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The Influence of Competence, Work Environment and Industrial Internships on Learning Effectiveness Through Teacher Performance in Vocational High Schools

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Abstract

This study aims to analyze the influence of competence, work environment, and industrial internship on learning effectiveness through teacher performance in Vocational High Schools (SMK) using a Systematic Literature Review (SLR) approach. A total of 35 relevant articles published between 2020 and 2025 were thematically analyzed to identify patterns and gaps in related research. The study results show that teacher competencies, especially in pedagogical and professional aspects, strongly influence student motivation and learning outcomes. A conducive working environment and effective leadership also improve teachers' performance in delivering materials optimally. In addition, the industrial apprenticeship program (PKL) for students and teachers is proven to improve the relevance of learning to the needs of the world of work, although its implementation still faces various challenges such as the lack of guidance from the industry and the mismatch of tasks with student competencies. This review suggests the need for continuous synergy between schools and industry and strengthening teacher training to make vocational education more responsive to labor market dynamics. Further research is recommended to examine the long-term impact of vocational education on graduates' career success and the development of effective school-industry partnership models.

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INTRODUCTION

Vocational education has a strategic role in producing human resources who are ready to enter the world of work (Priani & Ismiyati, 2020). According to Marfianti & Hariyati, (2020) Vocational

High Schools (SMK) as vocational education institutions are directed to develop students' competencies to be able to compete in an increasingly dynamic industrial world. However, the effectiveness of learning in SMK is not only determined by the curriculum and infrastructure, but also greatly influenced by the performance of teachers as the main facilitator in the learning process (Imanuddin et al., 2024). SMK teachers are required to have adequate competence, be able to adapt to technological developments and the world of work, and be able to bridge the needs of the industrial world with teaching materials at school (Rahayu & Sunarto, 2022). According to Tarigan (2022), understanding the factors that influence teacher performance is important in an effort to improve the quality of learning in SMK. In practice, many teachers experience challenges in integrating learning materials with the evolving needs of industry (Junaidi & Noor, 2023). The low relevance between learning in schools and the world of work is one of the causes of the mismatch of graduate competencies (Agustian et al., 2024). According to Sugiarti (2023) Teachers who have industrial insight tend to be able to develop learning strategies that are more contextual and applicable. So, improving the quality of teachers is an urgent need that cannot be ignored (Rahmania & Agustin, 2020). According to Badru et al, (2022) Thorough coaching and evaluation of the factors supporting teacher performance are important foundations for strengthening the vocational education system.

One of the main factors that influence teacher performance is their competence, including pedagogical, professional, social, and personality competencies (Kartiningsih, 2024). High competence allows teachers to design and implement meaningful learning that is relevant to the needs of the world of work (Furi et al., 2023). In addition, a conducive, collaborative and supportive work environment is also an important factor in supporting teacher performance (Eli et al., 2022). According to Wicaksono et al (2023), a good work environment can increase teacher motivation, job satisfaction, and a sense of responsibility for the learning process. In addition, teachers' industry internship experience can strengthen their understanding of work practices in the field, so that the learning delivered becomes more applicable and contextualized (Munandar & Suryawati, 2024). These three factors are interrelated and contribute to the achievement of optimal learning outcomes. Teachers who are competent, work in a positive environment, and have first-hand experience in the industrial world will find it easier to develop project-based and practical learning approaches. According to Judijanto et al (2024) this can ultimately increase student engagement and reduce the gap between the school world and the world of work. Without intervention in these three aspects, efforts to improve the quality of learning in SMK will be difficult to achieve. Identification and in-depth analysis of the influence of these three factors is very important.

Along with the increasing demands of the world of work for SMK graduates, it is necessary to strengthen the synergy between the world of education and the world of industry (Setiawan & Apriyanto, 2024). Industrial internships for teachers are not only an administrative complement, but as a means of enriching insights and skills that can be integrated in the learning process (Sitorus et al., 2021). Thus, the effectiveness of learning in SMK cannot be separated from the contribution of factors such as teacher competence, a supportive work environment, and industrial internship experience. Teacher performance becomes an intervening variable that bridges the influence of these three factors on overall learning effectiveness. According to Mantika & Purwanto, (2022) High-performing teachers tend to have innovative teaching strategies and are able to create a fun and meaningful learning atmosphere. They are also better able to conduct authentic learning

assessments and adapt teaching materials to the latest industrial developments (Rosyad et al., 2024). With an industrial practice-based learning approach, vocational students are expected to have better work readiness (Alfiani, 2021). Teacher performance is also an important indicator in assessing the successful implementation of the link and match policy between education and the business world (Efendi et al., 2023). According to Romli & Darmawan, (2025) Improving teacher performance is a central point in creating effective and competitive learning.

