

Project CLAM (Cookery Learning and Assessment Using Multimedia): A Multimedia-Based Approach to Enhance Assessment and Instruction in TLE 9 Cookery

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Abstract

This study aimed to determine the effectiveness of Project CLAM (Cookery Learning and Assessment using Multimedia) in enhancing the teaching and learning of TLE 9 Cookery. Specifically, it examined the impact of multimedia-based strategies, such as interactive video demonstrations and online recipe blogs, on students' academic performance, engagement, and skill development. The study also identified the challenges learners encountered during the implementation of Project CLAM and proposed improvements based on both quantitative and qualitative results. A descriptive research design was employed, utilizing teacher-made pretests and post tests, structured questionnaires, and interviews with selected Grade 9 students.

Findings revealed a significant improvement in students' performance across key competencies in Cookery after the integration of multimedia-based instruction. Interactive videos helped learners better understand procedures, increased motivation, and improved their cooking confidence. Similarly, online blogs supported independent practice and provided opportunities for students to revisit lessons and explore new techniques. However, challenges such as internet connectivity issues, limited access to digital devices, and difficulty in transferring video-based learning into practical output were also reported. Interview responses reinforced these findings, with students highlighting improvements in plating, time management, and overall skills. To address these issues, an enhanced action plan was developed incorporating blended learning strategies, TESDA Online Program integration, peer collaboration, and regular digital skills orientation. The study concludes that while Project CLAM is effective in enriching TLE 9 Cookery instruction, further support and resource accessibility are necessary to fully maximize its benefits for diverse learners.

Keywords: *Multimedia-based Instruction, Cookery Education, Student Engagement, Academic Performance, Skill Development*

1.Introduction

Education plays a vital role in shaping learners' knowledge, skills, and values, as it influences their decisions and prepares them for real-life situations. In today's digital age, the education system continues to evolve, particularly with the integration of technology in face-to-face instruction. One of the key learning areas that strongly supports practical and skill-based learning is Technology and Livelihood Education (TLE).

TLE is an essential component of the Philippine K to 12 Curriculum that equips learners with technical skills and livelihood competencies. Under Home Economics, Cookery is one of the specializations offered in Grade 9, focusing on food preparation, safety, sanitation, and practical kitchen skills. Despite its importance, many learners struggle in mastering cookery skills due to limited resources, lack of kitchen exposure, and difficulty in understanding step-by-step procedures through traditional teaching methods.

At Talahib Pandayan Integrated High School (TPIHS), these challenges are evident as some Grade 9 learners show low performance, lack confidence, and struggle in performing practical cookery tasks. In response, the use of multimedia-based instruction has been encouraged by the Department of Education through policies supporting ICT integration and computerization in schools. Studies have shown that multimedia tools such as instructional videos and digital learning materials can significantly improve students' understanding and performance in skill-based subjects like Cookery.

This study aims to determine the effectiveness of Project CLAM Cookery Learning and Assessment using Multimedia in using multimedia approach of Grade 9 students in the Cookery subject. Specifically, the research seeks to answer the following questions:

- 1.How do Grade 9 learners perform in the teacher-made test after covering the following lessons in Cookery 9 as to:
 - 1.1.Cleaning and sanitizing kitchen premises;
 - 1.2.Performing mise en place;
 - 1.3.Preparing a range of appetizers; and
 - 1.4.Presenting a range of appetizers?
- 2.To what extent do the following multimedia-based instructional strategies under Project CLAM enhance students' cooking skills and classroom participation in terms of:
 - 2.1.interactive video demonstrations; and
 - 2.2.online recipe blogs
- 3.How effective is Project CLAM in enhancing instruction and assessment in TLE 9 Cookery, as measured by the students:
 - 3.1.academic performance;
 - 3.2.lesson engagement; and
 - 3.3.skill development?
- 4.What challenges do students encounter in the use and implementation of Project CLAM in their cookery class?
- 5.How can Project CLAM be improved to better support teaching and learning in TLE 9 Cookery based on the findings of the study?

2. Materials and Method

- **Research Design**

This study used a descriptive research design to determine the effectiveness of Project CLAM (Cookery Learning and Assessment using Multimedia) in improving the academic performance, cooking skills, and class participation of Grade 9 students in Cookery 9. This design is appropriate as it describes and analyzes learners' performance and perceptions without manipulating variables. It focuses on collecting numerical data and descriptive responses to identify patterns and outcomes of the intervention.

- **Participants**

The respondents of the study were fifty-eight (58) Grade 9 students for first quarter of Talahib Pandayan Integrated High School for the School Year 2025–2026. The participants were chosen because they are currently enrolled in Cookery 9 and are directly exposed to multimedia-based instructional strategies under Project CLAM.

