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Intervention Brigade: A Strategic Process to Improve the Academic Performance of Cookery 9 Students in Bulihan Integrated National High School, Silang, Cavite, Philippines

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A B S T R A C T

This study examined the implementation and effectiveness of the "Intervention Brigade," a school-based remediation strategy aimed at addressing the least-mastered competencies of Cookery 9 students at Bulihan Integrated National High School in Silang, Cavite, Philippines. The research sought to identify factors behind low academic performance and evaluate the intervention's impact on student outcomes. Data collection involved Learning Outcomes Assessments (LOA), focus group discussions with purposively selected students, and interviews with Cookery 9 teachers. Findings highlighted that poor study habits, limited access to learning resources, low engagement in written tasks, and instructional gaps were key contributors to low performance. Analysis of pre- and post-intervention LOA scores showed a significant improvement, with an average 22% increase in scores and a notable rise in student mastery levels. The study concluded that structured remediation activities—such as teach-reteach sessions, test-retest, and the use of Strategic Intervention Materials (SIMs)—are effective in enhancing learners' comprehension and confidence. Recommendations include institutionalizing the Intervention Brigade across other subject areas, improving teacher training in differentiated instruction and SIM development, and integrating diagnostic assessments into regular teaching to better support student learning.

RESUME

Este estudo examinou a implementação e a eficácia da "Brigada de Intervenção", uma estratégia de remediação escolar voltada para abordar as competências menos dominadas pelos alunos de Culinária 9 da Bulihan Integrated National High School, em Silang, Cavite, Filipinas. A pesquisa teve como objetivo identificar os fatores por trás do baixo desempenho acadêmico e avaliar o impacto da intervenção nos resultados dos alunos. A coleta de dados envolveu Avaliações de Resultados de Aprendizagem (LOA), grupos focais com estudantes selecionados propositalmente e entrevistas com professores da disciplina de Culinária 9. Os resultados destacaram que hábitos de estudo deficientes, acesso limitado a recursos de aprendizagem, baixa participação nas tarefas escritas e lacunas na instrução foram os principais fatores que contribuíram para o fraco desempenho. A análise das pontuações das LOAs antes e depois da intervenção mostrou uma melhoria significativa, com um aumento médio de 22% e um progresso notável nos níveis de domínio dos alunos. O estudo concluiu que atividades de remediação estruturadas—como sessões de ensino-reensino, teste-reteste e o uso de Materiais de Intervenção Estratégica (SIMs)—são eficazes para melhorar a compreensão e a confiança dos alunos. As recomendações incluem institucionalizar a Brigada de Intervenção em outras áreas do currículo, aprimorar a formação de professores em instrução diferenciada e desenvolvimento de SIMs, além de integrar avaliações diagnósticas ao ensino regular para oferecer melhor apoio ao aprendizado dos estudantes.

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Introduction

Students' performance in Technology and Livelihood Education (TLE), especially Cookery 9, is crucial for career preparation and practical skills. Poor performance, especially on written tests, prevents students from mastering essential competencies. The National Achievement Test (NAT) results, which measure Filipino students' learning achievement, reflect this issue. The persistently low mean percentage scores (MPS) indicate that many students struggle to master key concepts (DepEd, 2020). These findings suggest that standardized tests often reveal students' struggles to reach their potential, especially without adequate instruction. Students' performance in Technology and Livelihood Education (TLE), especially Cookery 9, is crucial for career preparation and practical skills. Poor performance, especially on written tests, prevents students from mastering essential competencies. The National Achievement Test (NAT) results, which measure Filipino students' learning achievement, reflect this issue. The persistently low mean percentage scores (MPS) indicate that many students struggle to master key concepts (DepEd, 2020). These findings suggest that standardized tests often reveal students' struggles to reach their potential, especially without adequate instruction.