To obtain a comprehensive and in-depth understanding of the relationship between competence, work environment, and industrial internships on learning effectiveness through teacher performance, a study was conducted through the Systematic Literature Review (SLR) method. This method allows researchers to collect, evaluate and synthesize relevant findings from various previous studies in a systematic and transparent manner.

Thus, this study aims to identify patterns, trends, and gaps in existing research, so that it can serve as a basis for the formulation of vocational education policy and the development of vocational teacher professionalism in the future. The scope of this review includes studies that discuss the relationship between teacher competence, work environment, industrial apprenticeship experience, teacher performance, and learning effectiveness in the context of vocational education, especially in SMK. The results of this review are expected to make theoretical and practical contributions to the development of vocational education in Indonesia. In addition, the findings from this review can be used as a reference in designing teacher competency improvement programs based on industry needs. The utilization of SLR also allows researchers to ensure that the study conducted has a strong empirical basis and can be scientifically accounted for. With this approach, the study will produce an accurate mapping of the influence of various factors on learning effectiveness. Finally, the results of this study are expected to become a foothold in strategic decision-making for the development of vocational education policies that are more adaptive and responsive to the challenges of the times.

METHODS

Systematic Literature Review (SLR)

This research uses the Systematic Literature Review (SLR) approach to examine in depth the influence of competence, work environment, and industrial apprenticeship on learning effectiveness through teacher performance in Vocational High Schools (SMK). SLR is a research method that aims to identify, assess, and synthesize all available relevant evidence related to a particular topic with a systematic and replicable procedure. This method was chosen because it provides a systematic, transparent and structured synthesis of relevant scientific literature. SLR allows researchers to critically evaluate previous research results and identify knowledge gaps that still need further research. This approach is suitable for summarizing empirical and theoretical evidence related to improving learning quality and teacher performance in vocational education. In its implementation, the SLR method in this study refers to systematic steps, which consist of formulating research questions, identifying literature, selecting studies, extracting data, synthesizing analysis, and reporting results.

Literature Search Proses

The literature search process was conducted by accessing several credible online scientific databases, such as Google Scholar, ScienceDirect, Scopus, ERIC, and DOAJ. The search was

conducted using a combination of keywords relevant to the research topic, including: “teacher performance,” ‘vocational education,’ ‘teacher competence,’ ‘work environment,’ ‘industry internship,’ and ‘learning effectiveness,’ as well as their Indonesian equivalents such as ‘teacher performance,’ ‘vocational education,’ ‘teacher competence,’ ‘work environment,’ and ‘industry internship.’ The range of literature publications selected was limited to the range of publications published in the literature. The publication range of the selected literature was limited to 2020 to 2025 to ensure the relevance and novelty of the data.

Inclusion Criteria

To ensure that the literature used was relevant to the research focus, the following inclusion criteria were set:

1. Articles published within the time span of 2020 to 2025.
2. Articles addressed at least one of the main topics: teacher competence, work environment, industrial internship experience, teacher performance, or learning effectiveness in SMK or vocational education.
3. Empirical-based studies (quantitative, qualitative, or mixed) that clearly explain the research methods and findings.
4. Articles published in accredited journals or reputable scientific proceedings.
5. Articles are available in Indonesian or English and can be accessed in full text.

Data Analysis

After the literature selection process was completed, data was extracted from the selected articles based on several important aspects, namely: research objectives, methods used, variables studied, main results, and relevance to the conceptual framework of this study. The extracted data were then analyzed using a thematic approach and content mapping, with teacher performance as the mediating variable between competence, work environment and industrial internship on learning effectiveness. The analysis was conducted narratively and descriptively by grouping the findings based on certain themes or patterns that emerged from the literature. In addition, researchers also identified similarities and differences from previous research results and explored potential relationships between variables that may not have been widely studied. The results of this analysis are used as a basis for synthesizing knowledge and developing theoretical and practical implications for the development of vocational education, especially in efforts to improve the quality of vocational teachers.

RESULT AND DISCUSSION

A total of 35 journal articles were systematically reviewed to identify and analyze findings related to the influence of competence, work environment, and industrial apprenticeship on learning effectiveness through teacher performance in vocational schools. The literature reviewed shows that these three factors have a significant contribution to improving learning quality, either directly or through the mediating role of teacher performance. The review was conducted using a thematic approach to summarize various perspectives and research results. A summary of each article is presented in Table 1.

