JOURNAL OF INTERDISCIPLINARY PERSPECTIVES

ISSN Print: 2984-8288, ISSN Online: 2984-8385
Vol. 4 No. 4, pp. 127-132, April 2026

Original Article

Effects of Inadequate Cookery Laboratory on Students' Practical Performance

Jay-jay T. Batara

Author Information:

Ilocos Sur Polytechnic State College, Ilocos Sur, Philippines

Correspondence:
jayjaybatara@gmail.com

Article History:

Date received: February 1, 2025
Date revised: March 1, 2026
Date accepted: March 11, 2026

Recommended citation:

Batara, J.-j. (2026). Effects of inadequate cookery laboratory on students' practical performance. *Journal of Interdisciplinary Perspectives*, *4*(4), 127-132. https://doi.org/10.69569/jip.2026.059

Abstract. This study aimed to determine whether there is a significant difference between Grade 10 students' perceived effects of inadequate Cookery laboratory facilities and their actual practical performance across key skill areas. Guided by Experiential Learning Theory and Social Cognitive Theory, the study examined the relationship between perceived environmental limitations and objectively assessed competencies. Employing a descriptive–comparative research design, the study involved 43 Grade 10 Cookery students from Ilocos Sur Polytechnic State College-Laboratory High School, Tagudin Campus. Data were gathered using a validated perception questionnaire and a standardized performance rubric assessing five skill areas: ingredient preparation, cooking procedures, sanitation and safety, time management, and food presentation and quality. Ethical safeguards were strictly observed, including parental informed consent, student assent, and measures to ensure voluntariness and confidentiality. Descriptive statistics were used to analyze students' perceived effects and performance levels. At the same time, the Wilcoxon Signed-Rank Test was applied to assess differences between perception and actual performance, given the non-normal distribution of the data. Results revealed that students perceived the absence of a Cookery laboratory as having a high impact on their practical performance (M = 3.76). Despite this perception, students demonstrated high to very high levels of practical performance (M = 4.29), particularly in sanitation and safety, time management, and food presentation and quality. Significant differences were observed between perceived effects and actual performance in cooking procedures (p = .004), time management (p < .001), and food presentation and quality (p < .001), indicating that students tended to underestimate their competencies under perceived constraints on the facility. The findings suggest that effective instructional support and guided practice can mitigate the limitations of inadequate laboratory facilities, highlighting the critical role of teaching strategies and adaptable learning environments in sustaining skill development in resource-constrained cookery education contexts.

Keywords: *Cookery education; Experiential learning; Laboratory facilities; Practical performance; Technology and Livelihood Education.*

Technology and Livelihood Education (TLE), particularly Cookery, is anchored on competency-based and experiential learning approaches that emphasize the acquisition of practical, job-ready skills through hands-on engagement. This orientation is strongly aligned with Experiential Learning Theory, which posits that

meaningful learning occurs through concrete experience, reflective observation, and active experimentation (Kolb, 1984). In cookery education, laboratory-based activities provide learners with authentic contexts for developing procedural knowledge, psychomotor skills, and professional work habits.

In addition, the study is guided by Social Cognitive Theory, which highlights the interaction between environmental factors, instructional support, and learners' self-efficacy in shaping performance outcomes (Bandura, 1997). Within this framework, the availability of, or inadequacy in, instructional facilities, such as cookery laboratories, constitutes a critical environmental factor that may influence students' confidence, motivation, and perceived competence. However, Social Cognitive Theory also suggests that effective guidance, modeling, and feedback from teachers can mitigate environmental limitations and support skill acquisition.

Empirical studies in technical-vocational education consistently emphasize the importance of adequate laboratory facilities in supporting experiential and competency-based learning (Handayani et al., 2025; Masykar & Nurrahmi, 2024). Insufficient facilities may limit opportunities for repeated practice, procedural accuracy, and efficient task execution, which are essential in cookery instruction. Consequently, students may perceive the inadequate laboratory as a significant barrier to skill development, even when instructional interventions are in place. At the same time, research has shown that learners' perceptions of constraints do not always align with objectively measured performance, particularly in contexts with strong instructional scaffolding (Kholifah et al., 2024). This perceptual–performance gap remains underexplored in secondary-level cookery education, especially in public schools operating under resource constraints.

