

Developing Competency Assessment for Cook Helper: A Systematic Literature Review

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ABSTRACT

The global workforce's rapid evolution and the complexities of Industry 4.0 necessitate a paradigm shift in Technical and Vocational Education and Training (TVET). Modern institutions are required to produce graduates who possess not only specialized practical skills but also robust non-technical competencies to navigate unpredictable professional environments. Despite the emphasis on workforce readiness, a significant research gap persists in contextualizing general TVET competencies into specific, actionable assessment frameworks for niche professions, such as the cook helper role in the culinary industry. This study aims to bridge this gap by conducting a qualitative Systematic Literature Review (SLR) of 30 peer-reviewed articles to identify core technical and non-technical competency variables. The findings reveal that while hard skills—such as culinary technique mastery, food safety, and hygiene—remain foundational, soft skills like adaptability, resilience, and effective communication are equally decisive for long-term career sustainability. This study successfully adapts these general TVET variables into specific, measurable indicators for cook helpers, emphasizing procedural precision and adherence to industry standards. Furthermore, the proposed assessment framework integrates work-based, interpersonal, and behavioral evaluations, offering a holistic measurement tool for SMK students. The study concludes that assessment frameworks in vocational education must transition from product-oriented testing to authentic, performance-based evaluations, particularly when implemented within Teaching Factory ecosystems.

Keywords : Competency Assessment, Cook Helper, TVET, Employability Skills.

INTRODUCTION

The dynamic evolution of the global workforce and the complexities of modern industries demand a paradigm shift in Technical and Vocational Education and Training (TVET). Modern TVET institutions are required to produce graduates who possess specialized practical skills, knowledge, and competencies tailored to specific occupations or industries (Hassan et al., 2024). To achieve workforce readiness, educational frameworks must be implemented effectively in vocational education and training (VET), which is recognized as a unified and integrated official program of education and training. This paradigm requires students to master not only the theoretical aspects of their discipline but also the attitudes needed to face unpredictable real-world situations (Vargas et al., 2023).

At the core of vocational readiness are hard skills, which define an individual's technical and experiential capabilities and show what a person can

perform in a specific profession (Abramson, 2005, p. 21). These technical competencies are cognitive in nature and represent measurable abilities acquired through formal education and targeted training (Dorch, 2013, p. 15; Ferreira et al., 2023; Maulana et al., 2024). Current theories suggest that mastering hard skills requires the ability to repeat tasks with precision by adhering to the “Always Be Consistent” (ABC) rule (Ahmad, 2015, p. 31; Coyle, 2012, p. 19). Consequently, high-precision skills are best developed in established laboratories equipped with appropriate tools and industry-standard machines (Bano et al., 2022).

However, focusing merely on technical proficiency is no longer sufficient in today’s technologically intensive and collaborative work environments (Davila Laguna et al., 2025; Thianthai & Sutamchai, 2022). Non-technical competencies, also known as soft skills, have emerged as important determinants of professional success because they enable individuals to interact effectively, cooperate, and resolve conflicts (Dorch, 2013, p. 17; Kumar et al., 2022). Unlike hard skills, soft skills are more improvisational and require rapid responses based on a person’s ability in the 3Rs: reading, recognizing, and reacting to available information (Ahmad, 2015, p. 31). Previous literature also notes that individuals are often hired for their technical hard skills, yet their long-term survival in the workplace is heavily determined by their soft skills (Tulgan, 2015, p. 8).

Previous studies show a strong consensus on the need to integrate both hard and soft skills into vocational curricula to prevent structural unemployment. Recent research emphasizes that employability skills, including productivity, comprehension, and personal traits, serve as significant distinguishing factors among job applicants (Mariano & Tantoco, 2023; Yoto et al., 2024). Several studies have also highlighted the integration of these competencies within work-based learning models, such as the Teaching Factory, to improve students’ work readiness and entrepreneurial intentions (Agustina et al., 2025; Anggitan & Gunadi, 2025). Nevertheless, most studies on TVET competencies remain at the macro level and have not sufficiently addressed the specific demands of niche vocational professions.

