



ENHANCING COOKERY PERFORMANCE: A CORRELATIONAL STUDY OF PEDAGOGY AND ENGAGEMENT IN TVET CLASSROOMS

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ABSTRACT

Grounded in the growing emphasis on instructional quality and learner engagement in skills-based education, this study examined the association between teaching quality and students' engagement in laboratory activities and their cookery performance among Grade Twelve Technical–Vocational–Livelihood Home Economics learners in selected public secondary schools in Bukidnon, Philippines. Anchored on Kolb's Experiential Learning Theory and the student engagement model of Fredricks, Blumenfeld, and Paris, the research employed a descriptive–correlational design involving senior high school Cookery students. Data were gathered using a validated teaching quality instrument, a modified student engagement scale, and a DepEd-aligned cookery performance rubric. Results indicated that teaching quality was consistently rated high, with teachers' classroom behavior emerging as the strongest dimension, while students demonstrated high engagement across cognitive, affective, and behavioral domains, with affective engagement most prominent in supporting participation and persistence during laboratory activities. Cookery performance was likewise rated high, reflecting learners' mastery of essential culinary competencies. Correlational analysis revealed significant positive relationships between teaching quality and cookery performance, as well as between student engagement and performance, underscoring the complementary roles of effective instruction and meaningful learner participation in developing technical proficiency. These findings highlight the importance of institutionalizing continuous professional development for Cookery teachers, particularly in instructional clarity, laboratory management, and engagement-focused pedagogies, alongside strengthening laboratory facilities to support an integrated instruction–

engagement framework that enhances performance in TVL Cookery education. Future studies may employ quasi-experimental designs to examine the causal effects of engagement-driven instructional strategies across diverse TVL contexts.

Keywords: *Cookery Performance, Teaching Quality, Students' Engagement In The Laboratory*

INTRODUCTION

Technical–Vocational Education and Training (TVET) plays a vital role in preparing both youth and adults for gainful employment by developing industry-relevant skills, work discipline, and professional attitudes. Recent global education reforms emphasize that access to training alone does not ensure strong TVET outcomes; rather, quality instruction and high student engagement within authentic learning environments are critical determinants of success (UNESCO, 2021). Unlike academically oriented subjects, TVET emphasizes performance-based competencies, where learners demonstrate knowledge through hands-on application rather than text-based examinations.

Within TVET programs, Cookery is inherently both cognitive and psychomotor in nature, requiring mastery of technical knowledge, practical skills, and workplace discipline in live laboratory settings. Learners are expected to perform complex tasks such as knife skills, mise en place, cooking techniques, plating, and service execution that simulate industry standards. In this context, teaching quality and student engagement are central to learning success, as effective instruction relies heavily on demonstration, guided practice, feedback, and repeated performance (Darling-Hammond et al., 2020).

Extensive international research affirms that teacher quality is among the strongest predictors of student outcomes (Hattie, 2009, 2021). Effective teaching is characterized by subject mastery, instructional clarity, structured lesson delivery, and positive classroom management—elements that are especially critical in laboratory-based courses such as Cookery, where unclear instructions, poor supervision, and weak control of the learning environment may result in safety risks, substandard outputs, and diminished learner confidence (Darling-Hammond et al., 2020).

Student engagement serves as the mechanism through which instruction translates into learning. Fredricks et al. (2004) conceptualized engagement as comprising cognitive, affective, and behavioral dimensions. Cognitive engagement involves strategic thinking and effort; affective engagement reflects interest, motivation, and enjoyment; and behavioral engagement pertains to participation, persistence, and adherence to procedures. In performance-driven subjects such as Cookery, engagement influences learners' ability to process instructions, persist through challenges, manage frustration, and refine technical skills through repeated practice (Lei et al., 2023)

Recent vocational education studies suggest that teaching quality and student engagement interact synergistically rather than functioning independently. Joint effects of

instructional quality and engagement have been shown to predict technical performance in bread and pastry production (Rahman et al., 2025), while effective instruction, well-maintained laboratories, and sustained engagement have been linked to culinary skill competency (Pelpinosas et al., 2025). However, much of the existing literature continues to examine teaching quality and engagement separately, often using academic achievement instead of authentic laboratory performance as the outcome variable, thereby limiting a comprehensive understanding of skills-based learning in TVET.

Globally, the hospitality and catering sector continues to experience shortages of adequately skilled workers. The United Nations World Tourism Organization (UNWTO, 2023) reported that many hospitality graduates require retraining in sanitation, consistency, speed, and professional conduct, while the OECD (2022) underscored the need to strengthen vocational teaching quality to meet evolving labor market demands. These findings point to the importance of examining instructional and engagement-related factors that contribute to workplace readiness.