Guided by Experiential Learning Theory and Social Cognitive Theory, this study examined whether students' perceived effects of inadequate Cookery laboratory correspond to their actual practical performance. Specifically, the study addressed the following research question: Is there a significant difference between Grade 10 students' perceived effects of inadequate Cookery laboratory and their actual practical performance across key cookery skill areas? Understanding this relationship is vital for informing instructional planning, resource allocation, and pedagogical strategies in Technology and Livelihood Education, particularly in schools with limited laboratory facilities.

Methodology

Research Design

A descriptive–comparative research design was employed to examine the effects of an inadequate Cookery laboratory on students' practical performance. The descriptive component assessed students' perceptions of how inadequate laboratory conditions influenced their performance, while the comparative component analyzed differences between perceived effects and actual practical performance. This design enabled a systematic comparison of subjective perceptions and objectively assessed skills without manipulation of variables.

Participants and Sampling Technique

The study participants comprised 43 Grade 10 students enrolled in Cookery at Ilocos Sur Polytechnic State College-Laboratory High School, Tagudin Campus, during the School Year 2025–2026. Total population sampling was utilized due to the small cohort size and the fact that all students met the inclusion criteria of current enrollment in Cookery and direct experience with the inadequate Cookery laboratory. This approach ensured comprehensive representation of the target group.

Research Instrument

Two research instruments were utilized in this study: a researcher-made perception questionnaire and a performance-based assessment rubric. The questionnaire measured students' perceptions of the effects of the inadequacies of a Cookery laboratory across five skill areas: ingredient preparation, cooking procedures, sanitation and safety, time management, and food presentation and quality. The perception questionnaire utilized a five-point Likert scale ranging from 1 (Very Low Effect) to 5 (Very High Effect) to quantify students' perceived impact of inadequate laboratory facilities. Trained assessors used the performance rubric to evaluate students' actual practical performance in the same skill areas during a standardized cookery activity. Both instruments were subjected to content validation by a panel of three experts to ensure relevance, clarity, and alignment with the study objectives. Reliability testing demonstrated high internal consistency for the perception questionnaire (Cronbach's $\alpha = 0.97$) and acceptable reliability for the performance rubric (Cronbach's $\alpha = 0.70$), confirming the suitability of these instruments for data collection.

Data Gathering Procedure

Approval to conduct the study was obtained from the school administration, and informed consent was secured from all participants before data collection commenced. The perception questionnaire was administered in person, followed by a standardized cookery activity. Three trained evaluators independently assessed students' performance using the rubric to ensure objectivity and consistency. All completed instruments were reviewed for completeness and prepared for analysis. The data collection process was completed within two weeks, including questionnaire administration, performance assessment, and verification of completed instruments. This timeframe ensured systematic data collection while minimizing disruption to regular instructional activities.

Data Analysis Procedure

Descriptive statistics, specifically mean scores, were used to assess students' perceived effects of inadequate cookery laboratory and their practical performance levels. A normality test was conducted to assess the data's distribution. Because the data did not meet the assumptions of normality, the Wilcoxon Signed-Rank Test was used to assess significant differences between students' perceived effects and their actual practical performance. All statistical analyses were conducted at a .05 level of significance.

Ethical Considerations

Ethical standards for research involving minors were strictly observed throughout the study. Prior to data collection, formal approval was obtained from the school administration. Because the participants were Grade 10 students under 18, a two-tier consent process was implemented. First, written informed consent was obtained from parents or legal guardians. Consent forms clearly explained the purpose of the study, the procedures involved, potential risks and benefits, data confidentiality measures, and the voluntary nature of participation. Second, student assent was obtained from all participating learners, using age-appropriate language to ensure understanding of the study and their right to decline or withdraw at any time without penalty.