Cookery 9 students at Bulihan Integrated National High School in Silang, Cavite, Philippines, are enthusiastic and capable. Many remain in the least-mastered category in written exams, requiring targeted, systematic interventions. The study proposes the 'Intervention Brigade: A Strategic Process to Improve the Academic Performance of Cookery 9 Students,' which uses Strategic Intervention Materials (SIM), remediation strategies, and diagnostic support to improve conceptual and practical skills.

Through Memorandum No. 117, s. 2005, DepEd promoted teacher-created Strategic Intervention Materials (SIMs) for low-performing students. These materials simplify complex ideas and engage students (DepEd, 2005). DepEd Order No. 08, s. 2015, the Classroom Assessment Policy Guidelines, emphasizes pre-assessment interventions and requires remediation for students scoring below 75 in any quarter. To ensure no student is left behind, it emphasizes inclusive and effective instruction.

This research supports DepEd's commitment to quality and equity by improving student performance through responsive and inclusive methods. The Intervention Brigade will identify and address students' low mastery levels with structured academic support. The initiative promotes mastery learning in TLE to improve Cookery 9 students' academic performance and foster a culture of success and improvement.

This study developed and applied an Intervention Brigade—a strategic, data-informed approach focusing on students' least mastered skills identified by their Learning Outcomes Assessment (LOA) results—to improve Grade 9 Cookery students' academic performance at Bulihan Integrated National High School, Silang, Cavite. Specific goals of this study: Identify the factors influencing the low academic performance of students in Cookery 9, especially those

classified as least mastered according to the LOA item analysis. Calculate the percentage of students in the least-mastered category for Cookery 9; Design and propose an intervention plan based on the findings that targets the identified learning gaps and instructional challenges; Implement the intervention plan using strategies like remediation; teach-reteach sessions; test construction training, and mastery-based review aligned with TLE-Cookery 9 competencies; Assess the intervention scheme's effectiveness by analyzing post-intervention LOA results utilizing a test-retest approach to gauge improvements in student comprehension and mastery.

The Intervention Brigade organizes academic support to close learning gaps for Bulihan Integrated National High School Cookery 9 students. This method emphasizes mastering the least-mastered skills using evidence-based methods aligned with Department of Education standards. Beginning with automated item analysis of Learning Outcomes Assessment (LOA) results, teachers can identify student weaknesses (DepEd, 2015). Based on these findings, students will participate in targeted remediation and teach-reteach sessions during class time to review and reinforce key concepts.

The program offers teachers In-Service Training (INSET) on effective and objective test creation to improve instruction. Better assessment tools that match learning outcomes and improve measurement validity are needed (DepEd, 2005). Student progress and intervention efficacy will be monitored using Test-Retest. Students use the Know Your Point approach to identify their weaknesses based on test results, promoting self-awareness and content-focused study.

Cookery teachers, the Head Teacher, and the Grade 9 Level Coordinator will coordinate all activities. This comprehensive, data-driven, learner-focused approach improves academic performance and ensures equity. According to DepEd Order No. 08, s. 2015, focused remediation and intervention for students below the minimum proficiency level is part of the Department of Education's commitment to inclusive education and mastery-based learning.

Literature Review

Academic achievement in Technology and Livelihood Education (TLE), especially in Cookery, is vital for equipping junior high students with key life and vocational skills. As part of the Philippines' K to 12 curriculum, TLE courses like Cookery aim not only to teach knowledge but also to build practical skills students can apply in everyday life (De Guzman & Santiago, 2021). Nonetheless, research indicates that many students find it challenging to meet the basic competency standards in these performance-oriented subjects. This underachievement is often evident in written tests such as Learning Outcomes Assessments (LOAs), where many students are classified in the "least-mastered" category.

