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TEACHING MAPEH UTILIZING INFORMATION AND COMMUNICATIONS TECHNOLOGY-BASED MATERIALS AMONG GRADE 1 LEARNERS

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Abstract:
This study, entitled "Teaching MAPEH Utilizing Information and Communication Technology (ICT)-Based Supplementary Materials Among Grade 1 Learners," investigated the effectiveness of ICT-based supplementary materials in enhancing learners' performance in Music, Arts, Physical Education, and Health (MAPEH). Employing a pre-experimental, one-group pretest-posttest design within a quantitative research framework, the study involved 30 Grade 1 learners from Alegria Elementary School. To ensure the reliability of the researcher-made pretest and posttest questionnaires, the Internal Consistency method and Kuder-Richardson Formula 20 were utilized. For statistical analysis, the Wilcoxon Rank Sum Test—a nonparametric alternative to the paired t-test—was applied to assess the significance of differences between pretest and posttest scores. The findings revealed a significant improvement in learners' performance, with the total pretest score at 287 and the posttest score increasing to 479. This substantial gain underscores the effectiveness of integrating ICT-based supplementary materials in teaching MAPEH.

Keywords: educational management, utilizing ICT-Based supplementary materials, effectiveness MAPEH, learners, Philippines

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1. Introduction

Early primary education is a pivotal phase that shapes the foundation for a child's long-term academic journey. During this stage, meaningful, engaging, and well-supported learning experiences are crucial in fostering cognitive and social development. The thoughtful integration of Information and Communication Technology (ICT) into early education enhances learning quality by providing personalized, accessible, and interactive opportunities. ICT tools have proven particularly effective in strengthening literacy and numeracy skills, especially among learners from disadvantaged backgrounds, making them essential in ensuring equitable and dynamic educational practices (Outhwaite *et al.*, 2023). To truly support young learners' growth and readiness, educational methods must be diverse and developmentally appropriate—ICT-enhanced materials offer one such powerful solution.

Educators today must become more innovative and responsive in addressing the diverse needs of their learners. One proven strategy is the use of differentiated instruction, particularly in reading activities, which allows teachers to tailor lessons based on students' learning styles, strengths, and interests. While some children learn best through visuals, others benefit more from hands-on experiences, storytelling, or peer collaboration. By adapting instruction to these individual differences, teachers can create inclusive and engaging environments that support comprehension, academic performance, and a love for learning. Meeting learners where they are and recognizing their unique ways of understanding is key to helping them thrive (Suson, 2020)

Teaching Music, Arts, Physical Education, and Health (MAPEH) at the elementary level presents both challenges and opportunities. MAPEH teachers play a vital role in promoting holistic child development by uncovering learners' hidden talents and guiding them toward future aspirations. These educators must balance multiple responsibilities—whether inspiring the next artist, athlete, or health professional—requiring creativity, patience, and commitment (Abas, 2019). In today's digital age, providing ICT training to MAPEH teachers is increasingly important. With the right tools and skills, teachers can transform their lessons into interactive, engaging experiences that address various learning styles. This approach not only enhances student participation but also cultivates life skills such as critical thinking, collaboration, and digital literacy (Samonte & De Guzman, 2019).

Despite growing interest in ICT integration across subject areas, research remains limited on its practical application in MAPEH instruction at the primary level. Studies highlight ICT's effectiveness in enhancing student engagement and achievement, as seen in El Janous *et al.*'s (2022) research on Life and Earth Sciences, which reported significant academic and motivational gains through ICT-enhanced activities. However, little is known about how such tools impact Grade 1 learners in MAPEH subjects specifically. This gap is concerning, especially given the low competence observed in MAPEH among learners at Alegria Central Elementary School (Dabas, 2018). Addressing this issue, the present study explores the potential of ICT-based supplementary materials in improving

young learners' outcomes in MAPEH. With proper teacher training and thoughtful implementation, ICT can become a powerful tool in delivering holistic, engaging, and effective instruction during these crucial early years (Ghavifekr & Rosdy, 2015; Rana & Rana, 2020).

2. Theoretical Framework

This study was grounded in the **Technological Pedagogical Content Knowledge (TPACK)** framework developed by Mishra and Koehler (2006), which serves as its primary theoretical foundation. TPACK highlights the integration of three essential forms of knowledge: technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). In the context of teaching MAPEH to Grade 1 learners using ICT-based supplementary materials, TK involves the ability to understand and apply relevant technologies such as educational apps and interactive media. PK focuses on using age-appropriate and engaging teaching strategies, including differentiated instruction, while CK refers to a comprehensive understanding of the MAPEH curriculum for young learners. Together, these components support the design of enriching, technology-enhanced learning experiences that align with educational goals and developmental needs.

