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Effectiveness of Nurturing Engagement and Lifelong Learning through Audio-Visual (NELLA) as Supplementary Materials in Enhancing the Academic Performance of Grade 11 Students in Food and Beverage Services

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Abstract

The demand for skilled professionals in the Food and Beverage Services sector highlights the critical need for effective teaching methodologies that can boost student engagement and performance. However, conventional classroom instruction often struggles to meet the diverse learning needs of students and to provide the practical, immersive experience necessary for a deep understanding of the subject matter. This challenge points to a notable research gap: the need to explore innovative supplementary educational tools, specifically audio-visual materials, and their direct impact on knowledge retention and comprehension in this vocational area. To address this, the current study investigated the effectiveness of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) as a supplementary material for enhancing the academic performance of Grade 11 students in Food and Beverage Services. A quasi-experimental design was employed with ninety-six participants, who were divided into an experimental and a comparison group using a match pairing method based on pretest scores. The experimental group received NELLA interventions, while the comparison group followed the standard curriculum. The results of formative and post-tests revealed that students who used NELLA demonstrated a significant improvement in their understanding and learning outcomes. This suggests that the NELLA intervention, through increased engagement, targeted instruction, and self-paced learning, is a valuable pedagogical tool. While both groups showed some improvement, the NELLA group demonstrated a clear advantage in accelerating learning and achieving a deeper understanding, thereby confirming the potential of this audio-visual approach to bridge the gap in effective vocational education.

Keywords: effectiveness, food and beverage services, modified video lessons, supplementary materials

INTRODUCTION

Student engagement and long-term knowledge retention are crucial for academic success. However, traditional classroom learning methods may not always achieve these goals effectively, particularly in subjects like Food and Beverage Services, where

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practical skills and visual understanding are essential. To address this, this research introduces Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA), a supplementary material program that utilizes audio-visual resources to enhance student engagement and academic performance in Food and Beverage Services for Grade 11 students. The term "NELLA" is unique not only as an acronym for the program but also as a personal term inspired by the researcher's daughter, whose nickname served as a creative and inspirational foundation for the self-made videos used in this study. By incorporating the NELLA approach, this study aims to address the need for more engaging and effective learning methods in the Food and Beverage Services course. Improved student engagement can lead to better knowledge retention, higher academic performance, and a deeper understanding of the subject matter, ultimately preparing them for future careers in the hospitality industry.

In July 2020, the Department of Education (DepEd) issued DepEd Order No. 018, s. 2020, titled "Policy Guidelines for the Provision of Learning Resources in the Implementation of the Basic Education Learning Continuity Plan (BE-LCP)." This policy established guidelines for DepEd to develop educational materials in support of the BE-LCP. It also outlined procedures for the allocation, utilization, and disbursement of funding to produce self-learning modules and other learning resources.

Based on the research study of Baldon (2023), the researcher compared the effectiveness of three teaching approaches in Food and Beverage Services for Grade 11 students: modular learning, video demonstrations, and traditional lectures. The results indicated that video demonstrations (Demo Video Learning Approach) led to significantly better scores compared to the other two methods. This suggests that educators should utilize a variety of teaching styles to cater to different student learning preferences. Additionally, the study found a link between preferred teaching style and learning outcomes, highlighting the importance of considering student preferences when choosing instructional methods. Overall, this research contributes to the growing evidence supporting the benefits of technology-based teaching methods in enhancing student learning. It emphasizes the need for educators to incorporate innovative teaching practices that create a positive learning environment and boost student engagement.

This research sought to maximize the use of technology to enhance student learning in Food and Beverage Services (FBS). Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) went beyond simply providing readily available modified videos. The researcher created original video content specifically tailored to the students' needs and aligned with the required competencies of the course. This ensured the students were exposed to accurate and relevant information presented in an engaging format.

In a previous study by Buniel and Calipayan (2021), contextualized modules were shown to be effective in supporting student learning even without a physical teacher present. These modules, designed for distance learning environments, have been demonstrated to improve student academic performance. By allowing students to progress at their own pace and offering content relevant to their specific needs, contextualized modules promote a more personalized learning experience.

The Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) videos offered students the advantage of repeated viewing, allowing them to become thoroughly familiar with the skills their teacher aimed for them to master. This facilitated the expected return demonstrations in class, where students could showcase their acquired skills.

The foregoing study integrates the use of a TPACK and ADDIE model. TPACK stands for Technological, Pedagogical, and Content Knowledge, and is a framework that helps teachers figure out how to use technology effectively in their lessons. TPACK says teachers need three things: knowledge about the technology itself (Technological), knowledge about how to teach effectively in any subject (Pedagogical), and knowledge about the specific subject they're teaching (Content Knowledge). Further, TPACK acts like a roadmap, giving teachers a clear path on how to effectively integrate technology into the classroom.

Another model is the ADDIE, which stands for Analyze, Design, Develop, Implement, and Evaluate. This model provides a structured framework to design, develop, and evaluate the effectiveness of NELLA as an intervention using audio-visual supplementary materials to improve student performance in Food and Beverage Services.

Moreover, the study is anchored to Gardner's multiple intelligences theory, an individual possesses, in varying strengths and preferences, at least eight discrete intelligences: linguistic, logical, mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic (Gardner, 2006). "The relative strengths and weaknesses among and between these intelligences dictate how individuals take in information, perceive the world, and learn" (Marshall, 2002, p. 8). This represents a great departure from the traditional view of intelligence, which recognizes only verbal and computational ability (Brualdi, 1996).

Gardner's theory suggests that how subject matter is conveyed will influence an individual's ability to learn and that teachers need to take all these intelligences into account when planning instruction (Brualdi, 1996). While traditional textbooks often take a primarily linguistic approach to learning, video's multiple modes can take a variety of approaches, such as aesthetic, logical, or narrational, in addition to linguistic, thus addressing the needs of a broader range of learners: "These 'multiple entry points' into the content are especially

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valuable in a formal educational setting, as they offer greater accommodation to the multiple intelligences of a diverse group of students" (Corporation for Public Broadcasting, 2004).

The theory of Gardner's multiple intelligences helps this study to recognize the individual differences of the learners since some of them may be auditory, visual, or audio-visual. The use of technology employing self-made videos will greatly help the learners to cope easily with the lesson. Because they see, hear, and can repeat some parts they do not understand. Richard Mayer's cognitive theory of multimedia learning helps the researcher to create a meaningful video in line with the precise content and competencies that the students need for a particular course or subject. It is intended for learners who require improvement.

This approach aimed at encouraging students to replicate the skills demonstrated by the teacher in class and during laboratory time. Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) videos, designed as supplementary learning materials for Food and Beverage Services (FBS), served as a valuable guide for students even when they were absent from school. These self-paced video resources allowed students to practice and learn at their convenience, promoting independent learning and potentially mitigating the negative effects of absenteeism. According to the study by Almuslamani et al. (2020), researchers investigated the impact of educational videos on student participation in a classroom setting. The study involved 24 students at the Applied Science University in Bahrain. The findings revealed that incorporating educational videos, regardless of whether they were chosen by the instructor or the students themselves, led to a notable increase in student participation. Interestingly, the study also showed that videos selected by the students had an even greater positive effect on their classroom engagement compared to those chosen by the researcher.

Furthermore, the study aimed to address the challenge of limited laboratory time by providing students with additional practice opportunities through Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) materials. In this way, this program not only served as a valuable learning resource but also potentially functioned as preparation for students' upcoming national assessment under the Technical Education and Skills Development Authority (TESDA).

In addition, the learning by doing theory of education was expounded by American philosopher John Dewey and Latin American pedagogue Paulo Freire. It's a hands-on method of learning, meaning the students must engage with their environment for them to adapt and learn. Most significantly, this kind of instruction allows students to actively create knowledge since they will perform a real task. The well-known educational idea known as the learning by doing principle states that one should learn through experiences that are directly related to their activities. Food & Beverage Services focuses on skills that require

students to get practical experience in the laboratory. Through the practice of specific skills, they can apply to their experience; students can gain all the knowledge they require to learn in the subject.

One potential challenge for implementing the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program could have been limited access to technology among students. Fortunately, at Kapayapaan Integrated School, most Grade 11 students owned cell phones with internet access. For those who didn't have access, there was a dedicated time for the students to watch the videos on television during their class schedule since all classrooms were equipped with TVs. In this way, the program ensured students had the necessary tools to engage with Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) video materials.

The Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program offered a further benefit by encouraging students to use technology positively. Instead of solely using their devices for online games, chatting, or unproductive video watching, students were exposed to the educational potential of technology through Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA). This positive technology use aligned with a course requirement where students themselves created interactive videos related to specific competencies. The program helped students develop their creativity and fostered valuable video creation skills.

The cognitive theory of multimedia learning by Richard Mayer's represents a foundation for the implementation of multimedia educational content presentation. This theory explains the significance of the modality principle in the learning process. To efficiently process multimedia information, it is necessary to select relevant information and organize it into a verbal and pictorial model. Processing the information is performed in two channels after receiving the auditory and visual information that appears in the working memory as verbal and pictorial information models. Rational use of resources is very important, so the design of multimedia presentation is a crucial factor for the learning process outcome (Mayer, 2001; Moreno & Mayer, 2006).

This study aimed to develop and evaluate the effectiveness of the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program in enhancing the teaching and learning process of Food and Beverage Services (FBS) at Kapayapaan Integrated School. The findings of this research were intended to serve as the foundation for a comprehensive program. This program's goal was to further improve the delivery and student experience within the Food and Beverage Services (FBS) curriculum.

The rationale for program development is driven by the continuous growth in Food and Beverage Services (FBS) enrollment at Kapayapaan Integrated School. A more vigorous and engaging curriculum is essential to ensure these students achieve their full

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potential in the course and meet their educational aspirations. Additionally, the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program has the potential to serve as an effective advocacy campaign for the Food and Beverage Services (FBS) program. By providing incoming students with a glimpse into the course content and expectations through well-designed video materials, the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program can foster informed enrollment decisions and ensure students are well-prepared for the demands of the FBS curriculum.

A major challenge for many students is memorizing the scripts and becoming familiar with the wide range of table appointments and their associated terminology. Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) serves as a valuable tool for students in Food and Beverage Services (FBS) to improve their long-term memory of the subject matter. By addressing the research gap, this study can contribute valuable insights into the potential of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) materials, not only for boosting short-term academic performance but also for nurturing a long-term passion for lifelong learning in Food and Beverage Services (FBS).

METHODOLOGY

Research Design

This research is an experimental design in nature. This is the strongest design for establishing cause-and-effect relationships. Participants are randomly assigned to groups (control and treatment), and the researcher manipulates one variable (independent variable) to observe its impact on another variable (dependent variable).

Moreover, a quasi-experimental research design was chosen for this study. Creswell (2012) states that a quasi-experiment is an experimental situation in which the researcher assigns, but not randomly, participants to groups because the experimenter cannot artificially create groups for the experiment. Furthermore, the researcher employed a pre-test and post-test design for this study. Creswell explained that a pre-test measures attributes or characteristics assessed for participants in an experiment before they receive treatment. Meanwhile, a post-test was administered to measure the same attributes or characteristics of participants in an experiment after a treatment. A quasi-experimental design was deemed appropriate for this study because it aimed to investigate the effectiveness of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) as supplementary materials in enhancing students' academic performance in Food and Beverage Services.

Participants of the Study

The participants of the study are the Grade 11 students taking up Food and Beverage Services (FBS) under the Home Economics strand at Kapayapaan Integrated School were chosen as participants because they are enrolled in the specific program that is the focus of this study. Their enrollment in the FBS strand during the 2023-2024 school year makes them a relevant and accessible population for the research. It is conducted during the 2nd semester in the third quarter of the school year 2023-2024.

Table 1

Participants of the study

Grade 11 FBS Students	Male	Female	Total	Participants matched based on pre-test scores	Blind samples
FBS Ginto	26	22	48	30	18
FBS Pilak	25	23	48	30	18
Overall	**51**	**45**	**96**	**60**	**36**

Before the conduct of the study, two comparable sections among Grade 11 students in Food and Beverage Services enrolled during the school year 2023 – 2024 were chosen as participants of the study. A match-pairing technique is defined as a type of experimental design where participants are matched based on key variables or shared characteristics relevant to the topic of the study. Then, one member of each pair is placed into the comparison group while the other is placed in the experimental group. This technique was used in this study, where the participants were selected based on their pre-test scores. The pre-test score of one participant in one section was paired with the pre-test score of one participant in the other section. The same pre-test scores were paired; the goal is to create 30 pairs of students. The students who did not have a matching pre-test score were considered a blind sample. These students were still included in the class, but their test results were not used in the study.