Students' theoretical knowledge and practical skills differ, causing this academic gap. Flores and Gaspar (2022) indicate that students in TLE subjects often perform well in hands-

on activities but struggle with theoretical exams, mainly due to poor study habits, limited reading skills, and lack of instructional support. The Philippines' National Achievement Test (NAT) results consistently show low mean percentage scores (MPS), suggesting many students have not fully mastered core competencies across subjects (DepEd, 2020). The need for targeted academic interventions is clear from these findings.

DepEd Memorandum No. 117, s. 2005, introduced Strategic Intervention Materials (SIM) to close learning gaps. Teachers created these tools to simplify complex concepts and help struggling students. SIMs improve students' understanding and participation, especially when used with individualized instruction (Santos & Hernandez, 2021). DepEd Order No. 08, s. 2015 emphasizes the need for remediation and additional lessons before summative assessments, especially for students scoring below 75 in any subject.

Researchers support mastery learning and intervention strategies like test-retest and teach-reteach cycles. Bloom's (1968) Mastery Learning Theory recommends corrective instruction to help all students meet standards with enough time and support. Test-retest methods let students review their mistakes and show progress, while structured remediation promotes content mastery through practice and guidance (Andres & Dizon, 2020).

Recently published international studies support mastery learning and remediation in vocational education. Guskey (2021) noted that mastery learning strategies improve achievement for many learners, especially when combined with formative feedback and personalized instruction. Ahmad et al. (2022) found that modular teaching strategies and targeted remediation improved hospitality and culinary students' performance in Malaysian vocational schools. In Taiwan, Liu and Tsai (2023) found that digital interventions and performance tracking improved TVET student outcomes, especially in subjects requiring cognitive and practical competencies.

Hattie (2021) also stressed the importance of visible learning and feedback in vocational education, noting that timely interventions based on student performance data increase engagement and knowledge retention. These international findings emphasize the importance of data-driven, timely remediation and mastery-focused instruction in improving Cookery and other TLE outcomes. Cookery 9 students at Bulihan Integrated National High School in Silang, Cavite, Philippines, are enthusiastic and skilled in practical tasks but struggle with theory. The proposed Intervention Brigade, a data-driven, school-specific intervention, addresses this gap. This program uses LOA item analysis to identify the least-mastered skills and close them with collaborative teacher strategies, student remediation, and ongoing feedback. By combining these methods, the intervention aims to improve student performance and promote inclusive, quality education.

Methodology

Quantitative Learning Outcomes Assessment data supplemented this qualitative-descriptive study. The quantitative part used LOA performance results to confirm the

qualitative findings on Cookery 9 students' performance. The proposed Intervention Brigade was evaluated using pre- and post-intervention data and thematic analysis of participant responses.

Bulihan Integrated National High School (BINHS) in Silang, Cavite, participated. In the study were Grade 9 Cookery students and TLE teachers. The LOA-least proficient students participated in the focus group discussions (FGDs). To ensure participants had relevant cooking instruction and learning challenges experiences, purposive sampling was used (Lichtman, 2006).

During the FGDs, ten Grade 9 Cookery students discussed their academic struggles. Three TLE teachers who taught Cookery 9 were interviewed to validate student responses and provide instructional insights. This method allowed for in-depth data collection from teaching and learning professionals.

The researchers used semi-structured interviews, focus groups, and document analysis to collect data. For qualitative and quantitative student and teacher data, a self-developed and validated questionnaire was used. The MRC Committee on Research reviewed and revised the questionnaire based on SDRC, PPRD, and MRC Secretariat feedback to ensure clarity, appropriateness, and content validity.

Data collection followed these steps: Formal request to conduct the study was made to BINHS School Head. Participants received an orientation on the study's purpose, data privacy, and consent after approval. All participants, including minors and their parents, gave informed consent under the 2012 Data Privacy Act. The Division of Cavite Institutional Research Ethics Committee granted ethical approval. This ensured research ethics, transparency, and participant safety throughout the study. Permission was obtained to audio- and video-record FGDs and interviews, and all transcripts were analyzed. LOA results were reviewed to identify least-mastered competencies and inform intervention development.