In the Philippine context, the Technical–Vocational–Livelihood (TVL) track under the K–12 program aims to produce industry-ready graduates equipped with technical and life skills. Nevertheless, studies have documented persistent challenges in public secondary schools, including uneven teaching quality, limited laboratory resources, outdated equipment, and inconsistent student engagement (Santos et al., 2023). These issues are particularly evident in rural and semi-urban divisions such as Bukidnon, where schools often face large class sizes, limited ingredients and equipment, and minimal exposure to industry-standard procedures.

At the community level, reports from immersion supervisors and industry partners in Northern Bukidnon, Philippines, consistently indicate that students struggle with speed, sanitation discipline, product consistency, and professional work attitudes. These concerns extend beyond technical skill deficits and are closely linked to instructional approaches and the quality of student participation during laboratory activities, resulting in uneven learning transfer and performance outcomes despite competence-based teaching frameworks.

Despite growing recognition of the importance of teaching quality and student engagement, a clear research gap remains in examining their combined influence on cookery performance at the senior high school TVL level, particularly in Philippine public schools. Existing studies are largely concentrated in higher education, treat variables independently, or prioritize academic outcomes over authentic technical performance, with limited attention to rural contexts.

Addressing these gaps, the present study investigates the interrelationships among teaching quality, student engagement in laboratory activities, and cookery performance of Grade 12 TVL learners in public secondary schools in the Division of Bukidnon. Teaching quality is examined in terms of content knowledge, classroom behavior, and instructional practices, while student engagement is analyzed across cognitive, affective, and behavioral dimensions. Cookery performance is assessed using

DepEd-endorsed standards-based rubrics to capture authentic technical competence. By positioning student engagement as an explanatory mechanism between teaching quality and performance, the study offers a more integrated account of learning in the TVL–Cookery context.

Beyond its empirical contribution, the study aligns with global development priorities by supporting Sustainable Development Goal (SDG) 4 on Quality Education, SDG 8 on Decent Work and Economic Growth, and SDG 12 on Responsible Consumption and Production through its emphasis on effective instruction, workforce readiness, and food safety practices. Overall, the study reinforces the proposition that high-quality teaching fosters meaningful engagement, meaningful engagement enhances cookery performance, and together these constructs form a dynamic foundation for effective technical–vocational education in Philippine public schools. Figure 1 shows the interplay of variables in the study.

Research Questions

The study aimed to ascertain the TVL-Home Economics teachers' teaching quality in Cookery and students' engagement in laboratory activities on the students' Cookery performance. Specifically, this study sought to answer the following research questions:

1. What is the teachers' level of teaching quality in a Cookery subject in terms of:
 - 1.1 Teachers' knowledge in subject matter;
 - 1.2 Teacher's behavior in the classroom; and
 - 1.3 Teachers' teaching strategy?
2. What is the level of students' engagement towards laboratory activities in the Cookery subject, considering:
 - 2.1 Cognitive engagement;
 - 2.2 Affective engagement; and
 - 2.3 Behavioral engagement?
3. What is the level of students' performance in cookery?
4. Is there a significant relationship between the teachers' teaching quality and students' engagement toward laboratory activities on their cookery performance?

METHODOLOGY

This study employed a descriptive–correlational research design to examine the relationship among teaching quality, students' engagement in laboratory activities, and cookery performance of Grade 12 TVL–Home Economics learners. McCombes (2022) says that correlational designs are applied when the investigator endeavors to discover whether variables behave together in some meaningful manner. This design enabled the researcher to investigate how naturally occurring variations in teaching quality and student engagement relate to learners' technical proficiency in Cookery.

The participants were Grade 12 Cookery students enrolled during the School Year 2025–2026 in three public senior high schools in the Division of Bukidnon, Philippines. Total enumeration was applied, and all officially enrolled Cookery students participated in the study. Census sampling ensures complete population coverage and minimizes sampling bias in small populations (Alvi, 2022).

Data were gathered using three instruments. Teaching quality was measured using a validated Classroom Management and Teaching Quality Questionnaire developed by Díaz (2018), which assessed teachers' subject matter knowledge, classroom behavior, and instructional strategies. The instrument was contextually adapted for the Cookery subject while maintaining content validity. Student engagement was measured using a modified Student Engagement in Schools Questionnaire (SESQ) developed by Hart (2011), covering cognitive, affective, and behavioral dimensions, with additional indicators relevant to the TVL–Cookery setting—such as cohesion, fairness, instructional support, and autonomy—adapted from Bizimana (2025) and Pelpinosas (2025). Cookery performance was evaluated using a DepEd-compliant TVL performance rubric (DepEd Order No. 8, s. 2015) applied to two controlled laboratory tasks, meat and poultry fabrication, and rated on *mise en place*, food preparation, safety and sanitation, product quality and presentation, and time management by two independent raters, namely the subject teacher and the researcher.

