

Evaluating the Effectiveness of Teaching Factory in Culinary Education Using Tyler's Goal-Oriented Model: A Case Study from an Indonesian Vocational School

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ABSTRACT

The Teaching Factory (TEFA) is an educational model designed to bridge the gap between vocational training and industry demands by integrating real-world production experiences into the learning process. While TEFA aims to develop both technical and soft skills, its effectiveness remains underexplored, particularly in rural contexts. This study employed a descriptive qualitative approach using Tyler's Goal-Oriented Evaluation Model to assess the implementation of TEFA in the Culinary Program at SMK Negeri 1 Lubuk Sikaping, Indonesia. Data were collected through in-depth interviews, participatory observations, and document analysis. Informants included school leaders, teachers, students, and industry partners. Data triangulation and thematic analysis were used to ensure validity. Findings revealed that while TEFA was fully integrated into daily instructional activities and contributed to students' technical competence and work readiness, the program fell short in several key areas. These include: (1) vague and non-measurable objectives, (2) lack of alignment between activities and goals, (3) absence of standardized soft skills assessment tools, (4) informal and inconsistent evaluation practices, (5) limited data documentation, and (6) insufficient industry collaboration in performance evaluation. Despite its strengths in fostering industry-like experiences, TEFA's effectiveness is constrained by gaps in planning, assessment, and feedback systems. Strengthening evaluation protocols, developing rubrics for soft skills, and integrating digital tools for performance tracking are essential to align TEFA with its intended outcomes.

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1. INTRODUCTION

Vocational education is widely recognized as a crucial driver for economic growth, social inclusion, and sustainable development, equipping learners with the competencies required to meet the dynamic demands of the global labor market (McGrath & Yamada, 2023; Odilovna, 2025). In Indonesia, Vocational High Schools (SMK) play a central role in this endeavor, striving to produce graduates who are not only technically proficient but also adaptable to rapid industrial transformations (Hastutiningsih & Somosot, 2021; Indrawati & Kuncoro, 2021; Muskhir et al., 2024). This mission is aligned with both national policy objectives and international best practices, which increasingly emphasize the integration of technical expertise with soft skills such as communication, teamwork, and responsibility (Jaedun et al., 2024; Munir, 2022).

To narrow the gap between school-based training and labor market expectations, the Indonesian government has launched the SMK Revitalization Program, with the Teaching Factory (TEFA) initiative as a flagship strategy (Pradipta et al., 2021; Tanjung et al., 2025). TEFA seeks to replicate authentic industry environments within educational settings, enabling students to acquire hands-on experience in real production processes while adhering to industry standards (Sutianah et al., 2024). Comparable models of work-based learning and school-industry partnerships have been promoted globally as effective approaches to strengthening Technical and Vocational Education and Training (TVET) systems (OECD, 2023; UNESCO, 2023).

Despite these efforts, recent data from the Indonesian Central Statistics Agency reveal that SMK graduates continue to contribute disproportionately to the national unemployment rate, reflecting a persistent mismatch between vocational training outcomes and labor market needs (Poláková et al., 2023). While TEFA has demonstrated considerable promise in enhancing students' technical competencies, emerging research highlights its shortcomings in cultivating character and soft skills, particularly in rural and underserved regions. International studies consistently affirm that attributes such as discipline, responsibility, and teamwork are as critical to employability and career advancement as technical expertise (Mohammed & Ozdamli, 2024; Ngo & Thuy, 2024; ILO, 2023). Yet, the integration of character development within TEFA remains underexplored, especially in contexts with limited educational resources and weaker industry linkages.

The existing body of research on TEFA has predominantly concentrated on technical curriculum integration and school-industry collaboration, with insufficient attention to its role in nurturing students' character and soft skills (Haryadi & Dewi, 2024; Ismayati et al., 2020). This research gap is particularly salient in rural vocational schools, where implementation is often constrained by resource limitations and a narrow focus on production targets rather than holistic student development (Huang, Mills, & Tiangco, 2024). This underscores the need for more comprehensive studies that evaluate TEFA's effectiveness in advancing both technical proficiency and soft skills, with an emphasis on character formation (Nurvitasari et al., 2023; Rotty et al., 2025).