Supporting the TPACK model is the **Technology Acceptance Model (TAM)** developed by Fred Davis in 1989. TAM explains how users come to accept and use new technologies based on two key factors: perceived usefulness and perceived ease of use. In educational settings, teachers are more likely to integrate ICT tools when they believe these tools will enhance their teaching effectiveness and are easy to adopt. This complements the TPACK framework by focusing on the psychological and behavioral aspects that influence a teacher's willingness to embrace technology. TAM adds valuable insight into understanding how educators evaluate and adopt digital tools in their teaching practices, which is especially relevant when introducing ICT-based materials in early grade levels.

Another relevant theory is **Situated Learning Theory**, proposed by Lave and Wenger (1991), which emphasizes that learning is most effective when it occurs in authentic contexts. This theory posits that learners gain a deeper understanding and retention when they are actively engaged in real-life, meaningful experiences rather than abstract or disconnected instruction. In the classroom, this means using learning activities that mirror real-world situations and encourage collaboration, interaction, and problem-solving. When ICT tools are integrated into MAPEH in ways that reflect students' interests and daily experiences—such as using dance tutorials, health simulations, or virtual art galleries—they become more than just instructional aids; they become immersive, relevant learning environments.

Lastly, Connectivism, introduced by George Siemens (2005), presents a learning theory centered on the ability to connect information, people, and digital tools to create and share knowledge. In the digital age, learning is no longer confined to the classroom

or textbook—it occurs across networks and platforms. Connectivism highlights the value of real-time information, collaboration, and digital literacy as key elements of meaningful learning. This theory reinforces the importance of integrating ICT into education by supporting continuous learning and adaptability. It complements the TPACK framework by emphasizing how technological tools facilitate connected, lifelong learning experiences that go beyond content delivery and foster active engagement with the broader world.

3. Conceptual Framework

Figure 1 outlines the conceptual framework for the study, beginning with a pre-test, which serves as the initial step to evaluate students' knowledge or skills before any intervention. The pre-test provides a baseline to determine if progress occurs after using supplementary materials. This step ensures that any observed improvement can be attributed to the intervention rather than prior knowledge or external factors.

Next, students engage with ICT-based supplementary materials such as digital tools, interactive lessons, or educational videos designed to enhance and enrich the learning experience. These resources aim to make lessons more interactive and accessible, catering to various learning preferences and increasing student engagement and understanding. Through this engagement, learners are provided with opportunities to explore content beyond traditional classroom instruction.

Finally, a post-test is administered to assess what students have learned after using the ICT-based materials, allowing for a comparison with the pre-test results to measure the effectiveness of the intervention. Contrary to the notion that integrating ICT is merely about adopting new technology, its value lies in transforming the learning process: ICT fosters active participation, supports diverse learning styles, and enhances students' motivation and comprehension (Fu, 2013). The post-test results ultimately help validate whether ICT tools significantly contribute to improving student learning outcomes. Furthermore, these findings can inform future instructional planning and promote more data-driven decision-making in teaching strategies.

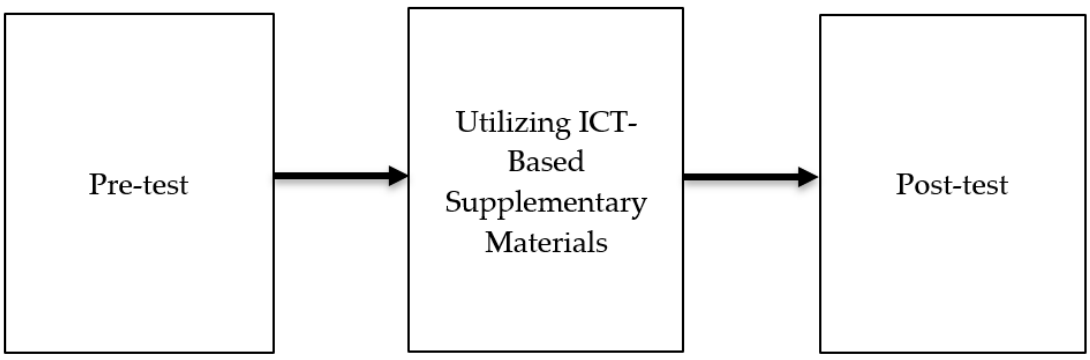

Figure 1: Conceptual Framework of the Study

4. Statement of the Problem

1) To determine the Pre-test score of Grade 1 learners in MAPEH?
2) To determine the Post-test score of Grade 1 learners in MAPEH?
3) Is there a significant difference between the mean gain score of Grade 1 learners after the treatment?