To mitigate potential coercion or undue influence, particularly given that the researcher was not involved in grading decisions for the research activity, several safeguards were implemented. Participation or non-participation had no bearing on students' academic grades or standing, and this was explicitly communicated to both parents and students. Data collection was conducted during scheduled activities, but students were informed that they could opt out without explanation. The performance assessments used in the study were part of a routine instructional evaluation. They were scored using a standardized rubric by multiple trained evaluators, thereby reducing the risk of researcher bias. All data were anonymized by assigning numerical codes to participants, and no identifying information was included in the dataset. The collected data were used solely for research purposes and were reported only in aggregate. These procedures ensured voluntariness, confidentiality, and ethical compliance consistent with accepted standards for educational research involving minors.

Results and Discussion

Students' Perceived Effects of Inadequate Cookery Laboratory

Table 1 presents the extent to which Grade 10 Cookery students perceived the inadequate Cookery laboratory as affecting their practical performance across five skill areas. The findings indicate that students perceived a high level of impact in all domains, with an overall mean score of $M = 3.76$. Time management ($M = 3.93$) and sanitation and safety ($M = 3.88$) received the highest mean ratings, whereas preparation of ingredients had the lowest mean (M = 3.59), although it was still classified as high.

Table 1. *Students' Perceived Effects of Inadequate Cookery Laboratory*

Key Areas	Mean	Descriptive Equivalent
A. Preparation of Ingredients	3.59	High
B. Cooking Procedures	3.64	High
C. Sanitation and Safety	3.88	High
D. Time Management	3.93	High
E. Food Presentation and Quality	3.75	High
Overall	**3.76**	**High**

The high rating for time management may reflect students' heightened awareness of logistical constraints, such as limited workspace, shared equipment, and improvised learning environments. Without a fully equipped laboratory, students may perceive task completion as more time-pressured and operationally challenging, thereby

amplifying their perception of difficulty in managing cooking tasks efficiently. The findings indicate that students perceive significant challenges due to the lack of a functional laboratory, particularly in managing time efficiently and adhering to sanitation standards during cooking activities. The lack of adequate tools, sufficient workspace, and designated kitchen facilities appears to increase students' awareness of task difficulty, thereby affecting their confidence and perceived readiness to perform cookery tasks. Prior research has similarly demonstrated that limited laboratory resources and inadequate facilities negatively influence students' perceived competence, engagement, and confidence in technical-vocational subjects (Belandres & Dioso, 2023; Nkunya & Mwila, 2024). Additionally, empirical evidence supports the view that well-structured and well-equipped laboratory environments are critical for fostering learners' confidence, mastery of skills, and effective performance in practical cookery and vocational education settings (De Freitas & Stedefeldt, 2022; Saab & Chiang, 2026).

Level of Practical Performance of Grade 10 Cookery Students

Table 2 shows the practical performance level of Grade 10 Cookery students, as assessed using a performance rubric. Overall, students demonstrated a very high level of practical performance, with a mean score of $M = 4.29$. Time management recorded the highest mean ($M = 4.88$), followed by food presentation and quality ($M = 4.55$) and sanitation and safety ($M = 4.26$), all interpreted as very high. Preparation of ingredients ($M = 3.68$) and cooking procedures ($M = 4.09$) were rated high.

Table 2. *Level of Practical Performance of Grade 10 Cookery Students*

Key Areas	Mean	Descriptive Equivalent
A. Preparation of Ingredients	3.68	High
B. Cooking Procedures	4.09	High
C. Sanitation and Safety	4.26	Very High
D. Time Management	4.88	Very High
E. Food Presentation and Quality	4.55	Very High
Overall	**4.29**	**Very High**

The results indicate that, despite the inadequacy of the Cookery laboratory, students demonstrated strong practical competencies, particularly in organization, hygiene, and food presentation. This outcome may be attributed to effective instructional strategies such as guided demonstrations, structured task sequencing, and consistent performance feedback provided during learning activities. Studies in vocational and technical education suggest that high-quality instruction and teacher facilitation can help sustain learners' performance even in contexts with limited physical resources (Pelpinosas & Saab, 2025; McGrath et al., 2022). However, the relatively lower scores observed in ingredient preparation and cooking procedures indicate that foundational and process-oriented skills may require more extensive practice opportunities and structured laboratory support. Previous research emphasizes that while instructional quality can partially mitigate the effects of inadequate facilities, the inadequate tools and authentic work environments may still constrain the development of complex procedural skills (Masykar & Nurrahmi, 2024; Handayani et al., 2025). These findings reinforce competency-based education literature, highlighting that effective teaching can compensate to some extent for limited resources, but optimal skill mastery is best achieved when strong instruction is complemented by adequate laboratory facilities (Nkunya & Mwila, 2024; Saab & Chiang, 2026).