- **Instrument**

The study used two main instruments: a teacher-made test and a survey questionnaire.

Teacher-Made Test. This was used to measure students' academic performance in Cookery 9 after exposure to Project CLAM. It covered lessons on cleaning and sanitizing kitchen premises, performing mise en place, preparing appetizers, and presenting appetizers. The test consisted of 20 multiple-choice items aligned with DepEd competencies and was validated by TLE experts.

Survey Questionnaire. A structured Likert-scale questionnaire was used to assess students' perceptions of multimedia strategies, including interactive video demonstrations and online recipe blogs, as well as their engagement, skill development, and challenges experienced.

- **Procedure**

The researcher secured permission from the school principal before conducting the study. A pretest was administered to establish the baseline performance of students. Project CLAM was then implemented using multimedia tools such as video demonstrations and online recipe blogs during Cookery lessons. As part of the implementation, students were required to create a TESDA account, watch instructional videos, and accomplish the assigned tasks and activities provided. Upon completion of the required modules and tasks, students were given a Certificate of Completion as recognition of their participation and accomplishment.

After the intervention, a posttest and survey questionnaire were administered to measure learning gains, engagement, and student experiences. All responses were collected, checked for completeness, and recorded for analysis.

- **Data Analysis**

The data gathered were analyzed using the following statistical tools. Percentage was used to determine the distribution of students' performance levels and responses in Cookery 9. Weighted Mean was used to determine the overall perception of students regarding the multimedia instructional strategies used in Project CLAM and their effectiveness in improving learning outcomes. Rank Technique was used to identify the most and least effective multimedia strategies based on students' responses.

3.Result

1.Performance of Grade 9 Learners in Cookery.

Table 1
Pre-test and Posttest Performance of Cookery 9 Students

Most Essential Learning Competencies	Ave.	Mastery	Ave.	Mastery
1. Cleaning and Sanitizing Kitchen Premises	42	Not Mastered	76	Mastered
2. Performing Mise en Place	47	Not Mastered	78	Mastered
3. Preparing a Range of Appetizers	52	Nearing Mastery	79	Mastered
4. Presenting a Range of Appetizers	47	Not Mastered	76	Mastered
Mean Percentage Scores	27.25		44.90	
Mean	54.50		89.80	
SD	10.96		5.41	

Legend: 49 below – Not Mastered; 50-74 – Nearing Mastery; 75 above - Mastered

The pre-test results showed that learners performed below expectations, with most competencies classified as “Not Mastered.” The mean score was 54.50 with an MPS of 27.25, indicating limited understanding of Cookery 9 concepts before the intervention. The high standard deviation (10.96) also showed varied and inconsistent student performance.

After the implementation of Project CLAM, the post-test results showed a significant improvement. All competencies reached the “Mastered” level, with scores increasing to a range of 76–79. The mean score rose to 89.80 with an MPS of 44.90, while the standard deviation decreased to 5.41, indicating more consistent performance among learners.

Overall, the results reveal that Project CLAM significantly improved students’ academic performance in Cookery 9. The use of multimedia tools such as video demonstrations and online recipe blogs helped enhance understanding, skill development, and learner engagement, leading to better and more uniform achievement across the class.

2. Extent of Influence of Multimedia-based Instructional Strategies to Students Cooking Skills and Classroom Participation.

2.1. Interactive Video Demonstrations.

Table 2
Students Assessment of Teachers Utilization of Interactive Video Demonstration to their Cooking Skills and Classroom Participation

Through interactive video demonstrations, I...	Mean	VI	R
1. better understand the cooking procedures.	3.55	VGE	1
2. was able to follow and apply cooking techniques after watching the video lessons.	3.40	GE	5
3. improve my kitchen skills, through visual representation of the steps.	3.50	VGE	3
4. found video demonstrations more engaging than traditional lectures.	2.97	GE	7
5. get motivated me to participate actively during cooking activities through those videos.	3.52	VGE	2
6. learned how to properly organize kitchen tools and ingredients from the videos.	3.45	GE	4
7. easily remember cooking concepts by watching the videos	3.29	GE	6
Composite Mean	3.38	GE	

Legend: VI – Verbal Interpretation; R – Rank

Scale: 3.50 – 4.00: Very Great Extent (VGE); 2.50 – 3.49 : Great Extent (GE) 1.50 – 2.49: Moderate Extent (ME) ; 1.00 – 1.49: Low Extent (LE)

Table 2 presents the students' responses on the effectiveness of interactive video demonstrations under Project CLAM in terms of clarity, visual appeal, pacing, and their ability to guide learners in cooking procedures and techniques. The results show that students generally responded positively, with a composite mean of 3.38 interpreted as "Great Extent," indicating that the videos were effective in supporting learning in Cookery 9.

