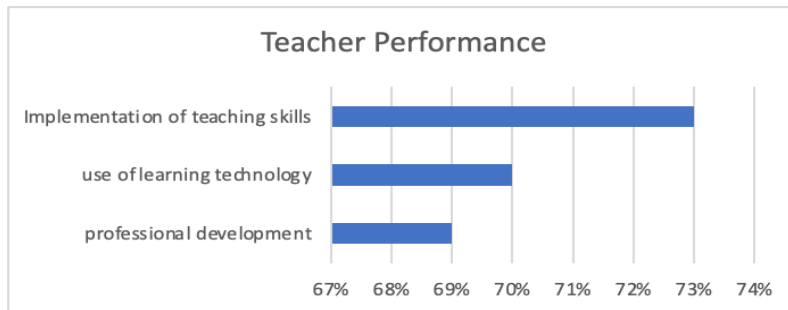
**Figure 1.** Overview of Learning Quality in Vocational High Schools (SMKs) in Bireuen Regency

### Teacher Performance in the TSM Vocational Program – Bireuen Regency

The performance of teachers in the Motorcycle Engineering (TSM) vocational program in Bireuen Regency has shown significant progress based on various measured indicators. The graph below presents evaluations of three key dimensions of SMK teacher performance: Professional Development, Use of Instructional Technology, and Implementation of Teaching Skills. The overall performance of SMK teachers in Bireuen was recorded at 71%, which is above the expected average of 66%. This indicates that while the results are promising, there are still areas that require improvement-particularly in professional development, the use of educational technology, and the implementation of teaching skills.



Although the performance level is close to the expected average, further improvement efforts are needed, especially in enhancing professional competencies and integrating technology in the learning process. The following is the result of descriptive-analytical research on the overview of teacher performance, as illustrated in Figure 2.

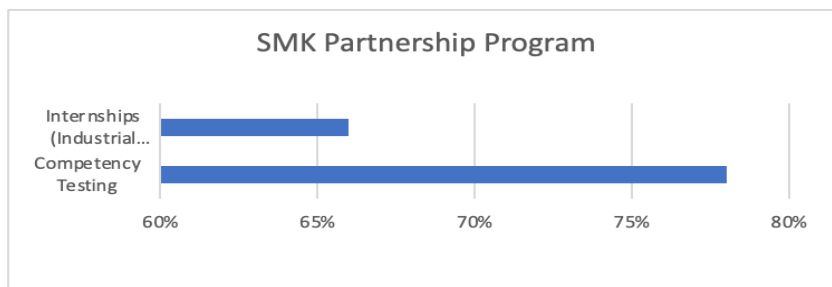


Source: Data Processed (2025).

**Figure 2.** Overview of Teacher Performance in Vocational High Schools (SMKs) in Bireuen Regency

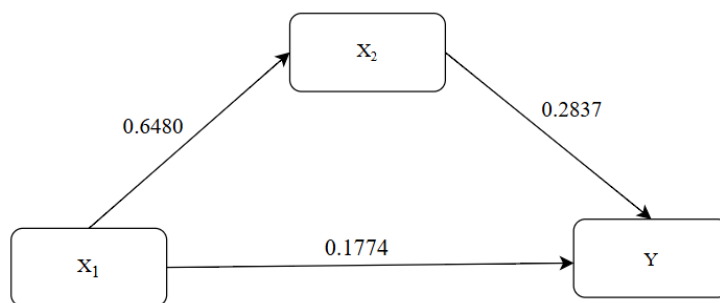
### TSM Vocational Partnership Program – Bireuen Regency

The partnership program in the Motorcycle Engineering (TSM) vocational field in Bireuen Regency has shown significant progress based on various measured indicators. The graph below illustrates assessments of two key dimensions of SMK partnership programs: Internships (Industrial Work Practice), and Competency Testing. The overall partnership performance in SMKs across Bireuen was recorded at 78%, well above the expected average of 66%. However, the area that still requires improvement is competency testing. Focused efforts are necessary to enhance the implementation and quality of this component. The following is the result of descriptive-analytical research on the overview of the partnership program, as illustrated in Figure 4.



Source: Data Processed (2025).

**Figure 3.** Overview of Vocational Program Management (TSM) in SMKs – Bireuen Regency



Source: Data Processing (2025)

**Figure 4.** Hypothesis Testing

The hypothesis proposed in this study is that there is a direct effect of vocational program management (X1) and teacher performance (X2) on the quality of learning (Y), as well as an indirect effect of vocational program management on learning quality through teacher performance as a mediating variable.