Tabel 1. Literature Review Results

No	Title	Research Results
1	Pengaruh Kompetensi Profesional	This study analyzes the effect of teachers' professional

<p>Guru dan Fasilitas Belajar Terhadap Mutu Pendidikan di SMK PK BIM Jombang. (Kartiningsih, V. D. (2024))</p>	<p>competence and learning facilities on the quality of education at SMK PK BIM Jombang using quantitative methods and questionnaires to 97 students. The results show that both have a positive and significant effect, with learning facilities providing a greater influence (63.8%). This finding supports that teacher competence plays an important role in learning effectiveness, in line with the concept of teacher performance as a mediator.</p>
<p>2 Pengaruh Kemandirian Belajar, Fasilitas Belajar dan Kompetensi Guru Terhadap Efektivitas Belajar Siswa-Siswi SMK Teknik Pal Surabaya. (Imanuddin, F., Aliyah, N. D., & Darmawan, D. (2024))</p>	<p>This study examines the influence of learning independence, learning facilities, and teacher competence on learning effectiveness at SMK Teknik PAL Surabaya. The results show that all three factors have a significant effect on learning effectiveness. This finding confirms the important role of teacher competence in improving the quality of learning in SMK.</p>
<p>3 Pengaruh Kompetensi Profesional Guru Produktif dan Kelayakan Sarana Prasarana Terhadap Peningkatan Kompetensi Siswa Dalam Pembelajaran Berbasis Teaching Factory Pada Program Keahlian Multimedia di SMK Negeri 1 Surabaya. (Marfianti, Y., & Hariyati, N. (2020))</p>	<p>This study examines the influence of teachers' professional competence and the feasibility of infrastructure facilities on improving student competence at SMK Negeri 1 Surabaya. Using a quantitative approach with 138 students as the sample, the F-test results show that both have a significant effect of 38.2%. This finding supports the conceptual framework that links teacher competence and work environment in improving learning effectiveness in SMK.</p>
<p>4 Badru, M., Ghofur, A., & Mashadi, M. (2022). Hubungan Antara Daya Inovatif Kepala Sekolah, Budaya Kerja Guru Dan Etos Kerja Guru Terhadap Efektivitas Pembelajaran di Smk Kabupaten Malang.</p>	<p>This study examines the influence of innovative principals, teacher work culture, and teacher work ethic on learning effectiveness at SMK Dharma Wanita Kromengan Malang. The F test results show that the three variables are significantly related, with the greatest influence coming from the innovative principal. This finding supports the conceptual framework that links teacher competence and work environment in improving learning effectiveness in vocational schools.</p>
<p>5 Pengaruh Prasarana Bengkel Sekolah dan Kegiatan Praktik Kerja Lapangan (PKL) terhadap Hasil Unjuk Kerja Praktik Sistem Bahan Bakar. (Setiawan, T., & Apriyanto, N. (2024))</p>	<p>This study examines the influence of workshop infrastructure and field work practice on student performance at SMK NU 06 Muallimin Weleri. The results of the analysis showed that both had a significant effect. The findings support the conceptual framework that work environment and internship play</p>

<p>6 Pengaruh Fasilitas Belajar, Kompetensi, dan Kinerja Guru terhadap Mutu Pendidikan di SMK Kabupaten Bogor. (Mantika, S. P., & Purwanto, A. (2022))</p>	<p>a role in improving learning effectiveness through teacher performance in SMK. This study examines the influence of learning facilities, competencies, and teacher performance on the quality of education in SMK Bogor Regency. The results show that facilities and teacher competencies have a positive effect, while teacher performance has no direct effect. The findings support the role of competence and work environment on learning effectiveness through teacher performance.</p>
<p>7 Pengaruh Kompetensi Pedagogik Guru Terhadap Hasil Belajar Siswa Setingkat Menengah Kejuruan. (Romli, A. B. S., & Darmawan, D. (2025))</p>	<p>This study shows that teachers' pedagogical competence has a significant influence in improving student learning outcomes. Using the literature study method, this research confirms the importance of teacher competence in creating a conducive learning environment. This finding is in line with the conceptual framework of this study, where teacher competence is one of the main factors that influence learning effectiveness through teacher performance in vocational schools.</p>
<p>8 Uji Kompetensi Siswa: Kompetensi Guru Produktif, Prestasi Prakerin Dan Intensitas Les Apakah Memberikan Kontribusi? (Rahayu, T., & Sunarto, S. (2022))</p>	<p>This study shows that productive teacher competence, internship achievement, and USK tutoring intensity have a positive and significant effect on the competency test results of SMK YPE Sawunggalih students. The largest contribution came from teacher competence, supporting the study's conceptual framework that competence and internship experience influence learning effectiveness through teacher performance.</p>
<p>9 Pengaruh Kompetensi Guru Terhadap Motivasi Belajar Siswa di SMK Negeri 40 Jakarta. (Furi, A. S., Faslah, R., & Yohana, C. (2023))</p>	<p>This study at SMK Negeri 40 Jakarta showed that teachers' pedagogical, personality, social, and professional competencies had a positive and significant effect on students' learning motivation. This finding supports the role of teacher competence in improving learning effectiveness through teacher performance as a mediator. These results strengthen the conceptual framework that improving teacher competence can create a more conducive learning environment and optimally motivate students.</p>
<p>10 Pengaruh Pelayanan Penyelenggaraan Praktik Kerja Industri Terhadap Kompetensi Agribisnis Tanaman Pangan dan</p>	<p>This study analyzes the effect of industrial work practice (PKL) services on the competence of class XII agribusiness students in food crops and horticulture at SMKN 63 Jakarta. The quantitative descriptive method</p>