This study aims to conduct a systematic evaluation of the TEFA Culinary program at SMK Negeri 1 Lubuk Sikaping. Specifically, it investigates the extent to which TEFA activities facilitate students' character development, identifies enabling and constraining factors affecting implementation, and formulates evidence-based recommendations to optimize TEFA's dual role in strengthening technical expertise and fostering essential soft skills.

2. METHODS

2.1. Research Methods

This study uses a descriptive qualitative evaluative approach to assess the implementation of Teaching Factory (TEFA) in the Culinary Skills Program at SMK Negeri 1 Lubuk Sikaping. The evaluation refers to the Goal-Oriented Evaluation Model developed by Ralph Tyler (Warohmah et al., 2025), which

focuses on the extent to which the program objectives have been achieved. The qualitative approach was chosen because it is capable of exploring information in depth, understanding phenomena from the perspective of the actors, and examining the alignment between program objectives, implementation, and the results obtained (Ramanadhan et al., 2021).

2.2. Research Subject

This study employs a purposive sampling technique to select informants, allowing the researcher to deliberately choose participants based on criteria directly relevant to the research objectives. This approach aims to ensure that the data collected is rich, relevant, and reflective of actual field conditions. Informants were selected due to their direct involvement, knowledge, and experience in the implementation of the Teaching Factory (TEFA) program, thereby ensuring comprehensive perspectives across multiple aspects of the program.

This study focuses on five groups of informants who play a role in the implementation of TEFA at SMK Negeri 1 Lubuk Sikaping: the principal, culinary teachers, TEFA unit managers, senior students, and industry partners/customers (DUDI). Each group provides unique insights into policy, curriculum delivery, operational management, skills development, and alignment with industry. Table 1 shows the breakdown of the five groups of informants in this study.

Table 1. Informants of the Study

Informant Group	Contribution	Number of Informants
School Principal	Provides strategic policy direction, monitoring, facilities support, and evaluation	1
Culinary Productive Teachers	Deliver teaching, supervise students, and manage classroom–production integration	3
TEFA Unit Manager	Coordinates production activities, finances, and school–industry linkages	1
Senior Students (Grade XI & XII)	Engage directly in production, skill application, work ethic, and entrepreneurship	5
Industry Partners / Customers	Provide external evaluation on product quality, service, and professionalism	2
Total		12

By integrating perspectives from these five groups, the research seeks to generate a holistic understanding of the TEFA program's implementation and its effectiveness in achieving its seven main objectives, as assessed using Ralph Tyler's Goal-Oriented Evaluation Model.

2.3. Research Instruments

In this study, the researcher acts as the primary instrument for deeply exploring the implementation of the Teaching Factory (TEFA) program in the culinary department at SMK Negeri 1 Lubuk Sikaping. The researcher uses various tools to collect data, including semi-structured interview guidelines, a voice recorder, and a camera. The semi-structured interview guide allows the researcher to obtain in-depth, contextual information from the informants, ensuring flexibility while covering the key topics related to the TEFA program. The voice recorder and camera are used to document interviews and observations accurately and validly, supporting the data for further analysis. These tools help ensure that the collected data is comprehensive, reliable, and consistent.

The interview guide is specifically designed to assist the researcher in obtaining data from the key informants who are directly involved in the implementation of TEFA. The guide helps explore respondents' perspectives and experiences regarding the execution of the program, including the challenges faced and the goals achieved. In addition to the interview guide, the study also uses audio

recording devices and cameras to document verbal and visual data. These recordings ensure the accuracy and validity of the collected information, which will later be analyzed to evaluate the effectiveness of the TEFA program. To strengthen the trustworthiness of the findings, the study applies several strategies: credibility is ensured through prolonged engagement with the field and member checking, confirmability is enhanced by maintaining an audit trail and systematically documenting decisions during data collection and analysis, while triangulation is achieved by combining interviews, observations, and document analysis. These measures enhance the reliability, accuracy, and impartiality of the research findings.