This generalized approach creates a significant research gap when applied to specialized roles, such as the cook helper profession in the culinary and hospitality sector. A commercial kitchen is a dynamic and high-pressure work environment that requires precise food preparation techniques, stress resilience, time management, and seamless teamwork (Espina-Romero et al., 2023; Yoto et al., 2024). A cook helper must execute technical tasks with consistent precision while also applying collaborative intelligence to synchronize workflows and minimize production errors (Coyle, 2012, p. 19; Espina-Romero et al., 2023). Generic assessment rubrics currently used in Vocational High Schools (SMK) often fail to capture the nuanced and fast-paced realities of the culinary sector.

To bridge the gap between academic learning and industrial demands, the implementation of authentic learning ecosystems, such as the Teaching Factory, is critical. The Teaching Factory model simulates real-world production and provides a

setting where students' hard and soft skills can be observed and evaluated simultaneously (Casmudi et al., 2022; Pratama et al., 2025). However, to ensure that the evaluation context closely reflects industry expectations, educational administrators must accurately distinguish the classification of Teaching Factory assistance schemes between regular and collaborative models. Accurate classification allows assessment metrics to align with the nature of industry partnerships and the operational realities faced by students during production.

The scientific novelty of this article lies in its systematic translation of macro-level TVET competency variables into micro-level practical assessment indicators tailored specifically for cook helpers at the SMK level. Traditional cognitive testing may measure theoretical knowledge, but it is insufficient to validate procedural competence and behavioral attitudes in a commercial kitchen environment. The proposed assessment framework integrates work performance, interpersonal, and behavioral parameters to provide a holistic measurement of student readiness. Based on the identified research gap, this study aims to identify the core variables of technical and non-technical competencies required in modern TVET, adapt these general competency variables into specific indicators for the cook helper profession, and structure the adapted indicators into an effective assessment framework for Vocational High School students.

REASERCH METHOD

This study employed a qualitative method with Systematic Literature Review (SLR) design to explore and synthesize current educational trends regarding TVET and employability competencies. The primary objective of this research design is to consolidate existing empirical evidence on hard skills and soft skills, subsequently adapting them into a highly contextualized and authentic assessment framework specifically tailored for the cook helper profession in Vocational High Schools (SMK).

The data collection process involved a comprehensive literature search across Science Direct databases. The search strategy utilized specific Boolean operators to capture the core themes of the research accurately. Core search strings included combinations such as ("TVET" OR "Vocational Education") AND ("Competency" OR "Employability") AND ("Assessment" OR "Framework" OR "Evaluation" OR "Measurement"). To maintain methodological quality, strict eligibility criteria were shown in table I.

Table 1. Inclusion and exclusion criteria

Inclusion	Exclusion
Publications written in English	Publications written in a language other than English
Articles published between 2022 and 2026	Articles published before 2022

Scopus-indexed international peer-reviewed journals and conference proceedings	Non-peer-reviewed articles, opinion pieces, editorials, theses, or non-indexed journals
Studies focused on Technical and Vocational Education and Training (TVET) or Vocational High Schools (SMK)	Studies focused exclusively on general education, primary education, or non-vocational higher education

The research procedures were executed chronologically following the PRISMA flow diagram to mitigate methodological biases and ensure transparency. During the identification phase, a total of 4,258 records were initially identified through database searching and being eliminate before screening amount 2639. During screening of 1,619 records being screened, there is 817 records pass the eligibility. During this thorough evaluation, 787 reports were excluded based on the criteria: studies focusing not in TVET context (e.g., focusing exclusively on general education), articles failing to meet indexing standards, and publications written in languages other than English. This procedure yielded a final, curated dataset of 30 highly relevant articles for qualitative synthesis. This procedure show in Figure 1.

