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ENHANCING THE COMPETENCIES OF VOCATIONAL HIGH SCHOOL CULINARY ARTS STUDENTS THROUGH INDUSTRY-BASED LEARNING: A SYSTEMATIC LITERATURE REVIEW

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Abstract

This study aims to synthesize the impacts of industry-based learning programs such as Internships (PKL), Work Placements (Prakerin), and Teaching Factories on the competencies of Vocational High School Culinary Arts students. Using the PRISMA framework for a Systematic Literature Review (SLR), ten relevant studies were analyzed to map the effects on students' hard skills, soft skills, and work readiness. The findings reveal a significant positive impact, with effects on overall competency ranging from 22.6% to 50.5%. Specifically, for technical skills like Food and Beverage service, the improvement reached up to 78%, while soft skills such as problem-solving and teamwork also showed significant enhancement. The analysis indicates that the effectiveness of these programs is highly dependent on the duration of the placement, the quality standards of industry partners (e.g., star-rated hotels), and the intensity of school-industry collaboration. However, a notable gap exists in the uniform implementation and evaluation standards across different programs. This study concludes that while industry-based learning is crucial, its optimization requires a more structured, adaptable, and formally evaluated framework to bridge the persistent competency gap in the culinary arts field.

Keywords: *practical training, school-industry collaboration, vocational education, culinary arts, internship (PKL), work placement (Prakerin), teaching factory.*

INTRODUCTION

The culinary and tourism industry stands as a fundamental cornerstone of the Indonesian economy. In 2023, for instance, the food and beverage sector contributed 39.10% to the non-oil and gas industry's GDP and accounted for 6.55% of the National GDP (Indonesiagoid, 2024). This significant contribution is largely attributed to the increasing appeal of local tourist destinations and a growing lifestyle trend favoring culinary exploration. Consequently, these factors have spurred a rising demand for professional human resources in the culinary arts field.

The required workforce must not only possess proficient technical skills but also demonstrate adaptability, innovation, and an understanding of ever-evolving industry standards.

Vocational education plays a vital role in preparing a job-ready workforce, bridging the gap between schooling and the actual demands of the industry. Unlike academic learning models, vocational education emphasizes the integration of real-world work experience with the mastery of applicable knowledge and skills, particularly in the culinary arts. However, previous studies Sutarna et al., (2020) reveal that vocational education has not fully eliminated the persistent gap, namely the misalignment between student competencies and industry needs. This phenomenon can be attributed to suboptimal models of collaboration between schools and the business and industrial sectors (DUDI) in implementing practical field training for students. Industry collaboration can serve as a strategic bridge between educational institutions and the corporate world (Munthe & Mataputun, 2021).

This partnership can manifest in various forms, including internship programs, joint training, the development of industry-aligned curricula (link and match), guest lectures from professionals, and industry-based competency certification schemes. Through this collaborative approach, students gain direct exposure to best practices in the field and acquire authentic work experience, thereby enhancing the quality of their professional competencies (Disas, 2018; Lisdiantini et al., 2022). (Disas, 2018; Lisdiantini et al., 2022).

Practical field training models can also have a significant effect on students' competitiveness, especially for those who undertake intensive training in workplaces with high standards. Schools, in conjunction with industry partners, can produce graduates with high employability and strong professional relevance, positioning field training as a strategic instrument for developing a job-ready workforce aligned with real-world industry demands (Adawiyah & Rifqi, 2022).

Given this pivotal role, it is crucial to thoroughly examine the influence of industry collaboration on graduate quality. Therefore, this study will be conducted using a Systematic Literature Review (SLR) to identify, assess, and synthesize empirical findings from various relevant studies. The SLR will provide a comprehensive knowledge map of how industry collaboration impacts the competencies of vocational students, specifically in the Culinary Arts major. This literature study is expected to identify existing research gaps and generate evidence-based recommendations for policies and educational practices to strengthen the quality of vocational education in Indonesia.

RESEARCH METHOD

This literature review examines the role of practical training facilities and industry collaboration on the graduate quality of vocational education in the Culinary Arts major. The method used in this review is PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). This framework is designed to conduct a systematic review of relevant literature in a specific educational field by ensuring comprehensiveness, validity, and transparency in its execution (Indadihayati & Hariyanto, 2023). The systematic literature review process adheres to the four stages of the PRISMA method as follows.

Identification

The identification stage is the initial process of searching for all relevant articles using appropriate keywords. The researchers used a combination of keywords relevant to the topic, including: "Vocational Education", "Culinary Arts", "Practicum Facilities", "Infrastructure", "Industry Collaboration", and "Graduate Quality". The search was conducted across several academic databases, namely SINTA, Garuda, and Google Scholar. All retrieved articles were then checked for duplicates, which were subsequently removed.