The research instruments in this study consist of two types: primary and supporting instruments. The primary instrument is the researcher, who directly interprets data through interviews and observations. The researcher is equipped with theoretical knowledge and insights on Teaching Factory and the Goal-Oriented Evaluation Model by Ralph Tyler. The researcher plays a key role in planning data collection, conducting interviews, observing field activities, and interpreting the results. The supporting instruments include the interview guide, used to collect data from the principal, culinary productive teachers, TEFA unit managers, students, and industry partners. The interview is semi-structured, focusing on aspects of TEFA implementation, such as work culture, character development, technical competencies, and entrepreneurship. The observation guide is used to observe the TEFA process, including student involvement, SOP implementation, work culture, and teacher guidance. It helps assess the alignment between field implementation and the program's planned objectives. Lastly, document collection is used to gather supporting documents such as the TEFA proposal, SOPs, financial reports, organizational structure, and evaluation reports. These documents provide a reference point for comparing the planned program with its actual execution.

2.4. Data Collection

Data collection was conducted using a triangulation approach involving in-depth interviews, participatory observation, and documentation analysis to ensure the richness and validity of the data. Semi-structured interviews were conducted with the five groups of informants to explore their perceptions and experiences regarding the objectives of the TEFA program, behavioral indicators, learning situations, and evaluation techniques based on Tyler's seven stages of GOEM. Furthermore, direct observation was conducted to capture the factual dynamics of TEFA implementation, including student-teacher interactions, compliance with Standard Operating Procedures (SOPs), and the application of soft skills (teamwork, discipline, communication) in a real work environment, where the researcher acted as a non-interventional participatory observer. To complement and verify data from interviews and observations, a documentation analysis was conducted on documents such as the school's vision and mission and TEFA planning documents.

2.5. Data Analysis

Data analysis in this study was conducted using descriptive qualitative methods, combining two approaches: the Goal-Oriented Evaluation Model (Tyler) and the analysis techniques of Miles and Huberman. The main objective of the analysis was to evaluate the extent to which the implementation of the culinary Teaching Factory (TEFA) had met its objectives, both in terms of technical skills and the strengthening of students' soft skills.

Tyler's approach emphasizes that program evaluation should begin with the formulation of objectives, behavioral indicators, evaluative situations, assessment techniques, and comparisons between actual results and initial objectives. The following are the analysis steps based on Tyler's seven evaluative stages: (1) general goal formulation, (2) detailed goal formulation, (3) behavioral goal definition, (4) evaluation situations, (5) measurement techniques, (6) student performance data collection, and (7) comparison of performance with goals.

In addition to Tyler's approach, this study also applies the data analysis steps according to Miles and Huberman (Asipi et al., 2022): (1) data reduction, the process of filtering, focusing, and simplifying data so that only data relevant to TEFA evaluation is analyzed, (2) data presentation in the form of narratives, interview excerpts, and a matrix of findings based on evaluation aspects to facilitate drawing conclusions, (3) drawing conclusions and verification, conclusions are drawn based on emerging data patterns, then verified through the triangulation of sources, techniques, and theories.

3. FINDINGS AND DISCUSSION

3.1. Findings

This study aimed to evaluate the implementation of the Teaching Factory (TEFA) in the Culinary Program at SMK Negeri 1 Lubuk Sikaping using Ralph Tyler's Goal Oriented Evaluation Model. The evaluation focused on the achievement of seven core objectives, particularly in fostering soft skills such as discipline, responsibility, teamwork, and entrepreneurial spirit. The TEFA program has been implemented through the school-based enterprise "Kinyami Food," operating daily and engaging students from grades X to XII in the production of ready-to-eat meals, traditional snacks, bakery and pastry products, and beverages under the guidance of productive subject teachers and with the support of industry partners.

Data were collected using a qualitative descriptive approach through in-depth interviews, direct classroom and production observations, and document analysis (including SOPs, block schedules, and production reports). Key informants included the principal, the head of the culinary program, productive and general subject teachers, students, and industry representatives. Data triangulation was performed across both sources and methods to ensure credibility.

General findings indicate that TEFA is not merely an extracurricular or supplementary initiative, but is fully embedded into the core curriculum. Its daily operation ensures that students consistently engage in production-based learning that mirrors real-world industry conditions. The school leadership emphasized that TEFA represents the practical embodiment of the national vocational school revitalization agenda (as outlined in Permendikbud No. 9/2016) by fostering synergy between education and industry. Teachers reported that the program applies project-based learning (PBL) methods, integrating planning, production, and marketing processes. Students work collaboratively to meet real customer demands, which cultivates discipline, accountability for product quality, and independence in task completion.