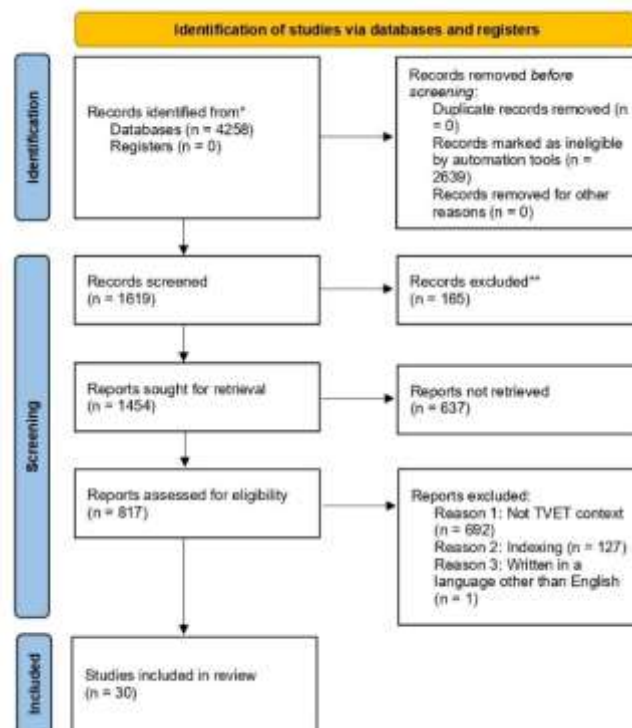


Figure 1. PRISMA Flow Diagram

In the context of this systematic review and framework development, testing methods refer to the analytical appraisal, coding, and validation of the synthesized data. A qualitative thematic analysis was utilized to evaluate the literature, employing both deductive and inductive context to categorize technical and non-

technical competencies. To ensure the practical validity and industrial relevance of the proposed assessment framework, the synthesized indicators were rigorously cross-referenced and tested against the Indonesian National Qualifications Framework (KKNI) and the Indonesian National Work Competency Standards (SKKNI). This analytical validation method guarantees that the resulting assessment parameters accurately measure the procedural competencies, safety compliance, and behavioral attitudes required for SMK graduates in the commercial kitchen environment.

RESULT AND DISCUSSION

The trend of cook helper competency is shown by the number of articles published from 2022 to 2026 in Science Direct. The figure 2 illustrates the comparative longitudinal trends of vocational hard skills, vocational soft skills, and cook helper competency metrics by the final years. The figure shows fluctuating data that tends to decrease, indicating the lack of involvement or specific research on the topic.

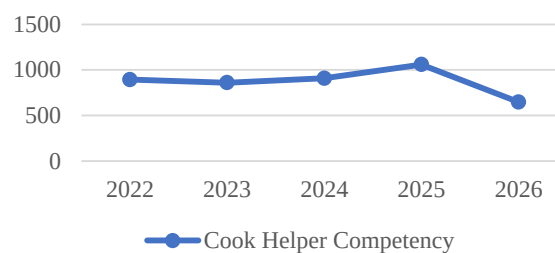


Figure 2. Cook Helper Competency Research Trends in Science Direct

Figure 3 illustrates the annual distribution of the 30 articles selected for this SLR, covering the period from 2022 to 2026. This period was chosen to better interpret the latest trends in research. The data demonstrate a dynamic publication pattern, with a notable peak in 2025 with 43.3% of total dataset.