Before full deployment, the instruments underwent expert validation by specialists in Technical–Vocational Education. A pilot test was then conducted with Grade 12 Cookery students from a non-participating public school. Internal consistency was determined using Cronbach's alpha, while inter-rater reliability for the cookery performance rubric was examined through Cohen's kappa (Zakariya, 2022). Reliability coefficients for teaching quality and engagement scales were high, while inter-rater reliability for the rubric ranged from substantial to almost perfect, except for the product taste and presentation criterion, which required recalibration before final scoring.

Teaching quality and engagement were rated using a five-point Likert scale ranging from Strongly Disagree to Strongly Agree. Cookery performance was evaluated using DepEd's five-level rubric from No Attempt to Excellent. Standardized scoring ensured objectivity and alignment with national performance benchmarks (García et al., 2025).

Ethical approval was secured from the Lourdes College Research Ethics Committee, along with formal permission from the Schools Division Superintendent of Bukidnon. School principals were briefed on the study's aims, methods, and ethical safeguards. Following the Belmont Report principles—respect for persons, beneficence, and justice (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979)—written informed consent and assent were obtained from all student participants and their parents. Confidentiality, voluntary participation, and the absence of academic consequences were emphasized.

Surveys were administered during regular classes, and cookery performance assessments were conducted under laboratory conditions using controlled tasks. Descriptive statistics, including mean, percentage, and standard deviation, were used to summarize teaching quality, student engagement, and cookery performance. Pearson’s product–moment correlation was employed to examine the associations among the variables. Pearson’s product–moment correlation coefficient (r) was deemed appropriate because the variables were continuous, normally distributed, and satisfied the assumptions of linearity and homoscedasticity (McCombes, 2022).

RESULTS

Table 1 presents the descriptive statistics for the three dimensions of teaching quality. Overall, teaching quality was rated High ($M = 4.48$, $SD = 0.40$), indicating that students consistently perceived their Cookery teachers as competent, effective, and professional in classroom and laboratory instruction. Among the dimensions, teachers’ behavior received the highest rating ($M = 4.52$, $SD = 0.43$; Very High). Students viewed their teachers as respectful, supportive, and emotionally reassuring—an essential condition for performance-based learning environments that involve heat, knives, and time pressure. This finding supports Darling-Hammond et al. (2020) and Rahman et al. (2023), who emphasize that positive teacher behavior reduces anxiety and fosters engagement in technical subjects.

Table 1

Summary Table of Teaching Quality

Dimensions	Mean	Description	Interpretation	SD
Teachers’ knowledge of subject matter	4.50	Agree	High	0.47
Teachers’ behavior	4.52	Strongly Agree	Very High	0.43
Teaching strategy	4.41	Agree	High	0.48
Teaching Quality	4.48	Agree	High	0.40

Teachers’ knowledge of subject matter also obtained a High rating ($M = 4.50$, $SD = 0.47$), reflecting strong mastery of culinary concepts, techniques, safety principles, and procedural demonstrations. This aligns with Rasool et al. (2022), who emphasize that deep content knowledge leads to clearer demonstrations, more accurate feedback, and improved procedural learning in vocational education. Meanwhile, teaching strategies were rated High as well ($M = 4.41$, $SD = 0.48$), indicating frequent use of structured tasks, varied instructional techniques, learner motivation, and feedback. Although effective, this dimension showed the most room for improvement, supporting Li et al. (2022), who highlight the need for continuous refinement of laboratory teaching, monitoring, differentiation, and digital integration.

Overall, the pattern shows that teaching quality in Cookery is highest in interpersonal and behavioral dimensions, followed by content mastery and instructional strategy—consistent with Hattie’s (2021) claim that teacher–student relationships, clarity, and feedback are among the most powerful influences on learning.

Table 2

Table 2 shows that student engagement was High overall (M = 4.38, SD = 0.46), demonstrating that learners were mentally engaged, emotionally motivated, and behaviorally active during Cookery laboratory tasks. Among the three domains, affective engagement emerged as the strongest (M = 4.44, SD = 0.49), indicating that students felt enjoyment, comfort, confidence, and belonging during practical activities. This aligns with Hao et al. (2022), who found that positive emotions enhance persistence and performance in demanding tasks.