<p>Holtikultura Kelas XII di SMKN 63 Jakarta. (Alfiani, M. N. (2021))</p>	<p>shows a significant positive influence, with a fairly strong category between PKL services and student competencies. These findings support the conceptual framework that highlights the role of industrial internships in improving student competencies through teacher performance.</p>
<p>11 Pengaruh Kompetensi Guru Dan Fasilitas Belajar Terhadap Prestasi Belajar Siswa Dismk Muhammadiyah Sampit. (Junaidi, M., & Noor, M. T. (2023))</p>	<p>This study analyzed the effect of teacher competence and learning facilities on student achievement at SMK Muhammadiyah Sampit. The results showed both had a significant effect with a contribution of 76.9%. The findings support that teacher competence plays an important role in learning effectiveness through teacher performance.</p>
<p>12 Pengaruh Kompetensi Guru, Fasilitas Belajar, dan Lingkungan Keluarga Terhadap Motivasi Belajar Siswa. (Priani, D. H. S., & Ismiyati, I. (2020))</p>	<p>This study shows that teacher competence, learning facilities, and family environment have a positive and significant effect on student learning motivation. These findings support the framework of the study that competence and environmental support can improve learning effectiveness through teacher performance in vocational schools.</p>
<p>13 Pengaruh Supervisi Kepala Sekolah, Lingkungan Kerja dan Motivasi Kerja Terhadap Kinerja Guru SMK Muhammadiyah 6 Donomulyo Kabupaten Malang. (Wicaksono, A. B., Handoko, Y., & Ruspitasari, W. D. (2023))</p>	<p>This study analyzes the effect of principal supervision, work environment, and work motivation on teacher performance at SMK Muhammadiyah 6 Donomulyo. Using a survey method on 41 teachers, the results show that supervision and work motivation have a significant effect on teacher performance, while the work environment does not. These findings support the framework of the study regarding the role of environment and individual factors on learning effectiveness through teacher performance in SMK.</p>
<p>14 Pengaruh Lingkungan Kerja Terhadap Kinerja Guru SMK Negeri 2 Kepenuhan. (Eti, E., Sudirman, W. F. R., & Mairiza, D. (2022))</p>	<p>This study analyzes the effect of work environment on teacher performance at SMK Negeri 2 Kepenuhan. The results show that the work environment has a positive and significant effect with a contribution of 66.9%. This finding supports the role of work environment in improving teacher performance and learning effectiveness in SMK.</p>
<p>15 Munandar, R., & Suryawati, R. (2024). Peran Magang Guru di Industri Dalam Meningkatkan Kompetensi Pengajaran Berbasis Praktik di SMKN 1 Sukorejo.</p>	<p>Teacher internships in industry improve teachers' understanding of the latest skills and technology, as well as honing soft and hard skills relevant to the world of work. Although limited by time and opportunity, these internships contribute positively to teacher performance and learning effectiveness in SMKs, in</p>