Difference Between Students' Perceived Effects and Actual Practical Performance

As shown in Table 3, no significant differences were found in preparation of ingredients ($p = .578$) and sanitation and safety ($p = .086$), indicating that students' perceptions in these areas were consistent with their actual performance. Conversely, significant differences were identified in cooking procedures ($p = .004$), time management ($p < .001$), and food presentation and quality ($p < .001$). These results indicate a discrepancy between students' perceptions of the impact of inadequate laboratory and their actual performance in these skill areas. While students believed that limited facilities adversely affected their performance, their assessed outputs reflected higher levels of competence than anticipated.

Table 3. *Difference Between Students' Perceived Effects and Actual Practical Performance*

Key Areas	p-value
A. Preparation of Ingredients	.578
B. Cooking Procedures	.004
C. Sanitation and Safety	.086
D. Time Management	<.001
E. Food Presentation and Quality	<.001

These findings suggest that students may underestimate their abilities in complex or performance-oriented tasks, particularly when they perceive learning conditions as inadequate. Previous research in technical and vocational education supports this observation, indicating that learners often attribute difficulties in task performance to environmental and facility-related constraints rather than to their actual skill level (Akomolafe & Adesua, 2016; Bitmal et al., 2026; Nkunya & Mwila, 2024). The alignment between students' perceptions and actual performance in ingredient preparation and sanitation indicates that these skills are less dependent on specialized facilities and are more strongly influenced by routine practice, repetition, and habit formation (De Freitas & Stedefeldt, 2022).

Collectively, these results underscore the importance of integrating reflective learning activities, systematic feedback mechanisms, and ongoing performance monitoring into cookery instruction. These strategies can help learners more accurately align their self-perceptions with actual performance outcomes, particularly in resource-constrained environments where perceived limitations may disproportionately affect students' confidence and self-assessment (McGrath et al., 2022; Pelpinosas & Saab, 2025).

Conclusion

This study examined the effects of an inadequate Cookery laboratory on the practical performance of Grade 10 students by comparing their perceived limitations with their actual performance outcomes. The findings indicate that, although students strongly perceived the lack of laboratory facilities as a limitation, they still demonstrated high to very high levels of practical competence across key cookery skills. These results demonstrate that students' performance is influenced not only by physical facilities but also by effective instructional practices and guided learning. The discrepancies observed between students' perceptions and actual performance in cooking procedures, time management, and food presentation underscore the influence of self-efficacy and environmental perceptions on learners' confidence. These findings suggest that students may underestimate their abilities when they perceive learning conditions as inadequate, even when their demonstrated skills are strong. In contrast, the alignment between perception and performance in ingredient preparation, sanitation, and safety indicates that these competencies are more resilient to facility limitations and can be strengthened through routine practice and habit formation.

These findings have important implications for educational practice and policy in Technology and Livelihood Education. Schools with limited resources can sustain competency development by maximizing instructional quality, utilizing improvised learning spaces, and providing structured demonstrations and feedback. For policymakers and school administrators, the results emphasize the need to prioritize support mechanisms and flexible approaches as they work toward the gradual provision of standard cookery laboratories. Future research should consider longitudinal designs, intervention-based approaches, or comparative studies across multiple schools to further investigate how teaching strategies and learning environments interact to influence skill acquisition in resource-limited settings.