From the student perspective, TEFA offers authentic experiences that build confidence and preparedness for the workforce. They reported that managing production schedules, serving customers, and handling inventory taught them how to work under time pressure, maintain product standards, and collaborate effectively. General subject teachers observed increased motivation and engagement, particularly as students recognized the tangible outcomes of their work being used or purchased by consumers.

Industry partners confirmed that graduates from SMK Negeri 1 Lubuk Sikaping are better prepared than their peers from schools without TEFA programs. They are not only proficient in cooking techniques but also understand service standards, kitchen management, and customer interaction. However, partners also noted gaps in standard operating procedures (SOPs) and quality culture that could be addressed to further align with professional industry expectations.

Specific findings based on Tyler's seven evaluation aspects are as follows:

1) **General Goal Formulation:**

The Culinary TEFA at SMK Negeri 1 Lubuk Sikaping has been implemented in line with Permendikbud No. 34/2018 as well as the broader national vocational revitalization policies. Stakeholders consistently emphasized that the program not only focuses on the mastery of technical competencies but also cultivates discipline, responsibility, and independence among

students. As the school principal explained, “TEFA ensures our students are job-ready and motivated through direct production experience.” This perspective is echoed by industry partners who view TEFA graduates as ready for employment, as one representative stated, “We are confident to hire TEFA graduates without retraining—they already understand workplace rhythms.” From the students’ standpoint, the program also provides significant value in preparing them for future challenges, as reflected in the testimony, “I feel more prepared to face real-world challenges after working in TEFA.” Together, these perspectives underline the alignment of the Culinary TEFA with national vocational goals while demonstrating its tangible impact on students’ technical readiness, work ethic, and adaptability in real industry contexts.

2) Detailed Goal Formulation:

The objectives of the Culinary TEFA were collaboratively designed and integrated into syllabi and lesson plans; however, certain gaps remain in embedding industry standards such as standard operating procedures (SOPs) and quality culture. An industry representative emphasized this concern by stating, “Consistency and cleanliness are crucial, but these indicators are not yet reflected in learning objectives.” This highlights the importance of capacity building for teachers so that the formulated objectives can be more explicitly aligned with industry dynamics, ensuring that vocational learning outcomes are not only pedagogically sound but also industry-relevant.

3) Behavioral Goal Definition:

Soft skills such as teamwork, responsibility, and work ethic are systematically embedded in the daily activities of the Culinary TEFA, including scheduling, order-taking, and customer service. Both teachers and students confirmed notable improvements in these aspects. One teacher reflected, “I see real changes—students are more disciplined in managing production schedules.” Similarly, a student shared, “Serving customers taught me patience and professionalism under pressure.” Despite these positive developments, the program currently lacks a standardized rubric for assessing soft skills, which makes the evaluation process subjective and dependent on individual perceptions rather than measurable indicators.

4) Evaluation Situations:

Consistent with the principles of the Goal-Oriented Evaluation Model (Tyler), evaluation in the Teaching Factory (TEFA) program must be authentic and practice-based to measure the achievement of objectives through student behavior. Findings at SMK Negeri 1 Lubuk Sikaping indicate that an authentic and multi-source evaluative situation has been actively established. Evaluation does not only come from productive teachers who directly assess technical aspects such as product quality and work speed during the production process, but also from fellow students. This informal peer evaluation has proven to foster a reflective and collaborative work culture. Additionally, input from industry partners (DUDI) also serves as an evaluation source, particularly regarding students’ professional attitudes and work resilience during on-the-job training (PKL). Although this evaluative situation is rich in sources, the main challenge lies in the lack of formality and standardization in the process. Specifically, evaluations and feedback from industry partners have not been systematically documented into structured rubrics or standardized formats. The absence of standardized evaluation instruments developed collaboratively with industry hinders the assessment process from being objective and measurable. As a result, this valuable evaluation data risks being merely informative rather than serving as a valid reference for continuous program quality improvement. Therefore, developing a standardized evaluation system aligned with Tyler’s goal-oriented evaluation principles is the next crucial step to ensure that learning objectives can be measured objectively.