To assign the group assignment, the researcher designates one section as experimental and the other as a comparative group. Throughout the experiment, the two groups received two distinct treatments. The experimental group was receiving Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) intervention, while the comparative group will continue with the standard curriculum.

Research Instrument

The researcher utilized the pre-test, formative test, and post-test assessment for the participants. The covered assessment and self-made videos in quarters 1 and 2 of Food and Beverage Services. It includes preparing the dining room/restaurant area for

service, welcoming guests, and taking food and beverage orders. A total of 50 items were included in the researcher-made questionnaire with a 2-way Table of Specification (TOS).

Validity. The researcher-made questionnaire was validated by the Master Teachers and the Head Teacher, while the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) supplementary materials were validated by the Master Teachers, the Head Teacher, and the LR coordinator. To ensure the accuracy of the questionnaires, they were reviewed by experts in the field. The experts assessed whether the questions were relevant, clear, and covered the intended aspects of the research. For the video content, the criteria followed the DepEd standards. A checklist based on these standards was provided to the experts.

The researcher provided a Google Drive that was accessed by the validators. All feedback and comments on the videos were carefully considered by the researcher, who then revised the instruments accordingly. Proper documentation throughout the validation process strengthened the credibility of the study. The validation process identified minor errors in the videos. However, all videos met the criteria established by the validators. This suggests a high overall quality but with room for some minor improvements. Revisions and adjustments were also made to the questionnaires and Table of Specifications (TOS).

Reliability. The researcher-made questionnaire was administered outside of a school that also offered an FBS course.

Scoring. Under DepEd Order No. 8, s. 2015 - Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program, this memorandum aimed to assist in identifying the mastered and least learned competencies in each subject.

The interpretation of test paper checking is based on the table below.

Table 2

Interpretation for Test Results

50 Item Test	Interpretation
38-50	High Performing (HP)
25-37	Average Performing (AP)
24 below	Low Performing (LP)

After receiving permission to conduct the study at Kapayapaan Integrated School, the researcher was also given explicit approval to use the school's name for all research purposes. The formal approval letter from the School Head confirmed that the school's identity could be disclosed in the research paper. This allowed the researcher to proceed with the pre-test and post-test administration. The data-gathering instrument was

administered face-to-face. A one hundred percent (100%) retrieval rate of test questions was achieved, and the data was analyzed using appropriate statistical tools.

Statistical Treatment of Data

After gathering the necessary data, the researcher's statistical analysis plan was reviewed and approved by a qualified statistician to ensure the accuracy and appropriateness of the methods used. To interpret the respondents' performance on the pre-test and post-test assessments, the researcher employed descriptive statistics, including mean, frequency count, and percentage.

For inferential analysis, an independent samples t-test was used to determine if there were significant differences between the post-test mean scores and the formative mean scores of the experimental and comparison groups. To further assess the learning impact within each group, a paired-sample t-test was employed to determine the significant differences between the pre-test and post-test mean scores of each group. Finally, Cohen's d was also used to assess the effect size between the two means, providing a standardized measure of the magnitude of the observed differences.

RESULTS AND DISCUSSION

This section presents the findings and analysis of the quasi-experimental study investigating the Effectiveness of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) as Supplementary Materials in enhancing the Academic Performance of Grade 11 Students in Food and Beverage Services.