The highest-rated indicator (mean = 3.55, "Very Great Extent") shows that students strongly agreed that the videos helped them understand cooking procedures more clearly. Another highly rated item (mean = 3.52) indicates that the videos also improved students' participation and motivation in cooking activities.

On the other hand, the lowest-rated indicators (mean = 2.97 and 3.29, both "Great Extent") suggest that some students found the videos less engaging compared to traditional instruction and experienced moderate difficulty in retaining some cooking concepts.

Overall, Table 2 reveals that interactive video demonstrations under Project CLAM were effective in enhancing students' understanding and engagement in Cookery 9, but further improvement is still needed to strengthen retention and ensure more consistent and sustained learner involvement.

2.2. Online Recipe Blogs.

Table 3
Students Assessment of Teachers Utilization of Online Recipe Blogs to their Cooking Skills and Classroom Participation

Through online recipe blogs, I...	Mean	VI	R
1. was provided with clear and easy-to-follow cooking instructions.	3.53	VGE	1
2. access to online recipes helped me practice independently at home.	3.45	GE	3.5
3. explore more cooking methods through the blogs.	3.09	GE	6
4. was encouraged to try new recipes beyond class requirements.	3.43	GE	5
5. get to collaborate with my classmates using cooking blogs.	3.07	GE	7
6. revisit the recipes anytime for review and practice.	3.45	GE	3.5
7. become more confident in preparing a variety of dishes.	3.48	GE	2
Composite Mean	3.36	GE	

Legend: VI – Verbal Interpretation; R – Rank

Scale: 3.50 – 4.00: Very Great Extent (VGE); 2.50 – 3.49 : Great Extent (GE) 1.50 – 2.49: Moderate Extent (ME) ; 1.00 – 1.49: Low Extent (LE)

Table 3 presents the students' responses on the effectiveness of online recipe blogs under Project CLAM in supporting independent learning, recipe exploration, and skill development in Cookery 9. The overall result obtained a composite mean of 3.36, interpreted as "Great Extent," indicating that students generally found the blogs helpful in improving their cooking skills and learning experience.

The highest-rated indicator (mean = 3.53, "Very Great Extent") shows that students strongly agreed the blogs provided clear and easy-to-follow cooking instructions. The second-highest (mean = 3.48) indicates that students gained more confidence in preparing different dishes through independent exploration of recipes.

Meanwhile, the lowest-rated indicators (means = 3.07 and 3.09, both "Great Extent") suggest that the blogs were less effective in promoting collaboration and were not fully maximized due to limited access or use among some students.

Taken as a whole, Table 3 indicates that online recipe blogs under Project CLAM were generally effective in enhancing students' learning experience in Cookery 9, particularly in developing independence and confidence in performing cooking tasks, though further improvement is needed to strengthen collaboration and maximize student engagement with the digital materials.

3. Effectiveness of Project CLAM in Enhancing Instruction and Assessment in TLE 9 Cookery.

3.1. Academic Performance.

Table 4
Effectiveness of Project CLAM in Enhancing Students' Academic Performance

With Project CLAM, I...	Mean	VI	R
1. perform better in written assessments.	3.53	SA	1
2. understood the lessons more clearly because of the multimedia tools.	3.28	A	4
3. improved my scores in quizzes and exams.	3.33	A	3
4. found the learning materials aligned with the lesson objectives.	3.47	A	2
5. complete tasks and requirements more efficiently.	3.26	A	5
6. retained the concepts better through multimedia materials.	3.21	A	6
Composite Mean	3.34	A	

Legend: VI – Verbal Interpretation; R - Rank

Scale: 3.50 – 4.00: Strongly Agree (SA); 2.50 – 3.49 : Agree (A) 1.50 – 2.49: Disagree (D) ;1.00 – 1.49: Strong Disagree (SD)

Table 4 presents students' evaluation of Project CLAM in terms of academic improvement in Cookery 9, particularly in understanding lessons and performing assessments. The results show a composite mean of 3.34, interpreted as "Agree," indicating that students generally perceived the multimedia-based instruction as helpful in improving their academic performance.

The highest-rated indicator (mean = 3.53, "Strongly Agree") shows that students believed Project CLAM improved their performance in written assessments. The second-highest (mean = 3.47, "Agree") indicates that students found the learning materials well-aligned with lesson objectives.