5) Measurement Techniques:

The current assessment instruments within the Culinary TEFA primarily emphasize technical accuracy and product quality, while important soft skills such as teamwork, communication, and work ethic remain under-assessed. Teachers acknowledged that they have not yet received sufficient training in designing integrated assessment tools that capture both technical and

behavioral dimensions. This gap was also recognized by the school leadership, as the principal noted, "Our evaluations still prioritize products, not behaviors." Such findings underscore the need for professional development programs aimed at equipping teachers with the capacity to develop comprehensive assessment frameworks that align with the holistic goals of vocational education.

6) Student Performance Data Collection:

Collecting student performance data is a crucial step in Tyler's goal-oriented evaluation, which in the context of TEFA requires authentic evidence of student progress. In the field, productive teachers have recorded student performance through observation sheets and visual documentation during production activities. However, the main findings show that this practice is not managed systematically. Data collection is not carried out uniformly by all teachers, and the data collected does not have a standardized format that facilitates further analysis. Student portfolios, which are mostly physical and not integrated into a centralized information system, are a clear example of this constraint. The absence of a structured data system directly impacts the involvement of industry partners (DUDI), which is found to be very limited. Industry partners do not have direct access to authentic student performance data at schools and generally only receive brief reports. As a result, the feedback they provide tends to be general and not based on actual performance data, thereby weakening the collaborative evaluation cycle between schools and industry. The absence of an integrated digital system is a major obstacle to long-term data tracking and providing real-time access for all stakeholders. Therefore, it can be concluded that strengthening internal school policies, enhancing teachers' capacity in documentation, and adopting information technology such as a Learning Management System (LMS) are necessary. These steps are crucial for creating an effective, accountable data collection system that supports authentic, sustainable evaluation in line with Tyler's evaluation principles.

7) Comparison of Performance with Goals:

Evidence from the Culinary TEFA indicates that students can achieve the technical objectives effectively while also demonstrating progress in developing soft skills. However, the analysis of these outcomes remains largely qualitative and descriptive, with limited opportunities for systematic reflection among teachers. As one teacher explained, "We see responsibility growing, but without a rubric it's hard to quantify." This finding highlights the necessity of developing structured rubrics and establishing coordinated reflection forums among educators to strengthen the alignment between intended objectives and actual learning outcomes.

To provide a clearer overview, the key findings of the TEFA program evaluation are summarized in Table 2, which compiles the strengths, weaknesses, and evidence across all seven objectives of Tyler's evaluation model.

Table 2. Summary of Findings on TEFA Implementation Based on Tyler's Goal-Oriented Evaluation

Tyler's Aspect	Evaluation		
	Strengths	Weaknesses	Observations
General Goals	Aligned with policy; strong stakeholder support	-	Principal: "Students are job-ready."; Student: "Prepared for real-world work".
Detailed Goals	Objectives in curriculum documents	SOPs & quality culture not integrated	Industry: "Cleanliness and consistency missing."
Behavioral Goals	Soft skills embedded in daily tasks	No standardized rubric	Teacher: "Students more disciplined."
Evaluation Situations	Multiple sources (teachers, peers, industry)	Lack of formal documentation	Peer-eval fosters collaboration but not standardized
Measurement Techniques	Product-focused rubrics exist	Soft skills under-assessed	Principal: "Evaluation prioritizes products."

Data Collection	Observation sheets, portfolios	No LMS; inconsistent documentation	Industry lacks authentic access
Comparison with Goals	Students show progress	Qualitative only; little teacher reflection	Teacher: "Responsibility growing but hard to measure."

3.2. Discussion

3.2.1 Industry Relevance

The findings indicate that the TEFA program in the Culinary Department at SMK Negeri 1 Lubuk Sikaping successfully integrates technical and soft skills, in line with international research emphasizing the importance of industry-like learning environments in vocational education. Through the school-based enterprise Kinyami Food, students engage in production processes that closely mirror real-world industry conditions, thus enhancing their technical competencies and employability. Industry partners also corroborated these achievements, highlighting that graduates are better prepared compared to those from schools without TEFA. This resonates with global literature that recognizes TEFA as a model for equipping students with practical and entrepreneurial competencies (Saputro, 2024). Nevertheless, gaps remain in the alignment with industry standards, particularly regarding the implementation of standard operating procedures (SOPs) and quality control mechanisms. These findings are consistent with previous studies reporting similar challenges in bridging vocational education with professional practices (Hasanah et al., 2024).