Table 3

Level of Academic performance in terms of pretest, formative test, and post-test mean scores

Test	Group (n=30)	Mean	SD	Interpretation
Pre-test	Experimental	26.70	4.24	Average Performing (AP)
	Comparison	26.70	4.24	Average Performing (AP)
Formative	Experimental	45.33	3.08	High Performing (HP)
	Comparison	40.97	6.45	High Performing (HP)
Post-test	Experimental	37.63	4.71	Average Performing (AP)
	Comparison	31.93	5.66	Average Performing (AP)

38-50 High Performing (HP), 25-37 Average Performing (AP), 24 below Low Performing (LP)

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Table 3 presents the results of the pretest, formative test, and posttest for both the experimental and comparison groups. As shown, both groups scored an average of 26.70 on the pretest, indicating an average level of performance according to DepEd Order No. 8, s. 2015: Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program. The experimental group achieved a significantly higher score (M = 45.33) on the formative test compared to the comparison group (M = 40.97). This trend continued in the posttest, where the experimental group obtained a higher mean score (M = 37.63) than the comparison group (M = 31.93). This suggests that the use of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) as supplementary materials may have facilitated a deeper understanding and learning of FBS concepts in the experimental group.

Table 4

Test of Significant Difference for Formative Test mean scores of the experimental and comparison groups

Test	Group (n=30)	Mean	SD	t	Mean-Diff	Cohen's d	Effect Size
Formative	Experimental	45.33	3.08	3.35 **	4.37	0.86	Large
	Comparison	40.97	6.45				

*** - Test is Significant @ p-value<0.01. df=58*

Cohen's d <=0.19: Very Small, d <=0.49: Small, d <=0.79: Medium, d <= 1.19: Large, d<=1.99: Very Large; d>=2.0: Huge

An independent sample t-test was conducted to examine the difference in formative test scores between the experimental and comparison groups (Table 4). The analysis revealed a statistically significant difference between the groups [t (58) = 3.35, p < .01]. The mean difference was 4.37, with a large effect size (Cohen's d = 0.86).

Analysis of the formative test results revealed a significant improvement in the understanding of the lesson among students in the experimental group who utilized Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) modified video lessons. This suggests that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) may be a valuable pedagogical tool, potentially due to factors such as enhanced engagement, targeted instruction repetition, and self-paced learning.

Wang et al. (2021) suggests that technology is transforming how traditional learning materials are used. This shift allows educators to deliver content in new ways and create engaging activities, ultimately increasing student motivation to achieve learning goals.

In line with Gilakjani (2012), Nicolaou et al. (2019), and Wungguli and Yahya (2020), research suggests that integrating technology into learning materials fosters a stimulating and interactive learning environment for students.

Table 5

Test of Significant Difference for Post-test mean scores of the experimental and comparison groups

Test	Group (n=30)	Mean	SD	t	Mean-Diff	Cohen's d	Effect Size
Posttest	Experimental	37.63	4.71	4.24 **	5.70	1.09	Large
	Comparison	31.93	5.66				

*** - Test is Significant @ p-value<0.01. df=58*
Cohen's d <=0.19: Very Small, d <=0.49: Small, d <=0.79: Medium, d <= 1.19: Large, d<=1.99: Very Large; d>=2.0: Huge

An independent sample t-test was conducted to assess the difference in post-test mean scores between the experimental and comparison groups (Table 5). The results revealed a statistically significant difference between the groups [t (58) = 4.24, p < .01]. The mean difference was 5.70, indicating a large effect size (Cohen's d = 1.09).

Based on the post-test results revealed a statistically significant difference in the performance of the experimental group compared to the comparison group. Students who utilized Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) in the experimental group achieved higher scores, suggesting that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) may have a positive impact on learning outcomes.

Consistent with Ariani, Imany, and Wungguli, W. (2014), the findings of this study support the use of learning media in culinary programs. Integrating learning media into curriculum delivery has the potential to enhance students' understanding, ultimately impacting their cognitive development and skill acquisition, which are essential for graduating competent culinarians.

Table 6

Test of Significant Difference between Pretest and Posttest of the Experimental Group

Group (n=30)	Test	Mean	SD	t	Mean-Diff	Cohen's d	Effect Size
Experimental	Posttest	37.63	4.71	16.42 **	10.93	2.44	Huge
	Pretest	26.70	4.24				

*** - Test is Significant @ p-value<0.01. df=29*
Cohen's d <=0.19: Very Small, d <=0.49: Small, d <=0.79: Medium, d <= 1.19: Large, d<=1.99: Very Large; d>=2.0: Huge

A paired-sample t-test was conducted to analyze the difference between the pretest and post-test scores of the experimental group (Table 6). The results revealed a statistically significant difference between the scores [t (29) = 16.42, p < .01]. The mean difference was 10.93, with a huge effect size (Cohen's d = 2.44).