Meanwhile, the lowest-rated indicator (mean = 3.21, "Agree") suggests that retention of concepts through multimedia was only moderately effective for some learners. Another lower item (mean = 3.26, "Agree") indicates that task completion efficiency was improved but still faced some limitations.

Overall, Table 4 shows that Project CLAM positively contributed to students' academic performance in Cookery 9, particularly in assessment results and lesson alignment, although further reinforcement is needed to improve retention and learning efficiency.

3.2.Student Engagement.

Table 5
Effectiveness of Project CLAM in Enhancing Lesson Engagement

With Project CLAM, I...	Mean	VI	R
1. increased my interest in the subject.	3.45	A	2.5
2. participated more actively in class discussions and activities.	3.44	A	3
3. encouraged me to learn beyond what was taught in class.	3.40	A	5
4. looked forward to using the multimedia tools in every lesson.	3.31	A	6
5. stayed more focused and attentive during class activities.	3.43	A	4
6. contributed more to group tasks and cooking activities.	3.48	A	1
Composite Mean	3.42	A	

Legend: VI – Verbal Interpretation; R - Rank

Scale: 3.50 – 4.00: Strongly Agree (SA); 2.50 – 3.49 : Agree (A) 1.50 – 2.49: Disagree (D) ;1.00 – 1.49: Strong Disagree (SD)

Table 5 presents the extent of students' engagement, interest, and motivation in Cookery 9 after the implementation of Project CLAM. The results show a composite mean of 3.42, interpreted as "Agree," indicating that students generally became more involved and motivated due to the use of multimedia tools. The highest-rated indicator (mean = 3.48, "Agree") shows that students participated more actively in group tasks and cooking activities. The second-highest (mean = 3.45, "Agree") indicates increased interest in the subject due to engaging multimedia lessons. Meanwhile, the lowest-rated indicator (mean = 3.31, "Agree") suggests that not all students consistently looked forward to using multimedia tools in every lesson, while another lower item (mean = 3.40, "Agree") shows only moderate encouragement for independent learning beyond class activities.

Overall, Table 5 indicates that Project CLAM positively improved student engagement, interest, and motivation in Cookery 9, although consistency and sustained enthusiasm across all learners may still be further strengthened.

3.3.Skill Development.

Table 6
Effectiveness of Project CLAM in Enhancing
Students' Skill Development

With Project CLAM, I...	Mean	VI	R
1. became more confident in my cooking abilities.	3.55	SA	3
2. improved my kitchen safety and hygiene practices.	3.57	SA	2
3. developed better time management during food preparation.	3.50	SA	4
4. improved my plating and food presentation skills.	3.48	A	5
5. learned to assess the quality of my own cooking output.	3.60	SA	1
6. demonstrated independent cooking skills	3.38	A	6
Composite Mean	3.51	SA	

Legend: VI – Verbal Interpretation; R - Rank

Scale: 3.50 – 4.00: Strongly Agree (SA); 2.50 – 3.49 : Agree (A) 1.50 – 2.49: Disagree (D) ;1.00 – 1.49: Strong Disagree (SD)

Table 6 presents students' perceptions of how Project CLAM enhanced their practical cooking skills and confidence in Cookery 9. The results show a composite mean of 3.51, interpreted as "Strongly Agree," indicating that students strongly perceived significant improvement in their hands-on culinary skills through multimedia-based instruction. The highest-rated indicator (mean = 3.60, "Strongly Agree") shows that students improved their ability to evaluate the quality of their own cooking output. The second (mean = 3.57) reflects better practices in kitchen safety and hygiene, while the third (mean = 3.55) indicates increased confidence in performing cooking tasks. Meanwhile, the lowest-rated indicator (mean = 3.38, "Agree") suggests that some students still needed more support in demonstrating independent cooking skills, while another lower item (mean = 3.48) shows moderate improvement in plating and presentation.

Overall, Table 6 indicates that Project CLAM was highly effective in developing students' practical cooking skills and confidence in Cookery 9, particularly in safety, self-assessment, and skill execution, although further support is needed for independent performance and presentation skills.

4.Challenges Encountered by Students in the Use and Implementation of Project CLAM in their Cookery Class.