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- 16 Analisis Pengaruh Kemitraan Sekolah-Industri dan Program Magang terhadap Keterampilan Kerja dan Kesiapan Karier Siswa SMK di Jawa Tengah. (Judijanto, L., Mayasari, N., Baruno, Y. H. E., Tasrip., & Rusdi, M. (2024))
- 17 Analisis Pengaruh Lingkungan Kerja dan Motivasi Kerja Terhadap Kinerja Guru SMK Multi Karya Medan. (Tarigan, P. S. B. (2022))
- 18 Tantangan Pendidikan Vokasional dalam Meningkatkan Penyerapan Lulusan SMK di Dunia Industri. (Agustian, D., Amarta, A., & Wardoyo, S. (2024))
- 19 Pemenuhan Guru Produktif SMK di Era Revolusi Industri 4.0. (Sitorus, J., Karima, M. K., & Silalahi, B. R. (2021))
- 20 Pelaksanaan Kurikulum Merdeka Belajar di Sekolah Menengah Kejuruan. (Rosyad, A. M., Suhendrik, S., Faozi, R., Nurchamidah, N., & Hamsah, M.
- line with the role of industrial internships as a variable that influences effectiveness through teacher performance.
- This qualitative study explores the influence of school-industry partnerships and internship programs on the work readiness of vocational students in Central Java, through interviews, FGDs, and document analysis. Results show that the internship program provides practical experience and soft skills development, although it still faces logistical challenges and limited resources. These findings are in line with the study's conceptual framework, where industrial internships are an important factor.
- This study analyzed the influence of Work Environment and Work Motivation on SMK Teacher Performance. As a result, Work Environment has a significant effect, while Work Motivation does not. Simultaneously, both have an effect on performance with a contribution of 21.2%. This finding supports the role of Teacher Performance as a mediating variable in improving learning effectiveness.
- This SLR research reveals that the synergy of SMK and DUDI through adaptive curriculum, internships, and teacher training is important to improve the competitiveness of graduates. This finding supports the role of teacher performance as a mediator in the linkage of competencies, industrial internships, and learning effectiveness. Skills certification and strengthening soft skills are also supporting factors for graduate job readiness.
- This study describes the fulfillment of vocational productive teachers in the industrial era 4.0 in North Sumatra. There is a shortage of teachers and various patterns of fulfillment, such as training, industrial internships, and collaboration with DUDI. These findings support the role of teacher performance as a mediator in improving competence and learning effectiveness in SMK.
- This study analyzes the implementation of Merdeka Curriculum at SMK Negeri Lelea with a qualitative approach. The results show that this curriculum encourages project-based learning and industry connections, but faces challenges in teacher readiness

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- (2024))
- 21 Pengaruh Kepemimpinan, Disiplin Kerja, Motivasi, dan Lingkungan Kerja Terhadap Kinerja Guru SMK Dr. Soetomo Surabaya. (Rahmania, N. D., & Agustin, S. (2020))
- 22 Pengelolaan Profesionalisme Guru di Era Revolusi Industri 4.0. (Sugiarti, D. Y. (2023))
- 23 Efektivitas Kepemimpinan Transformasional Kepala Sekolah Melalui Komitmen Kerja Terhadap Kinerja Guru Merdeka Belajar. (Efendi, F., Sunaryo, H., & Harijanto, D. (2023))
- 24 Ardali, A. (2020). Pengaruh Implementasi Program Prakerin Terhadap Mutu Lulusan SMK
- and infrastructure. This finding is relevant to the study's conceptual framework as it emphasizes the role of teacher performance in managing curriculum change to improve learning competencies and effectiveness in SMKs.
- This quantitative research examines the influence of leadership, work discipline, motivation, and work environment on teacher performance at SMK Dr. Soetomo Surabaya. The results show that only motivation has a significant effect on teacher performance, while the other variables are not significant. This finding is relevant to the study's conceptual framework as it highlights the importance of internal factors such as motivation in supporting teachers' performance which impacts on learning effectiveness in SMKs.
- This research highlights the importance of improving teacher professionalism in the Industry 4.0 era through standards-based management and the PDCA cycle. The findings support the role of teacher competence and performance in improving learning effectiveness in vocational schools. Educational policy support is needed to encourage optimal implementation at the education unit level.
- This study shows that transformational leadership improves teacher commitment and performance in implementing Merdeka Belajar. Work commitment acts as a mediator, in line with the study framework which emphasizes the importance of teacher performance in the effectiveness of learning in SMK. These results support the importance of strengthening school leadership competencies in creating a supportive work environment.
- This study examines the implementation of the Prakerin program, the quality of vocational graduates, and the effect of Prakerin on the quality of graduates. Using a quantitative and survey approach, the results show that the implementation of the internship program is good despite weaknesses in feedback, and the quality of graduates is good although the application of life values needs to be improved. Internship has a significant positive effect on the quality of vocational graduates by 40.70%.