### Regression Model Evaluation

**Table 2.** Results of Direct Regression Model Test

Jalur	Variabel	Koefisien	t-statistic	p-value
$\overline{X_1 \rightarrow X_2}$	Vocational Program Management to teacher performance	0.6480	13.4215	0.000
$\overline{X_1 \rightarrow Y}$	Vocational Program Management to Learning Quality	0.1774	2.9050	0.039
$\overline{X_2 \rightarrow Y}$	Teacher performance to Learning Quality	0.2837	5.1697	0.000

To determine the extent of the influence of the independent variables X1 (Vocational Program Management) and X2 (Teacher Performance) on the dependent variable Y (Learning Quality), a t-test was conducted as shown in Table 2.

Based on the t-test results, the following findings were obtained:

Vocational Program Management significantly affects Teacher Performance, with a coefficient of 0.6480. This means that if Vocational Program Management increases by one unit, Teacher Performance is expected

to increase by 65%. This effect is positive and statistically significant at the 5% level. It can be concluded that Teacher Performance is directly influenced by Vocational Program Management.

Vocational Program Management also significantly affects Learning Quality, with a coefficient of 0.1774. This indicates that a one-unit increase in Vocational Program Management is associated with an 18% improvement in Learning Quality. This effect is also positive and significant at the 5% level. Therefore, it can be concluded that Learning Quality is directly influenced by Vocational Program Management.

Teacher Performance has a significant influence on Learning Quality, with a coefficient of 0.2837, meaning that a one-unit increase in Teacher Performance leads to an increase of 28% in Learning Quality. This effect is likewise positive and statistically significant at the 5% level. It can be concluded that Learning Quality is directly influenced by Teacher Performance.

Based on the coefficient table, the path coefficients (beta values) were obtained, leading to the final result for Structural Model 1 as follows:

Path Coefficient Equation:  $Y = 0.1774 \cdot X_1 + 0.2837 \cdot X_2$

Arah	Variabel	Koefisien indirect effect	CI 95% (bootstrapping)
$\overline{X_1 \rightarrow X_2 \rightarrow Y}$	Vocational Program Management influence Teacher performance to learning quality	0.1838	[0.1118, 0.2566]

Based on Table 3, it was found that the indirect effect of vocational program management on learning quality through teacher performance is 0.1838. This means that if vocational program management increases by one unit, learning quality can increase indirectly through teacher performance by 18%. This effect is positive. The indirect effect is statistically significant, as the bootstrap confidence interval does not include zero.

### Model Fit Test

The goodness of fit of the model can be assessed using an extension of regression analysis in SPSS, given that the validity and reliability tests show very high results. This indicates that the proposed model fits the data well. SPSS further facilitates path analysis calculations, where model fit is confirmed if the

sample correlation matrix does not significantly differ from the estimated (reproduced) correlation matrix, or the expected correlation matrix. The model fit can be assessed using the following formula:

$$Q^2 = \frac{1 - R_m^2}{1 - M}$$

With

$$R_m^2 = 1 - (1 - R_1^2)(1 - R_2^2)(1 - R_3^2)(1 - R_3^2) \dots (1 - R_k^2)$$

If all path coefficients are significant, then  $M = R\_M^2$ , resulting in  $Q = 1$ , which means the model has a perfect fit. This indicates that the proposed model fits the data perfectly. Furthermore, based on the values of the correlation coefficients and path coefficients obtained from the calculations, a path diagram can be drawn. This diagram represents a fixed model or theoretical model that illustrates the causal relationships among the research variables.

	R-Square
Quality of Learning	0.1854
Teacher Performance	0.3392

Approximately 33.92% of the variation in Teacher Performance can be explained by the variable vocational program management ( $X_1$ ). The remaining 66.08% is explained by other factors outside the model. This interpretation indicates that the quality of instruction has a strong influence on Teacher Performance.

Approximately 18.54% of the variation in Instruction Quality can be explained by the combination of variables vocational program management ( $X_1$ ) and teacher performance ( $X_2$ ). The remaining 81.46% is explained by other factors not included in the model.

$$R_m^2 = 1 - (1 - 0.1854)(1 - 0.3392) = 0.4617$$

$$Q = \frac{1 - 0.7996}{1 - \frac{0.7996}{2}} = 0.6998$$

Model fit testing was conducted using the Goodness of Fit approach, based on the R-Square values from each regression path. The value of  $R_m^2$  was found to be 0.4617, and the calculation results showed a Q value of 0.6998. This value indicates that the model does not yet demonstrate a perfect fit with the data ( $Q < 1$ ); however, it can still be used because all path coefficients are significant.

## Discussion

The management of vocational programs has a direct influence on the quality of instruction, as well as an indirect influence through teacher performance, with an effect size of 18%. This indicates a moderate but important impact that must be considered in efforts to improve the quality of vocational high schools (SMK) through enhanced teacher performance.