3.2.2 Soft Skills Evaluation

Another significant theme that emerged from this study is the development and assessment of soft skills. Evidence suggests notable improvements in teamwork, responsibility, discipline, and communication as students participate in daily production activities. Teachers and students alike reported behavioral changes, such as improved time management and professionalism under pressure. However, the absence of standardized rubrics limits the objectivity of evaluations, making assessments largely qualitative and subjective. This issue reflects broader challenges in vocational education research, where the measurement of non-technical competencies is often underdeveloped (Subekti & Ana, 2018). The need for comprehensive assessment frameworks is critical to ensure that progress in soft skills can be systematically documented and aligned with intended learning outcomes.

3.2.3 Data Gaps and Evaluation Tools

The study also highlights the absence of a standardized system for collecting and analyzing student performance data, especially about soft skills. Current evaluation instruments are heavily focused on technical accuracy and product quality, while behavioral aspects remain under-assessed. This limitation echoes the findings of Wahjusaputri et al. (2021), who emphasized the importance of integrating digital systems for monitoring student competencies. Implementing Learning Management Systems (LMS) or similar digital tools could improve data accuracy, facilitate real-time feedback, and enhance consistency across evaluations. Moreover, incorporating structured reflection forums among teachers may strengthen the connection between intended objectives and achieved outcomes.

3.2.4 Theoretical and Practical Implications

From a theoretical perspective, this study reinforces the idea that vocational education must integrate both technical and behavioral dimensions to meet industry and societal needs. Scholars such as (Jaedun et al., 2024) have argued that embedding authentic industry processes within the curriculum enhances not only technical mastery but also interpersonal competencies. Practically, the TEFA model demonstrates strong potential to improve employability by bridging education with industry through

hands-on experiences. This finding is consistent with Maruanaya (2021), who found that TEFA initiatives foster students' personal and social maturity, preparing them for both employment and entrepreneurship. To further strengthen outcomes, schools should consider more structured partnerships with industry, particularly to co-develop evaluation standards and training modules for teachers.

3.2.5 Limitations and Future Directions

This study has several limitations. First, it focuses on a single institution, which limits the generalizability of the findings. Future research should investigate the scalability and adaptability of the TEFA model across different vocational schools and industries. Second, the absence of longitudinal data restricts insights into the long-term impact of TEFA on graduates' career progression. Future studies could track employability outcomes to capture the sustainability of TEFA's effects. Finally, the development of digital-based evaluation systems is strongly recommended to standardize data collection and enhance transparency in assessing both technical and soft skills.

4. CONCLUSION

This study evaluates the implementation of the Teaching Factory (TEFA) program in the Culinary Program at SMK Negeri 1 Lubuk Sikaping, using Ralph Tyler's Goal-Oriented Evaluation Model. The evaluation focused on the achievement of seven main goals, with particular attention to the development of soft skills such as discipline, responsibility, teamwork, and entrepreneurial spirit. The TEFA program is integrated with real-world production activities through the school-based business "Kinyami Food," which allows students to directly participate in the production of ready-to-eat meals, traditional foods, baked goods, and beverages, while being guided by teachers and supported by industry partners.

The findings indicate that the TEFA program contributes to students' mastery of technical skills while also fostering measurable improvements in soft skills required for the workplace. Students reported increased confidence and readiness to face workplace demands, and industry partners confirmed that TEFA graduates demonstrate higher levels of preparedness compared to graduates from schools without similar programs. Nonetheless, weaknesses remain in the implementation of standard operating procedures (SOPs) and in building a consistent quality culture, which limits the program's full alignment with industry expectations.

The primary challenge identified in this program is the absence of standardized and objective instruments for evaluating soft skills, which hampers accurate measurement of student progress in non-technical areas. Based on these findings, schools are advised to develop structured rubrics and systematic assessment tools that integrate both technical and soft skills dimensions. Policymakers should consider providing targeted training and resources to teachers for designing and applying such instruments, while also encouraging stronger partnerships between schools and industries. For future researchers, further studies should focus on designing validated soft skills assessment frameworks and examining the scalability of the TEFA model across different schools and industry contexts.

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