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- 25 Implementasi Praktik Kerja Industri dalam Meningkatkan Kompetensi Lulusan pada SMK. (Nida, N., Wasliman, I., & Dianawati, E. (2023))
- 26 Supriyanto, A., Miyono, N., & Abdullah, G. (2023). Manajemen Praktik Kerja Lapangan (PKL) dalam Peningkatan Kompetensi Teknik Kendaraan Ringan Otomotif.
- 27 Kontribusi Iklim Kelas, Motivasi Berprestasi dan Pengalaman PKL terhadap Kompetensi Keahlian serta Dampaknya pada Kesiapan Kerja Peserta Didik SMK Kompetensi Keahlian Teknik Komputer dan Jaringan. (Sudjimat, D. A., Sugandi, R. M., & Mariana, V. E. (2021))
- 28 Garnadi, A., Helmawati, R. Y., & Yoseptry, R. (2022). Manajemen Kelas Industri dan Industri Dunia Kerja (IDUKA) dalam Meningkatkan Kompetensi Siswa (Studi Kasus di SMK Wiraswasta dan SMK PGRI 3 Kota Cimahi).
- 29 Rosalina, T. (2024). Penguatan Kompetensi Siswa Melalui Program Magang Pada Dunia Usaha dan Dunia Industri.
- This study examines the management of vocational internship programs to improve the quality of graduates, with a focus on planning and implementation. The results show that the implementation of Prakerin has not been effective, especially related to the mismatch between jobs and competencies, as well as the lack of guidance and facilities from DUDI. Recommendations include improvements in planning, implementation, and evaluation of the Prakerin program.
- This study describes the planning, organization, implementation, and supervision of PKL in TKRO competence at SMK Negeri 1 Sragi. The results show that good PKL management, supported by optimal teacher performance, can improve learner competencies, which in turn contribute to the success of learning in SMK.
- This study identifies the contribution of classroom climate, achievement motivation, and PKL experience to the skill competence and work readiness of vocational students in Malang City. The results show that achievement motivation makes the largest contribution to skill competency (16.4%) and work readiness (5%), while the PKL experience has a positive effect on skill competency (6.4%) and work readiness (2.1%).
- This research used a qualitative case study approach to evaluate the management of vocational industrial classes and cooperation with IDUKA. The results showed that although the planning and cooperation program were appropriate, there were still problems such as student unpreparedness and lack of resources. Efforts made included improving teacher competencies and strengthening cooperation with IDUKA.
- This study describes the strengthening of student competencies through internships at PT Tirta Semesta Engineering Sidoarjo. Using a case study approach, data was collected through interviews, observations and document studies. As a result, competency strengthening is carried out through planning, implementation, and evaluation of the internship program. This process shows the importance of good cooperation between schools and industries to improve

<p>30 Dewi, T. K., & Hidayati, N. (2024). Model Program Magang Guru Industri untuk Meningkatkan Kompetensi dan Keterampilan Guru Pendidikan Vokasi.</p>	<p>the quality of student competencies. This research analyzes the industrial teacher internship program to improve vocational education. The results show that flexible program design and industry partnerships improve learning relevance and graduate readiness. Recommendations include standardization, technology, and continuous monitoring, with teacher performance as a mediating variable to learning effectiveness.</p>
<p>31 Pengaruh Lingkungan Belajar dan Kompetensi Pedagogik Guru Terhadap Minat Belajar Kelistrikan Body. (Pratama, B. W., Apriyanto, N., & Setiawan, T. (2021))</p>	<p>This study examines the effect of learning environment and teacher pedagogical competence on student interest in learning light vehicle body electricity at SMK Negeri 1 Blado. The results show a significant effect of 32%, which supports the role of teacher performance in improving the effectiveness of learning in SMK.</p>
<p>32 Pengaruh Kompensasi dan Lingkungan Kerja Terhadap Prestasi Melalui Motivasi Kerja Guru SMK Negeri Dander Bojonegoro. (Qomariyah, S. (2023))</p>	<p>This study analyzes the effect of compensation and work environment on teacher performance through work motivation at SMK Negeri Dander Bojonegoro. The results show that compensation and work motivation have a significant effect on teacher work performance, while the work environment only affects work performance through motivation. This finding is related to the influence of work environment factors on teacher performance in learning effectiveness in SMK.</p>
<p>33 Pengaruh Kompetensi Pedagogik dan Kompetensi Profesional Guru Terhadap Motivasi Belajar Peserta Didik SMK Negeri 3 Sidrap. (Hading, H. (2023))</p>	<p>This study analyzed the effect of teachers' pedagogical and professional competencies on student learning motivation at SMK Negeri 3 Sidrap. The results show that 48.94% of teachers have moderate pedagogical competence, 68.09% are high professional, and student learning motivation is high at 46.81%. Both teacher competencies provide 72.7% influence on student motivation, which is relevant to the role of teacher performance in vocational learning effectiveness.</p>
<p>34 Pengaruh Kepemimpinan Transformasional, Lingkungan Kerja, dan Motivasi Kerja Terhadap Kinerja Guru. (Khofifah, T. F., & Al Banin, Q. (2023))</p>	<p>This study analyzes the influence of transformational leadership, work environment, and work motivation on teacher performance in Sirampog District Vocational High School. The results show that the three factors have a significant effect on teacher performance, which is relevant to the conceptual framework related to competence, work environment, and work motivation in the effectiveness of learning in SMK.</p>
<p>35 Pengaruh Kegiatan Praktik Kerja</p>	<p>This study aims to analyze the effect of Field Work</p>