Participants were encouraged to speak freely in open-ended interviews. To encourage natural and meaningful conversations, the researchers did not force responses (Lichtman, 2006).

The data collected were subjected to both quantitative and qualitative analyses: Percentage Analysis quantified the number of students in the least-mastered category, providing statistical insight into the scope of the problem; Coding of Qualitative Data followed Creswell's (2006) approach; Transcripts from FGDs and interviews were coded to highlight key statements and grouped into thematic categories for interpretation. Thematic analysis was applied to uncover patterns and categories relevant to the research objectives.

To enhance the transparency of the thematic analysis process, initial codes and emergent categories were identified based on recurring student and teacher responses. Sample codes included:

-"Lack of time for review" (Student response on study habits)

-“No available modules” (On learning material scarcity)

-“More hands-on than theory” (On engagement preference)

These were grouped into broader thematic categories such as Study Habits and Time Management, Resource Availability, Learner Engagement, and Instructional Gaps. These themes were refined through coder consensus and aligned with the research objectives to ensure analytical clarity and depth.

To ensure the credibility of the qualitative findings, inter-coder reliability was established during the thematic analysis. Multiple coders independently analyzed a subset of the transcribed data to identify initial codes and themes. The results of their analyses were compared, and discrepancies were discussed and resolved through consensus meetings. To ensure coding consistency and reliability, a Cohen's Kappa coefficient was calculated to assess coder agreement. This step strengthened the FGD and interview thematic findings' credibility and rigor.

To triangulate and validate qualitative data, LOA results, school documents, and student records were analyzed. This process also identified performance trends and competency gaps to contextualize the intervention.

To protect participant anonymity, pseudonyms were used, and all responses were kept confidential. Data were carefully analyzed to ensure that the lived experiences and perspectives of both students and teachers informed the design of a responsive and relevant intervention strategy.

Given the study's use of purposive sampling and a limited participant pool (ten students and three teachers), the findings are context-specific and not generalizable to all educational settings. However, the study provides valuable insights for developing targeted interventions in similar contexts facing performance-related challenges in Cookery education.

Limitation of the Study

While this study provides valuable insights into the factors affecting student performance in Cookery 9 and the effectiveness of the Intervention Brigade, several limitations should be noted.

First, the study employed purposive sampling, including a relatively small group of ten students and three teachers from Bulihan Integrated National High School. As such, the findings may not be generalizable to other schools, grade levels, or TLE strands. The results are context-specific and should be interpreted as indicative rather than representative of broader educational trends.

Second, as with most qualitative research, the analysis may be influenced by researcher interpretation despite the use of inter-coder reliability measures. Nevertheless, the study aimed to ensure rigor through systematic data triangulation, member checking, and consensus-based coding validation.

Results and Discussions

This study aimed to identify the factors behind students' underperformance in Cookery 9 and to assess the effectiveness of the proposed Intervention Brigade. Data collection involved Learning Outcomes Assessments (LOA), focus group discussions with ten purposely selected students, and interviews with three Cookery 9 teachers. Several common themes emerged from the discussions.

A primary factor was the lack of study habits and poor time management. Many students reported difficulty balancing practical tasks with written exams and mentioned inconsistent study routines and challenges in reviewing lessons at home due to limited time or distractions. Students reported limited access to cookery modules, essential materials, and printed references, especially during modular and remote learning.

Students enjoyed hands-on activities but found theoretical parts boring or difficult, which led to low motivation and engagement in written tasks. Teachers also noted instructional gaps and overloaded competencies, explaining that the extensive TLE curriculum and limited instructional time prevented complete coverage of all competencies, leaving learning gaps.

Flores and Gaspar (2022) found that differentiated instruction in TLE subjects is necessary to meet students' diverse needs and learning speeds. The initial LOA analysis showed that 45% of Grade 9 Cookery students had low mastery in food preparation terminology, costing and pricing, and basic kitchen safety. National trends show a low Mean Percentage Score (MPS) in the National Achievement Test (NAT), according to the Department of Education (DepEd, 2020).