5. Method

This study employed a quantitative research approach and utilized a pre-experimental research design, specifically the one-group pretest-posttest design. As defined by Ma *et al.* (2018), this type of design involves measuring a single group of participants before and after being exposed to an intervention. In this case, the pre-test served as a baseline assessment, and the post-test measured any changes resulting from the application of ICT-based supplementary materials in teaching MAPEH. The research process followed three key steps: administering a pre-test to measure initial performance, implementing the intervention using ICT tools, and then conducting a post-test to measure outcomes. Although this design does not include a control group, it is particularly suited for exploratory studies where randomization is not feasible. It allows the researcher to evaluate whether the intervention brought about significant changes in the participants' learning outcomes.

The study was conducted at Alegria Central Elementary School, located in Barangay Alegria, in the municipality of Alabel, Sarangani Province. As a public elementary school under the Department of Education (DepEd), it serves a partially urban community with a student population that includes a mix of cultural backgrounds—primarily Cebuanos and Blaans—as well as children with special educational needs supported through its SPED program. The school comprises four sections per grade level, ensuring manageable class sizes and consistent delivery of curriculum. Geographically, the school occupies about 20,000 square meters, with coordinates at Latitude 6.152672408363812° and Longitude 125.28841280183984°, making it accessible to the surrounding barangays. In addition, Alegria Central Elementary School was chosen as one of the 35 pilot schools in the Philippines to implement the revised K to 10 MATATAG Curriculum beginning in the 2023–2024 academic year. This highlights the school's commitment to innovation and modernization, making it an appropriate and supportive site for implementing ICT-based instructional strategies.

A purposive random sampling technique was employed to identify the study participants. This sampling approach combines the deliberate selection of respondents who meet specific criteria with an element of randomization to reduce bias (Obilor, 2023). From the Grade 1 student population of 90 learners, the researcher shortlisted those with a weighted grade average of 85% or higher, reflecting consistent academic performance and readiness to benefit from supplementary instructional materials. A lottery method was then applied to randomly select 30 respondents from this pool, ensuring fairness and

equal representation. The final sample consisted of 20 male and 10 female students, all from the same class section to maintain consistency in the learning environment and curricular exposure. Categorizing respondents by gender also allowed for easier analysis of any trends or differences in performance between male and female learners.

Prior to data collection, the researcher secured official permission from the District Supervisor and School Principal of Alegria Central Elementary School, complying with ethical standards and institutional protocols. The main research instrument—a 100-item MAPEH test—underwent a rigorous validation process conducted by three MAPEH experts. They assessed the instrument based on several criteria, including clarity of instructions, organization, relevance and adequacy of indicators, alignment with the research purpose, impartiality, and the appropriateness of the rating scale. Based on their feedback and item analysis using difficulty and discrimination indices, the test was refined and reduced to a 50-item validated version. This version was then used for both the pre-test and post-test.

In September 2020, the pre-test was administered to the selected 30 Grade 1 learners to assess their initial MAPEH competence. The researcher personally facilitated the administration of the questionnaire to ensure clarity, address learner questions, and secure a 100% retrieval rate. Following the pre-test, a one-month instructional intervention using ICT-based supplementary materials was implemented. Lessons were delivered using multimedia presentations, interactive applications, and other digital tools aligned with the MAPEH 1 curriculum. To maintain the authenticity of results, learners were not informed beforehand that they were participating in a study. In November 2020, the same group of students was given the post-test using the validated 50-item instrument to determine any measurable changes in their academic performance.

6. Research Instrument

This study used a pre-test and post-test researcher questionnaire to collect data from selected learners. It was composed of a 50-item test used in the pre-test. These items were taken from the module made by the researcher for the First Quarter topics in Music, Arts, Physical Education, and Health. The same items were used in the Post-test activities after the treatment was done; however, the items were mixed up to determine if the respondents had improved. The choices for each item were mixed up to avoid memorization of answers. Subject experts determined the validity of the content of the items in the questionnaire.