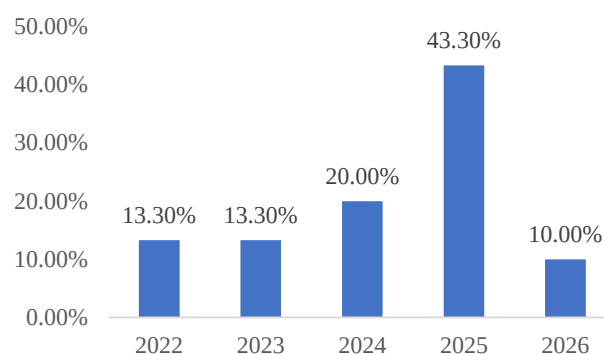


Figure 3. Years Distribution of Articles

The selected literature in this study is sourced from a various reputable journal indexed in Scopus. As illustrated in Table II, the literature is heavily characterized by high-impact publications, with 27 out of the 30 articles categorized

within the Quartile 1 of Scopus. The Social Sciences & Humanities Open journal represents the largest contribution to the dataset, accounting for 20.0% of the selected studies. This concentration in top-tier journals underscores the high academic rigor and relevance of the scholarly sources utilized to inform the development of the proposed cook helper competency assessment framework.

Table 2. Journal Distribution and Indexing

Index	Journal Name	N	%
Q1	Social Sciences & Humanities Open	6	20,0
Q1	Acta Psychologica	3	10,0
Q1	Education + Training	3	10,0
Q1	Heliyon	3	10,0
Q2	Higher Education, Skills and Work-based Learning	2	6,7
Q1	Journal of Innovation & Knowledge	2	6,7
Q1	Cleaner Environmental Systems	1	3,3
Q1	Computers & Education	1	3,3
Q1	Computers & Education: X Reality	1	3,3
Q1	International Journal of Educational Development	1	3,3
Q1	International Journal of Educational Research	1	3,3
Q1	International Journal of Educational Research Open	1	3,3
Q1	Personnel Review	1	3,3
Q1	Research in Social Stratification and Mobility	1	3,3
Q1	Studies in Educational Evaluation	1	3,3
Q1	Sustainable Futures	1	3,3
Q1	World Development Sustainability	1	3,3
	Total	30	100

Having established the robust, contemporary, and high-impact nature of the selected literature as a foundation for this study, the following section synthesizes these scholarly findings to address the core research questions. By integrating these insights, we systematically examine the multifaceted competency requirements in modern vocational education, beginning with an exploration of the essential variables that define workforce readiness, followed by their contextualization and the proposal of a structured assessment framework for the culinary profession.

A. Core Variables of Technical and Non-Technical Competency in Modern TVET

Based on the literature review, the overall data show that employability in the modern era requires a balanced integration of hard skills and soft skills. Hard skills, or technical competencies, are defined as specific occupation-related abilities that can be acquired through formal education, hands-on practice, and structured training (McDonald & Korber, 2023; Suyatmo et al., 2025). Mastering these competencies is essential to prepare graduates for the immediate demands of the

job market (Zheng et al., 2025). Vocational high school graduates are expected to master specific hard skills in their field to meet job market and industry requirements.

Within the TVET context, hard skills encompass a wide array of discipline-specific expertise. The curriculum is designed to provide practical knowledge in diverse occupational areas (Gul et al., 2025; Murshed, 2025). Furthermore, a deep understanding of specific competencies in each field is also categorized as an essential technical requirement (Piwowar-Sulej & Bąk-Grabowska, 2024). Possessing this specific expertise allows graduates to enter the workforce more smoothly because they are capable of executing tasks with minimal additional training from employers (McDonald & Korber, 2023).

However, hard skills cannot stand alone in the Industry 4.0 era. Hard skills must be supported by soft skills as decisive factors for career sustainability and adaptability. A lack of these competencies places graduates at a higher risk of career stagnation and structural unemployment (Demissie, 2026; Kholifah et al., 2025a). Among the most prominent soft skills are communication and collaboration, which are widely recognized as essential for workplace safety and virtual coordination (Suyatmo et al., 2025; Zuo et al., 2025). These skills enable individuals to work effectively within teams and respond to dynamic professional environments (Hulyadi et al., 2025; Okoye et al., 2026).