Table 7
Challenges Encountered by Students in the Use and Implementation of Project CLAM in their Cookery Class

Related Challenges Experienced by Students	Mean	VI	R
1. Limited access to devices needed to view multimedia content.	3.31	A	3
2. Internet connectivity issues affected the ability to learn from videos/blogs.	3.52	SA	1
3. Difficulty in understanding some of the video instructions	3.03	A	10
4. Blog content was sometimes overwhelming or hard to follow.	3.26	A	5
5. Encountered technical issues when accessing the online platforms	3.17	A	8
6. Need for more teacher guidance when using multimedia tools	3.12	A	9
7. Lacked confidence in using digital tools for learning cookery	3.38	A	2
8. Felt overwhelmed managing both online and hands-on activities.	3.19	A	7
9. Experienced difficulty applying what was learned from videos into actual cooking	3.29	A	4
10. Pace of multimedia instruction was sometimes too fast to follow	3.22	A	6
Composite Mean	3.25	A	

Legend: SD – Standard Deviation; VI – Verbal Interpretation; R - Rank

Scale: 3.50 – 4.00: Strongly Agree (SA); 2.50 – 3.49 : Agree (A) 1.50 – 2.49: Disagree (D) ;1.00 – 1.49: Strong Disagree (SD)

Responses from the questionnaire show that students generally experienced challenges in using Project CLAM, particularly in terms of access and technology, with a composite mean of 3.25 interpreted as “Agree.” This indicates that learners moderately encounter barriers during the multimedia-based instruction. The most serious issue was internet connectivity, which obtained the highest mean of 3.52 and a verbal interpretation of “Strongly Agree,” showing that unstable or unavailable internet greatly affected students’ access to lessons. The second major concern was lack of confidence in using digital tools (mean = 3.38), indicating that some students still needed support in navigating multimedia platforms for learning Cookery 9.

Meanwhile, the lowest-rated challenge was difficulty understanding video instructions (mean = 3.03), suggesting that most students were still able to follow the lessons, while another concern was the need for more teacher guidance (mean = 3.12), showing that some learners still relied on teacher support despite the use of multimedia.

Overall, the results reveal that although Project CLAM was effective, students still faced moderate challenges in internet access, digital skills, and learning independence, which should be addressed to improve future implementation.

5.Improvements in Project CLAM to better support Teaching and Learning of TLE 9 Cookery.

The findings of this study indicate that Project CLAM was generally effective in improving instruction and assessment in TLE 9 Cookery; however, several areas need enhancement to fully maximize its impact. The most common issue was limited internet access and lack of devices, which affected students' ability to consistently use multimedia materials. Some students also experienced difficulty with video clarity, pacing, and understanding instructions, suggesting the need for clearer, more structured, and more learner-friendly content.

In addition, students showed moderate lack of confidence in using digital tools and limited independence in performing tasks, indicating the need for stronger teacher guidance and digital orientation. Collaboration and interaction in online recipe blogs were also found to be limited, showing that engagement features need improvement.

Overall, while Project CLAM was effective in supporting learning and skill development in Cookery 9, its implementation can be further strengthened by improving accessibility, enhancing instructional clarity, increasing interactivity, and providing stronger learner support.

Improvement Plan for Project CLAM (Cookery Learning and Assessment using Multimedia)

I.Introduction

Project CLAM was developed as an innovative instructional approach that integrates multimedia tools, such as interactive video demonstrations and online recipe blogs, into the teaching of TLE 9 Cookery. It was grounded in the principle that combining visual, auditory, and experiential formats fosters deeper learning, particularly in skill-based subjects. The project aimed to modernize traditional instruction by offering students accessible, engaging, and competency-aligned materials designed to enhance academic performance, practical skills, and classroom engagement. Over time, Project CLAM has evolved to include additional digital learning resources such as TESDA's online modules, YouTube tutorials, cooking vlogs, and curated recipe websites. These tools collectively align classroom instruction with the learning standards of Cookery NC II.

While the results of Project CLAM's implementation have been largely positive, student feedback revealed several persistent challenges that need to be addressed to maximize its effectiveness. In particular, some learners struggled to fully comprehend certain multimedia content, especially when the pace or technical language of the videos was not appropriately scaffolded. Others found it difficult to collaborate through digital platforms, pointing to the need for more structured peer interaction and clearer instructions. A number of students also showed limited independence when applying cooking techniques, which suggests

the importance of offering additional guided or self-paced practice. Although not the most critical concern, some students also reported difficulties accessing the tools necessary for full participation, such as devices or stable internet connections. These lower-ranked but relevant challenges highlight key areas for improvement. This plan of action identifies strategies that will make Project CLAM more responsive, inclusive, and adaptable to the actual needs of the learners.

II. Rationale

The findings revealed that although students appreciated the integration of multimedia, the lowest-rated indicators point to challenges that hindered the full effectiveness of the approach. These include:

- Limited access to devices and stable internet
- Difficulty understanding video instructions and adjusting to fast pacing
- Low levels of collaboration using online blogs
- Limited confidence in demonstrating independent cooking skills
- Need for more teacher support in using multimedia tools

By targeting these challenges, this action plan proposes responsive, practical solutions aimed at strengthening instruction, ensuring equity, and supporting student autonomy and engagement in TLE 9 Cookery classes.