6.1 Data Gathering Procedure

Data collection is a crucial phase in research, ensuring the systematic gathering of relevant and accurate information to address the study's research questions and objectives. This process involved several key stages: obtaining permission to conduct the study, validating the research instrument, selecting appropriate respondents,

administering the instrument, and analyzing the collected data using appropriate statistical tools.

To begin, the researcher secured the necessary approval from the District Supervisor and Principal of Alegria Central Elementary School within the Alabel 4 District. This ensured compliance with ethical standards and institutional research protocols. By obtaining formal consent, the researcher demonstrated a commitment to responsible and respectful conduct of the study, fostering transparency and collaboration within the school community and facilitating the smooth implementation of the research. Following administrative approval, the researcher focused on validating the research instrument. A 100-item MAPEH 1 test was subjected to rigorous validation by three MAPEH experts with graduate-level qualifications. These experts assessed the instrument based on several criteria: clarity of directions and indicators, organization, suitability and adequacy of items, congruency to research purpose, impartiality, and appropriateness of the rating system. Revisions and improvements were made based on expert feedback. Items were evaluated through item analysis using difficulty and discrimination indices. From this validated pool, a 50-item test was finalized and used in both the pre-test and post-test phases of the study to ensure reliability and alignment with research goals.

The study involved 30 purposively selected Grade 1 learners from the third section of Alegria Central Elementary School, School Year 2020–2021. These respondents were chosen based on specific criteria, including lack of prior exposure to ICT-based supplementary materials, to eliminate bias and accurately assess the intervention's impact. The demographic balance, academic readiness, and availability of learners were also considered. To avoid influencing their behavior, students were not informed that they were participating in a study. This ethical approach helped preserve the integrity of the data collected.

The pre-test was administered in September 2020 using the validated 50-item instrument. The researcher personally distributed the questionnaires to ensure clarity, address immediate concerns, and guarantee a 100% retrieval rate. After administering the pre-test, the intervention phase began, wherein ICT-based supplementary materials were used to teach MAPEH 1 content throughout the first grading period. Lessons were delivered using various ICT tools aligned with the Grade 1 MAPEH curriculum. Following the one-month instructional period, the same 50-item instrument was administered in November 2020 as a post-test to evaluate the effectiveness of the ICT-based instruction. The collected data were then analyzed using appropriate statistical tools to determine significant changes in learners' performance and to draw meaningful conclusions from the study.

6.2 Data Analysis and Statistical Tools

To ensure the accuracy and relevance of the data collected, appropriate statistical treatments were applied during the analysis phase. These methods were selected to align

with the study's research questions and to ensure the reliability and validity of the findings.

The first draft of the pre-test instrument underwent statistical analysis to determine its suitability for the standards. The data collected from the validation and pilot testing of the assessment tools were analyzed to refine the final version of the instrument used for the pre-test and post-test. This process ensured that the test items were appropriate, effective, and capable of accurately measuring the desired learning outcomes.

Frequency counts were employed to analyze and interpret the data related to Research Questions 1 and 2. This statistical tool was used to determine how often certain scores or responses occurred among the participants. It provided a straightforward method of organizing data to identify trends, patterns, and the general performance of learners in both the pre-test and post-test phases.

To determine whether there was a significant difference in the performance of learners before and after the intervention using ICT-based materials, the **Wilcoxon Rank-Sum Test** was utilized. This non-parametric test is particularly appropriate for small sample sizes and does not assume a normal distribution of the data. It was selected to analyze the results for Research Question 3. By using the Wilcoxon Rank-Sum Test, the researcher was able to assess whether the observed changes in learners' scores were statistically significant, thereby supporting conclusions about the effectiveness of the ICT-based instructional approach in teaching MAPEH to Grade 1 learners.

7. Results and Discussion

This study focuses on evaluating the effectiveness of ICT-based supplementary materials in teaching MAPEH to Grade 1 learners at Alegria Central Elementary School. The assessment centers on the academic performance of students before and after the intervention, using pre-test and post-test scores as the basis for analysis. The objective is to determine whether the integration of digital tools—such as educational videos, interactive flashcards, and visual-audio materials—can improve learners' understanding and engagement in Music, Arts, Physical Education, and Health.

As stated, with a total sample population of 30 Grade 1 learners, the researcher employed statistical tools including frequency count, weighted mean, and the Wilcoxon Rank-Sum Test to evaluate the effectiveness of the intervention.