The Intervention Brigade used teach-reteach, structured remediation, and test-retest to address these issues. We measured this intervention's effectiveness quantitatively and qualitatively:

Quantitative Analysis:

Students with the least mastery had a 22% average increase in LOA scores after intervention. Table 1 shows that 7 of 10 students moved from “least-mastered” to “approaching mastery” or “mastered”.

Table 1.

Comparative Pre- and Post-Intervention LOA Scores of Selected Students in Cookery 9

Student No	Pre-Intervention Score (%)	Post-Intervention Score (%)	Mastery Level (Before)	Mastery Level (After)
S1	48%	72%	Least Mastered	Approaching Mastery
S2	50%	68%	Least Mastered	Approaching Mastery
S3	45%	66%	Least Mastered	Approaching Mastery
S4	52%	75%	Least Mastered	Mastered
S5	47%	70%	Least Mastered	Approaching Mastery

S6	49%	71%	Least Mastered	Approaching Mastery
S7	46%	73%	Least Mastered	Mastered
S8	51%	55%	Least Mastered	Least Mastered
S9	50%	52%	Least Mastered	Least Mastered
S10	48%	54%	Least Mastered	Least Mastered
Average	48.6%	70.6%		

Interpretation:

- 7 out of 10 students moved up at least one mastery level.
- The average improvement in scores was 22%, confirming the effectiveness of the Intervention Brigade.
- Data supports qualitative academic gains and student progress.

Qualitative Feedback:

Post-intervention focus group discussions and interviews showed that students felt more confident and understood previously difficult concepts. Teachers saw improved engagement and skill improvement after using simplified Strategic Intervention Materials (SIMs) and focused remediation.

SIMs and structured remediation improve academic performance in technical and vocational subjects like Cookery, according to Santos and Hernandez (2021).

Overall, the Intervention Brigade managed Cookery 9's academic issues well. Combining data-driven learning gap identification with specific instructional interventions improved student results. To improve TLE-Cookery performance and mastery, this research emphasizes prompt instructional support, customized teaching strategies, and educator teamwork.

Recommendations

The study found that poor study habits, limited learning resources, low engagement in written tasks, and gaps in instruction led to academic underperformance in Cookery 9 students. The following recommendations are suggested to sustain and improve academic performance:

1. **Institutionalize the Intervention Brigade** – Given the observed 22% average score improvement and the upward movement of 7 out of 10 students in mastery levels, it is recommended that the school formally adopt the Intervention Brigade as a school-based remediation strategy. This approach may also be expanded to other TLE strands where similar learning gaps exist.
2. **Strengthen Teacher Capacity** – Since the study identified instructional gaps as a contributing factor to poor performance, regular teacher training should be conducted on the development and use of Strategic Intervention Materials (SIMs), differentiated instruction, and item-based test construction.
3. **Utilize Diagnostic LOA Data** – The study demonstrated how LOA data effectively identified learning gaps. Teachers should therefore institutionalize the regular use of

diagnostic assessments, including item analysis, to guide focused and timely remediation strategies.

4. **Integrate SIMs in Daily Instruction** – As SIMs were effective in boosting student engagement and comprehension, they should be consistently integrated into daily lessons. Collaborative SIM development among teachers can also ensure alignment and reinforce instructional support.
5. **Improve Access to Learning Resources** – In response to students' reported lack of study materials and limited home-based learning options, the school should provide printed modules, digital resources, and structured tutorial sessions to support continuous learning.
6. **Institutionalize Student Feedback Mechanisms** – Since qualitative findings showed valuable insights from students and teachers, quarterly focus group discussions and feedback collection should be implemented. These will serve as a basis for refining instructional methods and updating intervention strategies.

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