Strategy 1: Expand and Integrate TESDA Online Program in Flipped-Classroom Format

Objective:

To strengthen foundational knowledge and provide national recognition of student competencies through TESDA's accredited online learning platform.

Description:

Students will be guided to register for the TESDA Online Program (TOP) at <https://e-tesda.gov.ph/> and enroll in the Cookery NC II course. Lessons can be accessed at home or in school ICT labs, allowing students to study modules, watch cooking demonstrations, and complete end-of-unit assessments at their own pace. Upon completion, students will download their Certificate of Completion or Competency, which can serve as formal evidence of participation and performance. This aligns with the flipped classroom model, where students learn theory at home and apply skills during in-person cooking activities.

Persons Involved:

- TLE teacher
- ICT coordinator
- School head

Resources Needed:

- Computer laboratory access
- TESDA accounts for students
- Printed guides for TESDA registration and navigation
- Monitoring sheet for certificate submission

Expected Outcome:

Increased mastery of core competencies. This directly supports improved student confidence and independent skill performance, addressing previously low ratings in these areas.



Photo of a student watching recorded video lecture through TESDA Online Program

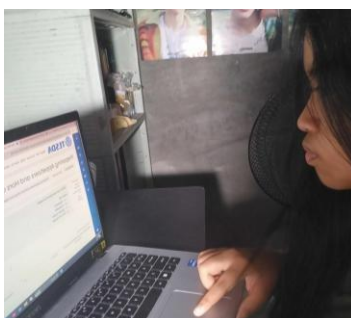


Photo of a student accessing TESDA Online Program



Certificate issued in TESDA Online Program after achievement of the competency

Strategy 2: Curate and Contextualize Multimedia Content (Videos, Blogs, and Vlogs)

Objective:

To enhance comprehension and engagement through clearer, more culturally relevant, and diverse instructional content.

Description:

Teachers will compile a multimedia library that includes curated YouTube cooking tutorials, video blogs, recipe websites, and online food presentation guides that are mapped to specific Cookery NC II competencies. These resources will be reviewed for clarity, pacing, cultural relevance, and alignment with lesson objectives. Content will be embedded in lesson plans and discussed during class. Teachers will also model how to reflect on and analyze the content

critically, using worksheets and guided discussions to reinforce key concepts. Students may be asked to submit reflections or recreate procedures based on what they watched.

Persons Involved:

- TLE teacher
- Students as contributors (peer sharing of vlogs and sites)

Resources Needed:

- Internet access or downloaded versions of videos
- List of curated sites (e.g., Panlasang Pinoy, Yummy.ph, AllRecipes, TESDA videos)
- Multimedia viewing worksheets
- Rubrics for vlog or tutorial reflection

Expected Outcome:

Enhanced understanding of cooking techniques and better retention of procedures, particularly among students who previously had difficulty understanding instructional videos. This also supports visual learners and those needing more contextual examples.



Photo of Cookery NCII class watching the recorded video about Presenting Appetizers

Strategy 3: Promote Student-Led Online Collaboration Through Recipe Blogs and Sharing Platforms

Objective:

To foster student interaction, feedback, and creativity through digital collaboration.

Description:

Online recipe blogs will be transformed into collaborative platforms where students can submit their own recipes, post photos or short clips of their cooking, and give constructive feedback to peers. Platforms such as Google Sites, Padlet, or class blogs will serve as digital spaces for interaction. Each week, a group of students will take turns managing the blog, posting a featured recipe, and moderating comments. This will encourage ownership, engagement, and peer accountability. Teachers will assess both technical output and communication using rubrics.

Persons Involved:

- TLE teacher
- Students (as blog contributors and moderators)

Resources Needed:

- Blogging platform
- Devices for capturing images or videos
- Templates for student posts
- Evaluation tools for peer feedback

Expected Outcome:

Improved collaboration and digital communication skills. This addresses the lowest blog-related mean on collaboration (mean = 3.07) and helps build 21st-century skills through culinary tasks.



Photos of students collaborating in 'blogging' task.

Strategy 4: Provide Digital Skills Orientation and Ongoing Teacher Support Objective:

To build students' confidence in navigating digital tools and ensure consistent teacher presence throughout multimedia learning.

Description:

Students will participate in a Digital Literacy Orientation each quarter, covering blog navigation, video viewing strategies, TESDA account use, and online safety. During instruction, the teacher will apply scaffolding strategies such as guided note-taking, formative checks, and pre-video briefings. Progress monitoring tools like checklists and journals will be introduced to help students track their learning. Teachers will be trained to balance facilitation with digital instruction by integrating multimedia activities with practical exercises and reflection.