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Analysis of the pre-test and post-test results within the experimental group revealed a significant improvement in learning outcomes attributable to Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) implementation. This suggests that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) may have a positive impact on both students' learning abilities and understanding capabilities. The substantial improvement observed within the group indicates that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) modified video lessons potentially facilitated deeper comprehension and knowledge retention.

Studies show that digital tools have fundamentally reshaped education in the post-pandemic era. They empower educators to redefine not just the "what" of learning (curriculum content) but also the "how" (pedagogical approaches), "where" (physical location), and "when" (scheduling) of knowledge acquisition. This technology allows for access to a vast range of learning materials, far exceeding traditional textbooks. These resources come in various formats, catering to diverse learning styles, and can be utilized irrespective of geographical constraints or time limitations (Velunta, 2021).

Table 7

Test of Significant Difference Between Pretest and Post-test of Comparison Group

Group (n=30)	Test	Mean	SD	t	Mean-Diff	Cohen's d	Effect Size
Comparison	Posttest	31.93	5.66	4.99 **	5.23	1.05	Large
	Pretest	26.70	4.24				

*** - Test is Significant @ p-value<0.01. df=29*

Cohen's d <=0.19: Very Small, d <=0.49: Small, d <=0.79: Medium, d <= 1.19: Large, d<=1.99: Very Large; d>=2.0: Huge

A paired-sample t-test was conducted to examine the difference between the pretest and post-test scores of the comparison group (Table 7). The analysis revealed a statistically significant difference between the scores [t (29) = 4.99, p < .01]. The mean difference was 5.23, with a large effect size (Cohen's d = 1.05).

The comparison group also demonstrated improvement in their learning outcomes, as evidenced by the increase in scores from their pre-test to post-test. This suggests that traditional teaching methods can still be effective. However, the level of improvement for the experimental group utilizing Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) was significantly greater compared to the comparison group. This finding suggests that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) may offer an advantage in terms of accelerating learning or achieving a deeper understanding of the subject matter. Studies by Samat and Aziz (2020) demonstrated that multimedia proved to be an effective tool for enhancing student learning outcomes.

This study aligns with Constructivism, a theory emphasizing that learners actively build their knowledge. It highlights that learners don't simply absorb information presented to them. Instead, they engage in a process of actively organizing and making sense of new information based on their existing knowledge, experiences, mental frameworks, and beliefs (Samosa, 2021).

The results of this study demonstrate a clear convergence of findings, providing compelling evidence for the effectiveness of the NELLA instructional tool. This is visible in the quantitative data from the pre-test and post-test assessments show a statistically significant improvement in the post-test scores of the experimental group. This numerical evidence directly supports the hypothesis that NELLA leads to enhanced learning outcomes. Next is supported by the practical context of how NELLA was used. The tool's audio-visual nature directly addresses a key challenge in teaching procedural skills like table setting and service sequences. The visual and auditory elements likely facilitated a deeper, more intuitive understanding for students, which is reflected in their improved performance. The effectiveness of the tool can be seen in its ability to simplify complex demonstrations, which is consistent with the significant score improvements.

Llego (2020) emphasizes the importance of differentiated instruction based on mastery levels. Students who demonstrate sufficient understanding by meeting the minimum criteria should be offered enrichment programs to extend their learning. Conversely, students who fall below the mastery criteria should be provided with targeted remedial programs to address knowledge gaps and support their achievement of learning objectives.

While the post-test scores clearly demonstrated improved knowledge, the study did not measure long-term retention of these skills. It is possible that while students quickly grasp the concepts from the NELLA tool, the long-term mastery and retention of physical, hands-on skills may still require more extensive laboratory practice. Future research could explore whether the initial knowledge gains from NELLA translate into sustained practical competence over a longer period.