Contributions of Authors

Not Indicated

Funding

Not Indicated

Conflict of Interests

Not Indicated

Acknowledgment

Not Indicated

References

Akomolafe, C.O., & Adesua, V.O. (2016). The impact of physical facilities on students' level of motivation and academic performance in senior secondary schools in South West Nigeria. Journal of Educational and Practice, 7, 38-42. https://files.eric.ed.gov/fulltext/EJ1092365.pdf

Arban, J.C., Enad, F., & Pabalan, A. (2024). The Senior High School Technical-Vocational-Livelihood track: Implementation and challenges. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4975284

Bandura, A. (1997). Self-efficacy: The exercise of control. New York, NY, United States: W. H. Freeman and Company.

Belandres, A., & Dioso, E. (2023). Preparedness of technical vocational workshop laboratories: Its effect on students' competence and skills acquisition. EPRA International Journal of Multidisciplinary Research. https://eprajournals.com/IJMR/article/11142

Bitmal, R., Camsa, S., Duque, C., Ignacio, A., Juane, S.N., Obos, M.C.S., & Muyrong, A., II. (2026). Utilization of the training laboratory and its effectiveness on the practical performance of Grade 12 TVL–Home Economics Cookery students at Bestlink College of the Philippines. Ascendens Asia Singapore – Bestlink College of the Philippines Journal of

Multidisciplinary Research, 6(1). https://tinyurl.com/4m3xjc78
De Freitas, C.O., & Stedefeldt, E. (2022). Factors influencing food production skills and food safety performance among culinary students. Journal of Food Safety Education, 21(3), 145–154.
Handayani, K., Kusumaningsih, W., & Sudana, I.M. (2025). The influence of practical facilities on the quality of learning at state vocational schools. Lembaran Ilmu Kependidikan, 54(1), 206–219. https://doi.org/10.15294/lik.v54i1.23521
Kholifah, N., Nurtanto, M., Mutohhari, F., Wahyuningsih, U., & Listiani, S. (2024). Students' readiness for practical learning in vocational education: A post-pandemic survey. Journal of Pedagogical Research, 8(3), 320–332. https://doi.org/10.33902/JPR.202426503
Kolb, D. (1984). Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ, United States: Prentice Hall. https://tinyurl.com/w45s3cha
Lazaro, J.M., & Paglinawan, J. (2025). Laboratory resource availability and students' engagement in science. International Journal of Research and Innovation in Applied Science (IJRIAS), 9(12), 146–153. https://doi.org/10.51584/IJRIAS.2024.912015
Masykar, T., & Nurrahmi, F. (2024). Laboratory facilities and practical skills acquisition in vocational education. Jurnal Pendidikan Vokasi, 10(1), Article 30123. https://doi.org/10.21831/jpv.v10i1.30123
McGrath, S., Powell, L., Alla-Mensah, J., Hilal, R., & Suart, R. (2022). Young people's participation experiences of Technical and Vocational Education and Training interventions in low- and middle-income countries: A systematic review. International Journal for Research in Vocational Education and Training, 9(4), 497–525. https://doi.org/10.1186/s40461-022-00136-4
Nkunya, H., & Mwila, P. (2024). Bridging the gap between TVET skills and labor market demands: An analysis of the influence of training outcomes in Dar Es Salaam, Tanzania. International Journal of Research and Innovation in Social Science, 8(12), 57–66. https://doi.org/10.47772/IJRISS.2024.8120057
Pelpinosas, V.I., & Saab, R. (2025). Quality of teacher instruction, laboratory learning environment, and student engagement in food waste management: Implications for students' key skills in bread and pastry production. International Journal of Research and Scientific Innovation, 12(5), 398–408. https://doi.org/10.51244/IJRSI.2025.120500033
Saab, R., & Chiang, P.M. (2026). Sustainability awareness, facilities, and the laboratory environment: Their influence on students' cooking performance. International Journal of Latest Technology in Engineering Management & Applied Science, 14(12), 422–429. https://doi.org/10.51583/IJLTEMAS.2025.1412000038
Soliman, M., & Gabutin, D. (2025). Gender and cookery: Exploring perceptions and participation in Technical-Vocational-Livelihood (TVL) tracks. International Journal of Research and Innovation in Applied Science, 10(7), 640–652. https://doi.org/10.51584/IJRIAS.2025.100700058