Persons Involved:

- TLE teacher
- ICT teacher or digital mentors
- Academic coordinator

Resources Needed:

- Orientation modules
- Teacher training materials
- Reflection journals
- Monitoring tools for student output

Expected Outcome:

Increased student confidence using multimedia tools and stronger connection between digital and practical components of Cookery. This addresses the identified need for more guidance and support (mean = 3.12) and improves digital fluency across learners.



Integration of Computer use as essential component of multimedia based approach

Strategy 5: Implement Performance-Based Digital Portfolios Objective:

To document and showcase student learning and competencies using real cooking outputs and reflective tasks.

Description:

Students will create a personal digital portfolio where they will upload photos or short video clips of their cooking outputs, copies of completed TESDA certificates, blog contributions, and written reflections. Portfolios can be created using Google Drive folders, Google Sites, or Padlet. The portfolio will serve both as an assessment tool and a repository of student work that can be shared with parents, peers, and future employers. Teachers can use it as a basis for quarterly evaluations and practical competency validation.

Persons Involved:

- TLE teacher
- Students

Resources Needed:

- Platform for portfolio creation (Google Sites, Drive, Padlet)
- Mobile phones or cameras for output documentation
- Guidelines and rubrics for portfolio tasks

Expected Outcome:

Increased student ownership and documentation of competency-based tasks, contributing to clearer proof of performance and engagement, particularly in areas such as presentation skills and task completion, which had moderate mean scores.



Photo showing students working on the digital portfolio

Strategy 6: Launch Peer Demonstration Days or “Cook and Share” Events Objective:

To promote student-led learning and reinforce applied skills through peer teaching and culinary presentation.

Description:

Once every quarter, selected students or groups will demonstrate a cooking skill or recipe to the class, based on competencies covered in the TESDA modules or classroom lessons (e.g., plating appetizers, preparing mise en place, or sanitation routines). These activities will simulate real workplace situations, promote confidence, and build leadership. Students can prepare visual aids or use edited clips from their own blogs. Peer feedback and teacher scoring will follow each presentation. Optionally, events may be streamed or recorded for parent and community viewing.

Persons Involved:

- TLE teacher
- Students
- School head (for recognition and community support)

Resources Needed:

- Presentation tools (posters, laptops, props)
- Camera or phone for documentation
- Simple rubrics for peer and teacher evaluation

Expected Outcome:

Improved engagement, communication, and confidence in applying cooking competencies publicly. This responds to students’ desire for more active participation and helps reduce anxiety in independent tasks (related to lower means in independent skill use and collaboration).

Monitoring and Evaluation

To ensure the ongoing effectiveness and sustainability of Project CLAM, a comprehensive monitoring and evaluation (M&E) framework will be implemented throughout the school year. This process aims to systematically track how multimedia strategies impact student learning, identify areas for improvement, and make necessary adjustments based on actual data and classroom observations. The focus will be on evaluating three key components: student access and participation, quality of instructional delivery, and outcomes in terms of academic performance, skill development, and engagement in Cookery 9.

Monitoring begins with the regular tracking of student access to multimedia resources. Teachers will maintain weekly records of students who engage with TESDA Online Program modules, submit certificates of completion, and participate in related activities. Blog submissions, peer comments, and reflections will be reviewed monthly to measure interaction and online collaboration. Completion of video-based lessons will be monitored through checklists, digital journals, and worksheet outputs, allowing teachers to assess whether students are keeping up with flipped or blended learning activities.

To evaluate the outcomes of Project CLAM, pretest and posttest results, along with teacher-made assessments, will be compared quarterly to determine changes in academic performance. Practical cooking tasks will be graded using rubrics aligned with Cookery NC II standards, and portfolios will be reviewed to assess students' progress in plating, food safety, and organization. Classroom observations and self-assessment checklists will provide insight into students' growing confidence, time management, and independence in the kitchen. At the same time, feedback from students will be collected regularly through reflection journals and short surveys, highlighting their experiences with the pace, clarity, and usefulness of the multimedia tools.

Monitoring efforts will be supported by teacher reflection logs, which document the challenges encountered in implementing Project CLAM, including student access, technical issues, and instructional pacing. These reflections, along with student feedback from focus group discussions, will serve as the basis for monthly and quarterly review meetings among the TLE team and school administrators. These meetings will help determine whether adjustments in delivery strategies or additional student support mechanisms are needed.