<p>Lapangan Terhadap Kemampuan Peserta Didik dalam Uji Kompetensi Keahlian Teknik Instalasi Tenaga Listrik SMK Negeri 1 Kediri. (Nugraha, A. T., Ashari, M. R., Kholis, N., & Purdiana, L. (2024))</p>	<p>Practices (PKL) on students' ability in the Expertise Competency Test (UKK) at SMK Negeri 1 Kediri. The method used is quantitative with survey, and the results show a significant positive relationship between PKL and UKK ($r = 0.774$), which supports the improvement of learning effectiveness through industrial experience.</p>
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Based on 35 articles reviewed, the influence of competence, work environment, and industrial internship on learning effectiveness through teacher performance in SMK shows that the three factors interact with each other in determining the quality of vocational education. Previous studies revealed the importance of collaboration between education and industry to improve students' competencies and their work readiness. Sudjimat, Sugandi, and Mariana (2021) and Garnadi, Helmawati, and Yoseptry (2022) highlighted that industrial internship experiences (PKL) significantly improve students' technical skills, especially in automotive and electrical fields. However, Nida, Wasliman, and Dianawati (2023) noted that the implementation of PKL is often ineffective due to the mismatch between students' competencies and the work given, as well as limited guidance from the business and industry world (DUDI). This leads to a lack of real experience that should be presented in the PKL program. The study by Rosalina (2024) shows the importance of the school's role in facilitating closer relationships with industry so that students can gain more applicable learning. Pratama, Apriyanto, and Setiawan (2021) added that teacher competencies that are not in line with industry needs can also limit student skill development during the internship period. With the active role of teachers in providing relevant guidance, the PKL program can run more effectively and effectively for students. In addition, the importance of strengthening the curriculum that supports the achievement of student competencies in accordance with industry standards should also receive more attention in this discussion.

In addition, teacher competence has a very important role in improving the effectiveness of learning. Research by Khofifah and Al Banin (2023) and Hading (2023) revealed that teachers' pedagogical and professional competencies significantly affect students' learning motivation. They argue that the quality of teaching provided by teachers can increase students' interest and motivation to learn, which in turn affects their learning outcomes. Wicaksono, Handoko, and Ruspitasari (2023) also emphasize that a supportive work environment, such as effective leadership and adequate facilities, also supports teachers' performance in delivering learning materials better. In addition, the quality of teaching provided by teachers is strongly influenced by their experiences in the field, especially those related to partnerships with industry. Dewi & Hidayati (2024) state that industrial internships for teachers contribute greatly to improving their competencies and skills, which in turn can improve teaching quality. In addition, the importance of continuous training for teachers to keep them up-to-date with technological developments and industry trends is also a significant determining factor. If the development of teacher competencies through planned training can be carried out well, the effectiveness of learning in SMK will also increase.

CRITICAL ANALYSIS

One of the main strengths of the existing literature is the attention to the factors that influence the quality of education in SMK, be it in terms of teacher competence, work environment, or

industry linkages. Research conducted by Sitorus, Karima, and Silalahi (2021) and Efendi, Sunaryo, and Harijanto (2023) contribute valuable insights into how school leadership and teacher commitment can improve the quality of teaching in SMKs. In addition, the integration of industry cooperation with the education curriculum, as discussed by Judijanto et al. (2024) and Rosalina (2024), provide practical implications on how this relationship can improve students' readiness to work in industry. These studies provide a clear picture of the importance of sustainability in cooperation between education and industry to support the development of student competencies that are relevant to market needs. The success of the PKL program is greatly influenced by the extent to which schools can facilitate access to industry and link student competencies with market demand. With an approach based on industry needs, the results of education in SMK are expected to be more relevant and applicable, thus preparing students with the right skills to enter the world of work.