Screening

This process involves screening the articles based on their titles and abstracts against predefined inclusion and exclusion criteria (Table 1).

Table 1 Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Publication Type	Journal Articles (Scientific Articles)	Books, Book Series, Book Chapters, Conference Proceedings
Publication Period	Articles published within the last 10 years (2015–2025)	Articles published before 2015
Language	Articles published in Indonesian or English	Languages other than Indonesian and English
Research Focus	Studies focusing on the field of Culinary Arts	Studies focused on other vocational programs, even within the scope of tourism schools (e.g., Travel and Tourism Management)
Accessibility	Articles available and accessible in full-text format	Articles available only as abstracts or metadata

Eligibility

The eligibility stage is a subsequent step aimed at a full-text evaluation of the articles selected in the previous stage. This evaluation involves a thorough review of each article's content to confirm its alignment with the predefined inclusion criteria. Articles that do not meet these requirements are excluded from the literature review.

Included

At this final stage, only the articles that have successfully passed the eligibility phase are included in the literature review for synthesis. Each included article is analyzed in-depth to identify findings relevant to the research focus. The results of this analysis form the basis for developing the theoretical framework, formulating hypotheses, and constructing the arguments that support the study's conceptual foundation.

Figure 1 Review Framework

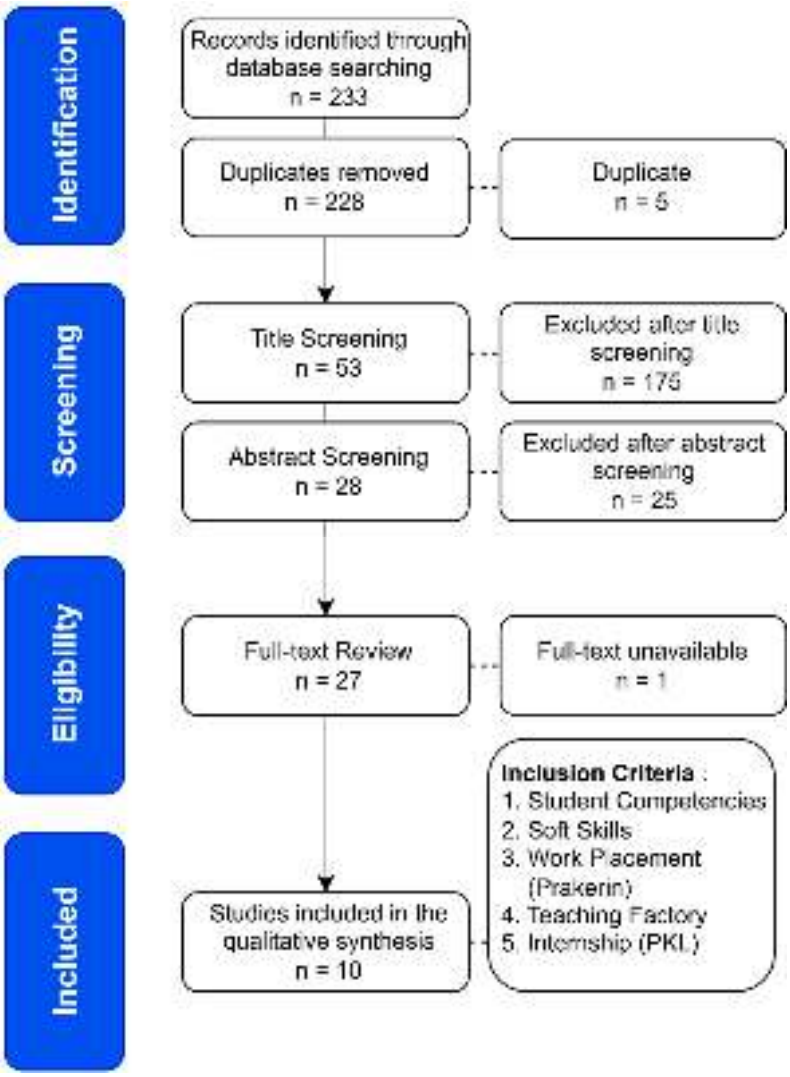

Table 2 Results of the Literature Analysis

No	Author (Tahun)	Title	Key Findings
1	Aida & Hidajat (2019)	Implementasi Pembelajaran Teaching Factory untuk Meningkatkan Kompetensi Keahlian Siswa Tata Boga	The Teaching Factory model increased the percentage of students with 'excellent' work competency from 23% before its implementation to 53% afterward. This indicates that fieldwork models that integrate industry needs can accelerate students' acquisition of work competencies.
2	Rahmawati (2022)	Kerjasama Humas Sekolah dengan Dunia Usaha dan Dunia Industri (DUDI) untuk Meningkatkan Kompetensi Lulusan	Schools that maintain intensive partnerships with industry can produce graduates with high competitiveness and strong professional relevance, positioning practical training as a strategic instrument for developing a job-ready workforce.