This finding confirms the results of Dighliya (2024), who stated that teacher performance must remain up to date, as it is closely related to the competency focus and skillsets required by the constantly evolving job market.

This study reaffirms the positive impact of vocational program management and teacher performance on instructional quality, which is consistent with previous findings (M., K., Mubarak; Zakiatur, Rofiah, 2023; Barokah, E. R., Giatman, M., & Ernawati, E., 2024). Vocational program management was also found to significantly affect teacher performance in vocational schools (Mamesah, S. F., Sumual, S. D. M., & Lengkong, J. S. J., 2024). Teacher performance tends to improve when vocational programs are perceived as being managed accountably and professionally (Mamesah et al., 2024).

This is further supported by Sri Handayan et al. (2024), who showed that effective vocational program management enhances teacher performance by fostering responsibility, trust, motivation, institutional belonging, and solidarity in maintaining the school's reputation. Moreover, Nelly et al. (2024) found that the impact of vocational program management on instructional quality is mediated by the performance of vocational school teachers.

The management of vocational programs has a positive and significant impact on the quality of instruction, with an effect size of 18%. This indicates a meaningful influence that should be considered in efforts to improve the quality of vocational high schools (SMKs).

This study confirms the positive impact of vocational program management on teacher performance, which is consistent with previous findings. Vocational program management significantly affects the performance of SMK teachers (Raharja et al., 2022). Teacher performance improves when vocational programs are perceived as being managed accountably and professionally (Abu Nasra & Arar, 2019).

This is further supported by Nuryasin and Mitrohardjono (2019), who found that vocational program management enhances teacher performance by fostering responsibility, trust, motivation, institutional belonging, and a sense of shared purpose in maintaining the school's reputation. Additionally, Nelly et al.

(2024) found that the impact of vocational program management on instructional quality is mediated by teacher performance in SMK.

This study confirms the positive impact of teacher performance on the quality of instruction, which is consistent with previous findings. Teacher performance has a significant effect on the quality of instruction in vocational high schools (SMKs) (Raharja et al., 2022). The quality of instruction in SMKs, particularly in the context of implementing competency-based curricula, improves when schools employ teachers who demonstrate high levels of responsibility and professionalism (Abu Nasra & Arar, 2019).

This is supported by Nuryasin and Mitrohardjono (2019), who found that teacher performance enhances instructional quality in SMKs through teachers' competence, motivation, and strong commitment. Furthermore, Nelly et al. (2024) found that teacher performance not only has a direct impact on instructional quality but also serves as a mediating variable in the relationship between vocational program management and instructional quality in SMK.

Vocational program management has been proven to significantly enhance instructional quality, aligning with findings from previous research (Wandi Wandu, Lona Mardiaty, Akma Khairun Nisa, Ahmad Sabri, & Yusran Lubis, 2024). In addition, Fitriyani et al. (2024) emphasize the critical role of teacher performance in improving instructional quality. Rerdiana, Barlian, and Oktaviani (2024) highlight the substantial contribution of vocational program management in fostering teacher performance.

Conversely, Azizah et al. (2019) argue that although vocational program management may not directly influence instructional quality, it still positively impacts teacher performance. School principals are encouraged to consistently and effectively implement vocational program management that is professional, fair, innovative, and collaborative. They should foster professional learning communities (PLCs) to support teacher development and encourage active engagement in internal problem-solving and collaboration with industry partners.

The principles of Participation, Empowerment, Collaboration, and the use of Technology (PPKP) are essential components in vocational program management that embodies good governance and clean government (Komariah et al., 2023).

However, challenges remain in the implementation of vocational program initiatives such as teaching factories, including: Limited resources, Industry collaboration, Performance measurement and work ethic safety, Monitoring and evaluation, Technological advancements, Providing adequate

hands-on experience for students, Funding and sustainability (Irsyad & Effendi, 2023). Furthermore, schools must ensure the reliability of learning infrastructure, the availability of key learning facilities, and the continuity of support services that prepare students for engagement with the business and industrial sectors.

## CONCLUSION

This study concludes that effective vocational program management significantly enhances teacher performance, which in turn exerts a direct and substantial impact on instructional quality. Moreover, teacher performance serves as a critical mediating variable, amplifying the positive influence of program management on learning outcomes. Although the model fit ( $Q = 0.6998$ ) falls short of optimal standards, it remains statistically acceptable and confirms the robustness of the proposed relationships. These findings underscore the necessity of a strategic, two-pronged approach to educational reform in SMKs: aligning vocational programs with labor market demands and investing in continuous teacher development. To translate these insights into actionable strategies, schools should foster structured industry partnerships and implement targeted upskilling initiatives for educators. Future studies are encouraged to explore this model across broader regions and incorporate student achievement metrics to validate the instructional impact more comprehensively.

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