In addition to communication, modern vocational graduates must possess strong cognitive and technological flexibility. Critical thinking and problem-solving are vital for analyzing data and handling complex systems in the workplace (Mei et al., 2023; Vlachopoulos & Makri, 2024). These cognitive skills allow workers to make autonomous decisions and troubleshoot effectively in real-world scenarios (Mason et al., 2022; Wolf et al., 2025). Closely related to these cognitive abilities is digital literacy, which involves mastery of digital tools, software, and data safety (Adegbite, 2024; Kholifah et al., 2025b). The capacity to integrate technological changes into daily working skills has become a fundamental requirement for remaining competitive across industries (Rahmawati et al., 2025; Selebi & Ngwenya, 2026).

Finally, the demanding nature of contemporary workplaces requires strong psychosocial resources to maintain long-term employability. Competencies such as adaptability, resilience, and emotional intelligence form the psychological capital needed to manage constant change (Potgieter et al., 2024; Shamzzuzoha et al., 2022). Attributes such as emotional stability and conscientiousness are crucial for sustaining effort in challenging tasks and maintaining high productivity under pressure (Choi & Min, 2025; Sulistiobudi & Kadiyono, 2023). Furthermore, these emotional competencies allow individuals to empathize with diverse colleagues and transform potential workplace conflicts into collaborative success (Xue & Ooi, 2026).

B. Adaptation and Contextualization for the Competency of Cook Helper

Translating general TVET competencies into cook helper competencies requires strict alignment with national qualification frameworks. Based on the Indonesian National Qualifications Framework (KKNI) for food services, a Level 2 cook helper is primarily responsible for assisting in raw material preparation and food mixing (Menteri Pariwisata Republik Indonesia, 2025). This specific role requires graduates to acquire relevant skills for the job market by integrating theoretical education with practical execution (Guerrero Puerta & Lorente García, 2025). The adaptation process ensures that generic TVET skills are transformed into specific and measurable indicators appropriate for daily culinary operations.

In terms of technical competency, general discipline-specific expertise must be adapted into practical food production skills. According to the Indonesian National Work Competency Standards (SKKNI) for the hotel sector, these technical requirements include handling specific ingredients such as seafood, meat, and vegetables (Kementerian Ketenagakerjaan Republik Indonesia, 2024). Furthermore, students must demonstrate a solid understanding of food safety, proper nutrition, and physical health regulations to maintain product quality (Piwovar-Sulej & Bąk-Grabowska, 2024). These technical competencies require accuracy in using kitchen tools and strict adherence to standard operating procedures, moving beyond the evaluation of the final plated product.

Beyond technical capabilities, non-technical competencies must be contextualized to fit the high-pressure environment of a commercial kitchen. General communication and collaboration skills are adapted into the ability to exchange clear information and synchronize workflows during food preparation (Demissie, 2026; Hulyadi et al., 2025). A cook helper must work effectively as part of a kitchen brigade by demonstrating teamwork and social intelligence to prevent production errors (Mei et al., 2023; Suyatmo et al., 2025). This aligns with the KKNI directive that a cook helper must be capable of cooperating and communicating effectively within their scope of work (Menteri Pariwisata Republik Indonesia, 2025).

Another critical adaptation involves cognitive and emotional resources, particularly problem-solving and adaptability. In a fast-paced culinary setting, a cook helper must be able to respond to unexpected situations (Kholifah et al., 2025a; Mason et al., 2022). Furthermore, psychological resilience and stress management become vital indicators that enable the cook helper to maintain emotional stability under pressure (Choi & Min, 2025; Piwovar-Sulej & Bąk-Grabowska, 2024). These adaptive traits are recognized as essential psychosocial resources that help vocational graduates manage workplace changes and sustain their employability.

Finally, self-discipline and conscientiousness are adapted into tangible behaviors related to workplace hygiene and safety. A cook helper's work ethic is measured by consistency in applying sanitation protocols and occupational health and safety rules in the kitchen area (Kementerian Ketenagakerjaan Republik

Indonesia, 2024). Conscientiousness is identified as a crucial non-cognitive skill for ensuring high-quality work outcomes and long-term career success (Choi & Min, 2025). In addition, as commercial kitchens become more modernized, workers' adaptability must be strengthened to prepare cook helpers for emerging culinary technologies and industry trends.