3	Mustika *et al* (2017)	Pengaruh Praktik Kerja Lapangan (PKL) terhadap Soft Skill Siswa SMK Bidang Keahlian Jasa Boga di Kota Malang	Internships (PKL) had a significant 50.5% positive effect on the development of students' soft skills, particularly in workplace communication, teamwork, critical thinking, and problem-solving abilities. This positions practical training as a holistic development model for students.
4	Iskandar et al (2023)	Pengaruh Efikasi Diri dan Hasil Belajar Praktek Kerja Industri terhadap Kesiapan Kerja Siswa Sekolah Menengah Kejuruan	Student self-efficacy and fieldwork experience have a significant effect on work readiness levels, with the calculated t-value being higher than the tabular t-value (t_calculated > t_table). This highlights that motivation and fieldwork experience can be used to moderate the impact of practical training on student work readiness.
5	Nirmalasari *et al* (2024)	Pengaruh Pengalaman Praktik Kerja Industri terhadap Kesiapan Kerja Siswa SMK Tata Boga di SMKN 1 Praya Barat	Extended Work Placements (Prakerin) of a 6-month duration in high-standard workplaces, such as star-rated hotels, had a significant 40.3% effect on student work readiness. This finding reinforces the notion that the quality and intensity of the fieldwork experience significantly influence a student's level of preparedness for the workforce.
6	Khoerunnisa *et al* (2017)	Manfaat "Program Praktek Kerja Industri" pada Kemampuan Kompetensi Kerja Food and Beverage Service Siswa Jasa Boga SMK Negeri 3 Cimahi	Work Placements (Prakerin) led to a significant improvement in students' Food & Beverage Service competencies, with a 77% enhancement in the service preparation stage and a 78% enhancement in the service process stage. This indicates that fieldwork positively impacts students' practical abilities, bringing them into alignment with F&B Service industry standards.
7	Iktarastiwi (2025)	Pengaruh Program Praktik Kerja Industri Terhadap Keterampilan Memecahkan Masalah pada Siswa SMK Negeri Jurusan Tata Boga di Yogyakarta	Work Placements (Prakerin) had a significant positive impact, accounting for a 22.6% improvement in students' problem-solving skills. This provides compelling evidence that fieldwork experience serves as an effective platform for developing students' capacities for both critical thinking and practical, work-related problem-solving.
8	Nahriana & Arfandi (2020)	The Co-operation of Vocational High Schools and Industries in Achieving Graduates Competence	Synergistic school-industry partnerships significantly impact students' mastery of work competencies and the overall quality of graduates. This includes fostering a stronger alignment with real-world industry needs and ensuring higher graduate employability compared to conventional fieldwork programs.
9	Dewi *et al* (2023)	Evaluasi Pelaksanaan Program Praktik Kerja Lapangan (PKL) Peserta Didik Kelas XI pada Jurusan Kuliner	The context, process, and product aspects were found to be effective, whereas the input aspect was not yet fully adequate. This indicates that while the fieldwork's structure aligns with student needs, its resource component (input) requires

			strengthening to ensure the program yields optimal outcomes.
10	Hariati *et al* (2022)	Evaluasi Pelaksanaan Teaching Factory dalam Meningkatkan Keterampilan dan Motivasi Berwirausaha Siswa SMK di Kota Makassar	All four components of the CIPP evaluation model, context (95%), input (97%), process (88%), and product (85%), were rated at a 'very good' level. This strongly indicates that the implementation of a Teaching Factory, when supported by intensive industry collaboration, yields significant positive effects for students, particularly in their mastery of essential hard and soft skills for the workplace.

RESULT AND DISCUSSION

A systematic analysis of the ten selected studies reveals that industry-based learning programs including industrial work practices and Teaching Factories have a significant positive impact on the competencies of culinary arts vocational students. However, the magnitude of this impact and the overall effectiveness of these programs vary, influenced by the program model and the quality of its implementation. This discussion is thematically structured into four sub-sections: (1) enhancement of technical competencies (hard skills); (2) development of non-technical competencies (soft skills); (3) the crucial role of program quality and industry partnerships; and (4) the limitations of the reviewed studies.

1. Significant Enhancement of Technical Competencies (Hard Skills)

The most consistent finding across the reviewed studies is the marked improvement in students' technical competencies. The study by Khoerunnisa et al. (2020) highlights this quantitatively, showing that student competency in Food and Beverage Service increased from 77% before the internship to 78% after. While the percentage increase appears modest, it indicates that internships are effective in validating and reinforcing skills learned in school to meet industry standards.