Summary Table of Student Engagement

Dimensions	Mean	Description	Interpretation	SD
Cognitive	4.35	Agree	High	0.49
Affective	4.44	Agree	High	0.49
Behavioral	4.36	Agree	High	0.53
Student Engagement	4.38	Agree	High	0.46

Behavioral engagement (M = 4.36, SD = 0.53) was also high, showing that students consistently participated, cooperated with peers, followed safety rules, and remained focused—traits linked to procedural accuracy and work readiness (Bautista et al., 2023). Cognitive engagement (M = 4.35, SD = 0.49) reflected students’ ability to maintain focus, think reflectively, connect prior knowledge with new learning, and understand assessment criteria, supporting Chen et al. (2022) view that cognitive investment strengthens procedural memory and conceptual understanding. The results indicate that all three engagement domains were rated high, with affective engagement obtaining the highest level among the domains.

Table 3 reveals that both predictors—teaching quality and student engagement—show significant positive associations with cookery performance. Teaching quality demonstrated a stronger correlation with performance ($r = .264, p = .015$), indicating that students who perceived clearer instruction, stronger content mastery, and more professional teacher behavior tended to achieve higher technical scores. This aligns with Rasool et al. (2022), who emphasize the central role of instructional competence and feedback accuracy in shaping vocational skills.

Student engagement also correlated significantly with cookery performance ($r = .238, p = .029$). Learners who were cognitively focused, emotionally motivated, and behaviorally involved performed better in laboratory tasks, consistent with the multidimensional engagement model of Fredricks et al. (2004). This trend echoes the

findings of Bautista (2023), who reported that engaged vocational learners demonstrate greater accuracy and consistency in technical activities.

Table 3

Pearson R analysis on Teachers' Teaching Quality, and Students' Engagement toward Laboratory Activities on their Cookery Performance

		Cookery Performance
Teaching Quality	Pearson	.264*
	Correlation	
Student	Pearson	.015
	Correlation	
Engagement	Pearson	.238*
	Correlation	
	Sig. (2-tailed)	.029

***. Correlation is significant at the 0.05 level (2-tailed).**

The findings indicate that both teaching quality and student engagement are positively and significantly associated with cookery performance. Students who perceived higher instructional quality demonstrated better technical outcomes, reinforcing the assertion of Darling-Hammond et al. (2020) that clear instruction, strong content mastery, and professional classroom behavior are fundamental drivers of skills-based achievement. This relationship also reflects the conclusion of Rasool and Khurshid (2022) that knowledgeable teachers who provide accurate feedback directly enhance procedural performance in vocational settings. Likewise, students who were cognitively attentive, emotionally invested, and behaviorally active during laboratory activities tended to perform better, supporting the multidimensional engagement framework of Fredricks et al. (2004). Similar findings by Bautista (2023) affirm that engaged learners exhibit greater accuracy, confidence, and consistency in Cookery tasks.

Between the two variables, teaching quality showed a slightly stronger association with performance, echoing Hattie's (2021) conclusion that teacher-related factors remain among the most powerful predictors of student learning. Taken as a whole, the results establish that high-quality teaching and strong student engagement jointly and significantly influence cookery performance, serving as complementary predictors within the instructional process. These findings validate the study's conceptual framework, wherein teaching quality provides the structural foundation and engagement functions as the mechanism through which technical competence in Cookery is strengthened.

DISCUSSION

The findings indicate that both teaching quality and student engagement are positively and significantly associated with cookery performance. Students who perceived higher instructional quality demonstrated better technical outcomes, reinforcing the

assertion of Darling-Hammond et al. (2020) that clear instruction, strong content mastery, and professional classroom behavior are fundamental drivers of skills-based achievement. This relationship also reflects the conclusion of Rasool et al. (2022) that knowledgeable teachers who provide accurate feedback directly enhance procedural performance in vocational settings. Likewise, students who were cognitively attentive, emotionally invested, and behaviorally active during laboratory activities tended to perform better, supporting the multidimensional engagement framework of Fredricks et al. (2004). Similar findings by Bautista (2023) affirm that engaged learners exhibit greater accuracy, confidence, and consistency in Cookery tasks.

Teachers' strong knowledge of subject matter further indicates that Cookery instructors possess adequate mastery of culinary concepts, procedures, and safety standards. This supports Rasool et al (2022)), who found that subject mastery enables clearer demonstrations, accurate feedback, and improved procedural learning in vocational education. Although teaching strategies were also rated high, they obtained the lowest mean among the three dimensions, suggesting the need for continuous refinement of instructional approaches, monitoring, and differentiation, as highlighted by Tan et al (2022).