By the end of each grading period, the teaching team will prepare a summary of progress and recommendations. This will include highlights of what worked well, areas that require refinement, and proposed interventions to enhance implementation. The evaluation process will not only help ensure the relevance and alignment of multimedia materials with learning competencies but will also empower teachers to make data-informed decisions. Ultimately, the M&E framework will contribute to improving student outcomes, making Project CLAM a more inclusive, responsive, and learner-centered instructional model in Cookery education.

4. Discussion

- Interpretation of findings

The findings of the study show that Project CLAM was effective in improving Grade 9 students' performance in Cookery, as reflected in the significant increase from pretest to posttest scores. The use of interactive video demonstrations and online recipe blogs helped enhance students' skills, engagement, and participation in class activities. Overall, students agreed that Project CLAM improved their academic performance and strongly agreed that it significantly developed their cooking skills. However, they also encountered challenges such as poor internet connectivity, limited access to devices, and difficulty understanding some multimedia content. Despite these issues, the results

indicate that Project CLAM is a useful instructional approach in TLE 9 Cookery, with the potential to be more effective if accessibility and instructional design are further improved.

- Comparison to existing studies

The findings of this study are consistent with existing research emphasizing the effectiveness of multimedia-based instruction in improving learners' performance in skill-based subjects. Similar to the studies of Enguito and Calipayan Jr. (2025) and Sablayan (2024), the results revealed that video demonstrations and digital learning materials significantly enhance students' understanding, engagement, and practical skills in Cookery. These studies also highlighted that learners exposed to multimedia instruction tend to perform better compared to those taught using traditional methods. However, like previous literature, the present study also identified challenges such as limited access to technology and internet connectivity, which align with the findings of Fernandez and Cruz (2023) regarding the digital divide in public schools. Overall, the results of Project CLAM reinforce existing evidence that multimedia integration is an effective instructional strategy, while also highlighting the continued need to address accessibility and implementation barriers.

- Implications for practice and policy

The results of the study imply that the integration of multimedia-based instruction, such as Project CLAM, can significantly enhance the teaching and learning of TLE 9 Cookery by improving students' performance, engagement, and practical skills. In practice, teachers are encouraged to incorporate interactive video demonstrations and online learning resources to make lessons more engaging, skill-oriented, and accessible to different learning styles. However, challenges such as limited internet access and lack of devices suggest the need for stronger school support systems, including offline learning options and improved digital resources. In terms of policy, the findings support the continued implementation of DepEd ICT integration programs and highlight the need to strengthen digital infrastructure in public schools to ensure equitable access to multimedia learning tools.

- Study limitations

The study is limited to fifty-eight (58) Grade 9 Cookery students of Talahib Pandayan Integrated High School during the School Year 2025–2026, which may limit the generalizability of the findings to other grade levels or schools. It focuses only on the implementation of Project CLAM using interactive video demonstrations and online recipe blogs, and does not include other possible multimedia tools. The study also relies on teacher-made tests and self-reported questionnaire responses, which may be influenced by students' honesty and understanding of the items. Additionally, external factors such as internet connectivity, device availability, and learning environment at

home may have affected students' participation and performance during the implementation.

5. Conclusion

✓ Conclusions

Grounded on the key findings of the study, the following conclusions reflect the overall effectiveness and areas for improvement in the implementation of Project CLAM in TLE 9 Cookery.

1. Pretest and post-test results indicate a marked improvement in the performance of Grade 9 learners in Cookery.

2. Interactive video demonstration and online recipe blogs enhanced the students skills and class participation to a great extent.

3. The respondents agreed that Project CLAM is effective in enhancing instruction and assessment in TLE Cookery in terms of academic performance and lesson engagement while they strongly agreed that Project Clam is effective in enhancing their skill development.

4. The respondents agreed that they are encountered challenges such as poor internet access, limited devices, and difficulty following some multimedia content in the use and implementation of Project CLAM.

5. Project CLAM has proven to be an effective instructional model for TLE 9 Cookery, but further enhancements are needed to fully support diverse learners and optimize multimedia-based learning outcomes.

✓ Recommendations

In response to the results and identified challenges, the following recommendations are proposed to strengthen the use of multimedia-based instruction and improve student outcomes in TLE 9 Cookery.

1. The improved activities for Project CLAM may be implemented to address weak areas and sustain the use of multimedia tools aligned with Cookery NC II competencies.

2. Future research may explore the long-term or comparative effects of Project CLAM across different TLE areas and learning modalities.

3. Schools may provide digital orientation for students and training for teachers to address access, clarity, and facilitation issues.



4. Students may be encouraged to create personal cooking blogs or portfolios to promote reflective learning and skill mastery.

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