This improvement can be explained through the theory of Situated Learning, as proposed by Lave & Wenger, (1991). This theory posits that learning is most effective when it occurs within an authentic context where the knowledge will be applied. In an industrial kitchen, students are not merely replicating recipes as they might in a school setting; they are exposed to the actual pace, pressure, and quality standards of the profession. They are compelled to master techniques like mise en place (ingredient preparation) with efficiency, work under time constraints, and understand the workflow of a commercial kitchen. The school learning environment is often more permissive and controlled, whereas the industrial setting demands precision and speed, thereby forcing students to hone their technical skills to a professional level. This direct exposure transforms theoretical knowledge into tested, practical competence.

2. Development of Non-Technical Competencies (Soft Skills) as a Pillar of Work Readiness

Beyond hard skills, industry-based learning programs have proven to be an effective vehicle for developing soft skills. Mustika et al. (2017) found that internships contributed to a 50.5% improvement in students' soft skills, while Iktarastiwi (2025) also identified a significant, albeit smaller, influence of 22.6%. The soft skills developed include communication, teamwork, discipline, time management, problem-solving, and adaptability.

This development aligns with the concept of Employability Skills articulated by Yorke, (2006), which emphasizes that career success is determined not only by technical abilities but also by personal attributes and social skills. Internships function as a "gym" for training these soft skills "muscles." In a real work environment, students naturally learn how to communicate with superiors and colleagues, handle customer feedback, collaborate within a team to fulfill orders, and manage their time effectively during peak hours. These experiences are rarely fully replicable in a classroom. The industrial environment places students in situations that demand critical thinking and professional conduct, directly shaping their work readiness and maturity.

3. Program Quality and Industry Partnerships as Determinants of Success

Further analysis reveals that the effectiveness of these programs is not uniform and is highly dependent on the quality of the program design and the depth of the school-industry partnership. A stark contrast exists between the findings of Dewi et al. (2023), who identified the "input" of internship programs (such as student preparation and site selection) as suboptimal, and those of Hariati et al. (2020), where a CIPP model evaluation of a Teaching Factory showed all aspects (context, input, process, product) were rated as excellent.

This contrast suggests that the Teaching Factory (TEFA) model has the potential to be superior to traditional internships. A Teaching Factory does not merely place students in an industry; it creates an industrial ecosystem within the school environment. The partnership becomes more structured, sustainable, and integrated with the curriculum. This ensures that industry standards from raw materials and production processes to quality control are consistently applied. Conversely, the quality of traditional internships often varies depending on the standards and commitment of the partner industry, which may not always align with the school's learning objectives. The superiority of the TEFA model confirms that a true "Link and Match" program requires more than just student placement; it demands institutionalized curriculum synchronization and deep, collaborative partnerships.

4. Limitations of the Reviewed Studies and Future Research Directions

While presenting robust evidence, it is important to acknowledge several methodological limitations in the studies reviewed in this SLR. First, a majority of the studies (e.g., Khoerunnisa et al., 2020; Mustika et al., 2017; Iktarastiwi, 2025) used survey methods with questionnaires to measure competency impacts. The resulting data tend to be perceptual (based on student or teacher perceptions) rather than objective performance measures, which may introduce subjectivity bias. Second, several studies had limited sample sizes, often confined to a single school or a single cohort, which calls for caution when generalizing the findings.

These limitations highlight avenues for future research. There is a need for studies employing a mixed-methods design, which would combine quantitative data from objective performance assessments (e.g., pre- and post-program practical cooking tests) with qualitative data from in-depth interviews to understand the students' learning processes. Furthermore, longitudinal studies that track graduates for several years after employment would provide a more comprehensive understanding of the long-term impact of industry-based learning programs on their career trajectories.

CONCLUSION

The analyzed studies confirm that vocational fieldwork programs, whether in the form of Internships (PKL), Work Placements (Prakerin), or Teaching Factories play a strategic role as a form of school-industry collaboration in preparing a job-ready workforce that is relevant to real-world industry needs. The positive effects of these programs are significant not only for enhancing students' hard skills, soft skills, and overall work competency but also for the mastery of specific technical skills. This is evidenced by effect values ranging from 22.6% to over 50.5%, and even reaching 77–78% for specific job-related abilities. Fieldwork models that are intensive and conducted with high-standard industry partners are proven to yield the most powerful effects.

However, the collective findings also reveal that the impact of fieldwork is not yet uniformly distributed, particularly concerning variations in the quality of workplaces, the models of school-industry partnership, and the operational standards applied. This gap presents an opportunity for future research to uncover more adaptive and relevant fieldwork models that cater to students from diverse regions and address the continuously evolving demands of the workforce.

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