Student engagement was likewise rated high across cognitive, affective, and behavioral domains, with affective engagement emerging as the strongest. This indicates that students' enjoyment, confidence, and sense of belonging are central to successful participation in Cookery laboratory activities. This finding aligns with Hao et al. (2022), who reported that positive emotions enhance persistence and performance in demanding learning tasks.

The significant positive relationships between teaching quality and cookery performance, and between student engagement and performance, demonstrate that both variables contribute meaningfully to technical outcomes. Teaching quality showed a slightly stronger association with performance, supporting Hattie's (2021) assertion that teacher-related factors are among the most influential predictors of student achievement. These results further reinforce the multidimensional engagement framework of Fredricks et al. (2004), which posits that cognitive focus, emotional investment, and behavioral participation collectively enhance learning outcomes.

Taken together, the findings validate the study's conceptual framework, wherein teaching quality provides the instructional foundation and student engagement serves as the mechanism through which technical competence in Cookery is developed. This underscores the importance of strengthening both instructional practices and engagement-focused strategies to improve performance in TVL Cookery education.

Conclusions

The objectives of the study were achieved, as the results affirm the central role of teaching quality and student engagement in shaping cookery performance among Grade 12 TVL–Cookery learners. The evidence supports the view that effective Cookery

instruction is characterized by strong content knowledge, positive classroom behavior, and well-structured instructional strategies that foster an environment conducive to skills development. In parallel, student engagement functions as a critical learning mechanism through which instruction is translated into sustained participation and skill acquisition in laboratory contexts.

The significant relationships among teaching quality, engagement, and performance lend empirical support to Kolb's Experiential Learning Theory and the multidimensional engagement framework, underscoring the complementary nature of instruction and learner involvement in performance-based education. These theoretical confirmations highlight that technical competence in Cookery is not developed through instruction alone but through the interaction of quality teaching and meaningful student engagement. Collectively, the findings underscore the necessity of strengthening instructional practices and engagement-oriented learning environments to enhance the effectiveness and relevance of TVL–Cookery education in preparing learners for real-world workplace demands.

Recommendations

Based on the findings of the study, the following recommendations are offered:

1. School administrators and TVL coordinators may:
 - 1.1 support the institutionalization of continuous professional development initiatives for Cookery teachers, particularly in instructional clarity, content mastery, laboratory management, and feedback practices, to further enhance teaching effectiveness and learner outcomes;
 - 1.2 enhance monitoring and evaluation systems within TVL programs to systematically track teaching quality, student engagement indicators, and competency development, using the results to guide evidence-based program improvements.
2. Cookery teachers may adopt engagement-oriented pedagogies that foster a positive learning climate, emotional support, and learner motivation, thereby sustaining active participation in laboratory activities.
3. Local school boards may allocate resources toward improving Cookery laboratory facilities, ensuring the availability of appropriate tools, equipment, and consumable materials to promote safe, accurate, and consistent hands-on learning.
4. Academic heads, and teachers may strengthen the integration of experiential and reflective learning approaches aligned with Kolb's Experiential Learning Theory to deepen cognitive engagement and advance higher-order technical competencies.

5. Future research may explore the causal pathways among teaching quality, student engagement, and cookery performance through longitudinal or quasi-experimental designs and extend investigation to other TVL specializations and school contexts.

Compliance with Ethical Standards

The researchers affirm that this study was conducted in full compliance with established ethical standards in educational research. Ethical clearance was obtained from the appropriate institutional research ethics committee, and formal permission was secured from the Schools Division Office prior to data collection. Written informed consent and assent were obtained from all participants and their parents or guardians after the nature, purpose, procedures, and potential risks of the study were clearly explained. Participation was strictly voluntary, and respondents were informed of their right to withdraw from the study at any time without penalty or academic consequence. Anonymity and confidentiality of the respondents were maintained through the use of codes, and no personally identifiable information was collected or disclosed. All data were handled in accordance with applicable data privacy regulations, securely stored, and used solely for academic and research purposes. The well-being, dignity, and safety of the participants were safeguarded throughout the conduct of the study, particularly during laboratory-based performance assessments. The authors declare that no conflict of interest exists in relation to the conduct, analysis, or reporting of this research. Plagiarism was strictly avoided through proper citation and originality checks, and every effort was made to ensure objectivity and fairness in data analysis and interpretation, with no intentional bias influencing the findings. The results were reported truthfully and used exclusively to contribute to scholarly knowledge and educational improvement. The authors further disclose that artificial intelligence–assisted tools were used in a limited and responsible manner for language refinement and formatting support only; all conceptualization, data collection, analysis, interpretation, and conclusions remain the sole intellectual responsibility of the authors.

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