Alber (2019) highlights the challenges faced by new educators in expanding their curriculum. They propose instructional videos as a valuable tool to enhance student understanding. However, the authors emphasize the importance of mindful implementation, ensuring videos are not used simply as routine but strategically to significantly contribute to learning. Jamal Yar (2019) suggests that educational videos can benefit language acquisition. The study indicates that videos can enhance students' abilities in reading, listening, and speaking. By watching and retaining information from the videos, students can more easily recall, interpret, and practice language concepts.

Studies suggest that Supplementary Learning Materials (SuppMats) serve a dual purpose: teacher motivation and content adaptation (Jimenez, 2020). By creating SuppMats, teachers are encouraged to develop materials specific to their region and learner demographics, fostering a more localized learning experience (Modesto, 2019). This process can also empower teachers to explore their creativity, acting as writers, illustrators, and layout artists for their resources (Jimenez, 2020).

A growing body of research supports the effectiveness of video-based learning for students. Studies by Wong (2020, 2022) highlight student recognition of the benefits of video clips, including improved comprehension, enriched lessons, and increased engagement. Dham (2021) further emphasizes the flexibility video offers, allowing students to learn at their own pace and in a way that best suits them. Trail and Caukin (2022) add that video serves as a powerful tool for both students and teachers, fostering a shared learning environment that promotes growth for all. These findings collectively suggest that video-based learning is a valuable tool for educators to consider, providing students with an effective means to build a strong knowledge foundation for their future endeavors.

Trail and Caukin (2022) suggest that video presentations offer instructors greater control over the information presented to students compared to online sources of unknown origin. This approach can also foster students' awareness of privacy and trust issues in the digital age. Indriani (2020) highlights an additional benefit: video presentations can serve as an alternative assessment tool, allowing instructors to evaluate student skills and provide immediate feedback for improvement, potentially preparing them for similar tasks in the future.

Dham (2021) suggests that video-based learning addresses four key factors that influence student motivation: attention, relevance, confidence, and satisfaction. By incorporating these elements into a comprehensive learning package, video-based learning is argued to be a highly effective instructional approach.

Indriani (2020) explored the use of video recordings as an alternative assessment tool. This approach provided learners and their peers with opportunities to evaluate speaking and presentation skills through self and peer review of the recorded videos.

Mercado (2022) investigates the potential of integrating video clips into multimedia presentations to enhance student engagement. The rationale behind this approach lies in the power of visual stimulation combined with a familiar media format (video clips) to capture students' attention. The study emphasizes the importance of selecting appropriate video clips and implementing them effectively within learning materials to optimize curriculum design and promote positive learning outcomes.

In this manner, the right use of technology made the class more engaging and interactive with the help of self-made videos as supplementary materials. It supports learning that makes students more capable and effective.

CONCLUSION

Based on the comprehensive analysis presented in the preceding chapters, this study's findings definitively establish the profound and positive impact of the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) instructional tool on the academic performance of Grade 11 Food and Beverage Services students. The empirical evidence gathered from the experimental design strongly supports the efficacy of NELLA as a potent and effective method for enhancing student learning, skill acquisition, and overall mastery of the curriculum.

The initial null hypothesis, which posited no significant difference between the post-test mean scores of the experimental and comparison groups, was decisively rejected. The analysis revealed a statistically significant difference, with the experimental group—which utilized the NELLA tool—demonstrating substantially higher mean scores compared to the control group. This outcome provides direct evidence of NELLA's superior effectiveness over traditional instructional methods in fostering higher levels of student achievement.

Furthermore, the null hypothesis of no significant difference between the pre-test and post-test scores within each group was also rejected for both the experimental and comparison groups. However, the magnitude of improvement was markedly different. For the experimental group, the statistically significant increase from pre-test to post-test scores (at a p-value < 0.01) indicates that the NELLA intervention was highly effective in facilitating a deep and measurable gain in knowledge and skills. While the comparison group also showed some improvement, the gains were not as pronounced, further highlighting the unique advantage conferred by the NELLA tool.

The calculation of Cohen's d yielded a notable effect size, demonstrating that the observed difference between the two groups was not merely statistically significant but also practically meaningful. A large effect size indicates that the NELLA instructional tool has a substantial and tangible influence on student learning outcomes, making it a highly impactful and worthwhile educational intervention. This effect size provides a strong justification for integrating NELLA into the standard Food and Beverage Services curriculum.