However, there are some limitations in these studies. One of them is the methodological focus that tends to be limited to small samples or specific case studies, such as in Tarigan (2022) and Nugraha et al. (2024), which reduces the generalizability of the findings. More comprehensive research with wider samples and more varied methods is needed to obtain a more representative picture. In addition, while many studies highlight the importance of collaboration with industry (e.g., Nida et al., 2023; Garnadi et al., 2022), there are few studies that empirically examine models of industry-school partnerships that can significantly improve learning outcomes. These studies also mostly focus on short-term outcomes, such as improving students' technical skills, but few examine their impact on students' long-term career development. This points to the need for research that examines the effects of stronger school-industry relationships on students' long-term success, including the impact on their employment after graduation.

When viewed from a different perspective, some studies emphasize the role of leadership and teacher motivation in improving learning effectiveness. For example, Wicaksono et al. (2023) emphasize the role of school leaders and a supportive work environment to improve teacher performance, while Hading (2023) and Khofifah and Al Banin (2023) focus more on the direct influence of teachers' pedagogical and professional competencies on student motivation and learning outcomes. This approach provides insight that in addition to teacher competence, external factors involving support from school leaders and colleagues also greatly influence learning effectiveness. In contrast to research that emphasizes internal factors such as teacher competence, research by Agustian et al. (2024) examines more external challenges such as industry demand for skilled labor, while Rosyad et al. (2024) discussed more internal challenges such as curriculum adjustments and teacher training. All these studies provide a broader picture of the factors that influence the quality of education in SMKs. These different approaches point to the need for a more holistic model that can encompass all factors affecting learning in SMKs. Thus, more comprehensive solutions need to be developed to solve the existing challenges in vocational education

DISCUSSION

Based on the critical analysis of the research findings, there are several important things that need to be considered to improve the effectiveness of learning in SMK. First, the role of teacher competence is vital in influencing the quality of education. Efendi et al. (2023) showed that transformational leadership in schools contributed to increased teacher commitment, which in turn

improved student learning outcomes. However, the quality of teaching provided by teachers is also affected by their readiness to face new challenges, including technological developments and innovative learning methods. The lack of adequate training for teachers and limited support from school authorities, as found by Tarigan (2022) and Dewi & Hidayati (2024), remain major obstacles. Continuous training and improvement of education infrastructure are necessary so that teachers can provide effective learning in accordance with the demands of the times. In addition, it is important for schools to create a supportive work environment for teachers to work more optimally. School leaders must be able to create an atmosphere that motivates teachers to continue to develop and innovate in teaching.

In addition, a good industrial internship or PKL can be a link between the world of education and the world of work. Judijanto et al. (2024) and Sudjimat et al. (2021) showed that the PKL experience provides students with the opportunity to develop technical skills needed in the world of work. Real-life experience in the industrial world allows students to learn skills that are relevant to market needs, as well as introducing them to a real working environment. However, despite this, Nida et al. (2023) and Garnadi et al. (2022) revealed that many PKL programs are ineffective due to the mismatch between the work given and the students' inadequate competence, as well as the lack of guidance from the industry. For PKL programs to run well, there needs to be closer coordination between schools and companies, as well as continuous evaluation to ensure that students gain useful and relevant experience. In addition, the active involvement of teachers in directing students during the internship is also very important to ensure that students get maximum learning.

CONCLUSIONS

This literature review shows that factors such as teacher competence, a supportive work environment and strong links with industry influence the effectiveness of learning in vocational schools. The success of vocational education is highly dependent on the quality of teachers, student readiness, and industry involvement in the education program. However, there are some gaps that need to be addressed, such as the lack of research examining the long-term impact of vocational education and the lack of clear models for effective industry-school partnerships.

Future research should focus on longitudinal studies to measure the impact of vocational education programs on students' job readiness and career success after graduation. Further research could also explore the influence of technology application in vocational learning, given the rapid changes in the industrialized world that are heavily influenced by technological advancements. In addition, more effective partnership models between schools and industry need to be developed to create greater opportunities for students to acquire skills that match the demands of the job market.

CONFLICTS OF INTEREST STATEMENT

Regarding this study, the author declares that there is no conflict of interest.

AUTHOR CONTRIBUTIONS

Study concept and design: Wici Aan Savitri. Acquisition of data: Hasan Maksum. Analysis and interpretation of data: Dedy Irfan. Drafting the manuscript: Wici Aan Savitri. Critical revision of the manuscript for important intellectual content: Eko Indrawan. Statistical analysis: Wici Aan Savitri.

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