C. Structuring an Assessment Framework for the Culinary Field at the Vocational High School Level

To effectively measure the adapted cook helper competencies among Vocational High School (SMK) students, the assessment framework must move beyond traditional cognitive testing. The framework proposed in this study synthesizes the findings of the literature review and integrates them with SKKNI and KKNI standards for the cook helper role. The result is a comprehensive assessment framework divided into technical or hard skills and non-technical or soft skills domains, as detailed in Table I.

Table 3. Type Styles

Competency Domain	Construct	Indicator
Technical Competency (Hard Skills)	An accumulation of procedural knowledge applied through standardized practice, enabling students to perform specific tasks precisely and consistently, producing outputs that meet industry standards.	a. Preparation b. Production Skills c. Hygiene d. Sanitation e. Output Quality
Non-Technical Competency (Soft Skills)	A set of personal attributes internalized through experience, supporting an individual's adaptation to dynamic and high-pressure work ecosystems.	a. Adaptability b. Communication c. Teamwork d. Responsibility

The framework in Table I provides a structured approach to evaluating the specific competencies required for the cook helper role. The synthesis of technical competency assessment prioritizes the working process rather than the final product. Validation should focus on the accuracy of kitchen tool usage, professional work attitudes, and strict adherence to sanitation standard operating procedures (SOPs), rather than exclusively judging the final plated dish.

Assessing non-technical competencies in a commercial kitchen environment cannot be achieved through standard written examinations. It requires continuous observation using analytic rubrics involving both instructors and industry mentors across the planning, execution, and debriefing phases of food production (Hulyadi et al., 2025). Indicators of adaptability and teamwork can be observed more clearly

during high-pressure production situations, such as *rush hour*. This approach aligns with the concept of authentic assessment, which emphasizes evaluation based on real-world working conditions and performance-based tasks (Vlachopoulos & Makri, 2024).

To maximize the impact of this authentic assessment approach, the framework should be integrated into formal training that functions as a unified and structured program of education and training. The implementation of this assessment framework within the Teaching Factory provides the necessary industrial context for evaluating students' technical and non-technical competencies simultaneously. However, to ensure that the evaluation metrics remain accurate and relevant, the classification of Teaching Factory assistance schemes must be clearly distinguished between regular and collaborative models. This distinction ensures that the assessment reflects the specific nature of the industry partnership and the actual operational realities faced by students in the kitchen.

CONCLUSION

This research demonstrates that an effective competency assessment framework for cook helpers in Vocational High Schools cannot rely exclusively on technical execution. Through a systematic synthesis of international literature and alignment with national standards (KKNi and SKKNi), this study concludes that successful workforce readiness necessitates a holistic integration of discipline-specific hard skills—such as precise food production processes, sanitation, and quality output—with critical soft skills, including stress resilience, concise communication, and conscientiousness. By contextualizing macro-level TVET variables into micro-level operational indicators, this study provides a comprehensive framework that evaluates students' work-based performance, interpersonal proficiency, and behavioural responsibility.

The proposed assessment framework advocates for a shift toward authentic, performance-based evaluation methods. Moving beyond traditional cognitive testing, the framework emphasizes the assessment of conceptual, procedural, and interpretative competence, prioritizing the working process over final results. Implementing this approach within structured Teaching Factory environments, while clearly distinguishing between regular and collaborative industry partnerships, offers a more accurate measure of a student's professional readiness. Consequently, this framework provides vocational stakeholders with a robust, evidence-based tool to cultivate graduates who are technically proficient, operationally disciplined, and psychologically prepared for the rigorous demands of the modern culinary industry. Future empirical validation of this instrument in live SMK laboratory settings is highly recommended to further refine the assessment metrics and demonstrate its impact on graduate employability.

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