The combined evidence from the significant improvements in post-test scores and the clear distinction from the control group underscores that NELLA is an effective instructional tool for enhancing student learning and mastery of critical skills. The audio-visual components likely facilitated a more engaging, multi-sensory learning experience, which is particularly crucial for a vocational subject like Food and Beverage Services. By

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combining visual demonstrations with auditory explanations, NELLA likely made complex procedures and concepts easier to understand, remember, and apply, leading to higher levels of competence.

In conclusion, the findings of this study provide certain evidence that the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) instructional tool serves as a highly effective and impactful method for enhancing student learning and mastery of critical skills within the Food and Beverage Services curriculum. The statistically significant improvements, a notable effect size, and the clear distinction from the control group collectively demonstrate NELLA's potential to transform pedagogical approaches in vocational education.

These results strongly suggest that NELLA should be considered an essential component of the instructional strategy for Food and Beverage Services courses. Future research should explore the long-term retention of skills acquired through NELLA and its potential application in other vocational subjects to further solidify its role as a leading-edge educational innovation. The success of NELLA is not merely a statistical victory; it represents a tangible improvement in the quality of education, preparing students more effectively for their future careers.

Recommendations

Based on the comprehensive findings of this research, the following recommendations are offered to optimize the use of the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) instructional tool. For students, the NELLA instructional videos can be a powerful resource for mastering fundamental and advanced skills in Food and Beverage Services. Specifically, these videos can equip them with the knowledge to identify various table appointments, which is a foundational skill for mastering the four standard table settings as prescribed by TESDA (Russian, American, English, and French). The video lessons, designed to improve understanding of table service sequences, promote better memorization and lead to more confident and accurate performance of service tasks. Furthermore, NELLA empowers students to learn and practice a wide range of napkin folding techniques at their own pace, from basic to advanced, allowing for the refinement of skills through repeated visual demonstrations. The step-by-step breakdown of procedures in the video lessons also facilitates the internalization of the entire table service sequence, fostering a more professional and confident approach for future food attendants.

For educators, the NELLA instructional tool offers a unique set of modified video lessons that are directly aligned with TESDA's core competencies, serving as a valuable pre-made instructional material. This resource can significantly simplify lesson delivery

for teachers, reducing the need for extensive in-laboratory demonstrations, which is particularly beneficial during periods of blended learning with limited face-to-face laboratory time. The flexibility of NELLA empowers teachers to create engaging and effective learning experiences across various formats, including face-to-face, modular, or online. The videos' clear and concise presentation of complex topics makes them an invaluable visual aid for new teachers who may still be developing their content delivery skills, saving them valuable time that can be better spent on classroom management and student interaction. As a consistent delivery model for key concepts, NELLA can also serve as a helpful reference point for new teachers as they develop their own teaching styles. Moreover, these findings provide valuable insights that can be incorporated into professional development workshops for teachers, equipping them with effective and innovative strategies to improve student learning outcomes in Food and Beverage Services across the division and beyond. The adoption of this intervention can thus lead to a widespread improvement in educational quality and student performance in this vocational field.

STATEMENTS AND DECLARATIONS

The author received no specific financial support for the research study entitled "Effectiveness of Nurturing Engagement and Lifelong Learning through Audio-Visual (NELLA) as Supplementary Materials in Enhancing the Academic Performance of Grade 11 Students in Food and Beverage Services".

The author certifies that they have no affiliation with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

To ensure the ethical integrity of this study, the researcher obtained voluntary informed consent from all participants, ensuring they were fully aware of the study's aims, procedures, and potential consequences. Data confidentiality was maintained, which was used solely for academic purposes, and all efforts were made to ensure participants' safety, with no harm reported during the study's conduct. Proper citation and acknowledgment of all sources were observed to avoid plagiarism and copyright issues. The study also complied fully with the Data Privacy Act of 2012 to protect participant privacy.

To ensure the originality and academic integrity of this manuscript, the final draft was submitted to Turnitin (Turnitin LLC). The resulting Similarity Report indicated an overall similarity index of 20%, which was carefully reviewed to confirm proper citation and referencing of all sources. This score is consistent with expected academic conventions, acknowledging that research builds upon existing literature.

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