7.1 Pre-test Scores of Grade 1 Learners in MAPEH

It can be gleaned that of the 30 respondents, 4, or 13%, got a Very High score; 8, or 27%, got a High score; 9, or 30%, got a Moderately High score; 7, or 23%, got a Low score; and 2, or 7%, got a Very Low score. The mean score of 26.57 revealed that Grade 1 learners achieved Moderately High pre-test scores in MAPEH before the intervention. Appendix K shows detailed information on the learners' pre-test scores.

Out of the 30 Grade 1 learners who took the pre-test, the majority scored within the 21–30 range, accounting for 30% of the class. This implies that most learners had an average understanding of the MAPEH concepts at the outset. However, the data also show that their grasp of the subject matter was still below the expected mastery level. Traditional teaching approaches may not have adequately addressed the diverse needs of young learners, underscoring the need for more engaging and inclusive methods. According to Tagon (2019), incorporating interactive and experiential learning strategies into MAPEH significantly enhances student understanding and retention, which may not have been fully employed during the initial teaching phase.

Meanwhile, 27% of the learners scored between 31–40 (High), and 13% scored between 41–50 (Very High), representing a combined 40% who demonstrated relatively strong performance. These students may have benefited from prior exposure, personal interest, or strong support systems that helped reinforce their learning. Nevertheless, this group still accounted for less than half of the class, meaning a significant portion of the learners had yet to achieve optimal performance levels.

On the other hand, 23% of the learners scored between 11–20 (Low), and 7% between 1–10 (Very Low), indicating that nearly one-third of the class performed below satisfactory levels. This finding aligns with the study of Tabuena (2021), which revealed that learners initially exhibited low scores in MAPEH prior to the integration of digital and diversified teaching tools. These students may have struggled with engagement and comprehension due to a lack of appropriate instructional strategies or insufficient exposure to the subject matter. Their performance highlights the urgent need for learner-centered, ICT-based teaching approaches to close existing learning gaps.

Overall, the results confirm that while some learners demonstrated a fair understanding of MAPEH concepts, many others needed significant academic support. This supports the growing consensus in the literature that effective teaching of MAPEH should include digital tools and experiential methods to foster improved engagement and performance, particularly among young learners.

Table 1: Frequency Counts of Pre-test Score of Grade One Learners in MAPEH.

Score	F	%	Description
41-50	4	13	Very High
31-40	8	27	High
21-30	9	30	Moderately High
11-20	7	23	Low
1-10	2	7	Very Low
Total	**30**	**100**	
Average Score	**26.57**		

7.2 Post-test Scores of Grade 1 Learners in MAPEH

The second objective of the study aimed to assess the post-test scores of Grade 1 learners in MAPEH using a 100-item test. As presented in Table 2, there was a clear improvement in the learners' performance after the intervention. Of the 30 respondents, 6 learners or

20% scored in the Very High range, while 12 learners or 40% fell within the High range. The class's average score increased to 31.96, showing a significant improvement from the pre-test mean of 26.57 (refer to Table 3 on page 25). The increase of 5.39 points in the mean suggests that the ICT-based supplementary materials positively impacted the learners' academic performance. These findings strongly indicate that the integration of ICT tools in teaching MAPEH was effective in enhancing the understanding and retention of the subject matter among Grade 1 students.

A large portion of the class, particularly 40%, scored between 31–40, indicating that many learners reached a high level of understanding after the intervention. This improvement reflects the alignment of the teaching strategies with learners' needs and interests. The interactive features of the ICT-based materials likely contributed to better engagement and comprehension. Moreover, 27% of the learners scored within the 21–30 range (Moderately High), and 20% scored between 41–50 (Very High), bringing the total to 87% of students who performed at least moderately well. This shift in score distribution shows a substantial increase in academic achievement levels and highlights the positive influence of technology in the teaching-learning process. Only 13% remained in the Low category, and notably, no learner scored in the Very Low category. The reduction in low-performing students is a strong indicator that the intervention supported struggling learners in catching up with their peers.

Overall, the results revealed that learners significantly improved after using ICT-based supplementary materials in MAPEH. The increase in test scores and the reduced number of low-performing learners emphasize the effectiveness of the intervention. These findings are consistent with El Janous *et al.* (2022), who found that ICT integration in science subjects led to better academic performance and increased learner motivation. Similarly, Chen *et al.* (2024) reported that students in ICT-enriched classrooms improved their scores by an average of 9.2 points, compared to only a 2.4-point increase among those in traditional settings. Students learning through technology also showed greater engagement and enthusiasm. Furthermore, Najera and Osorno (2023) highlighted the crucial role of teaching competency in maximizing the benefits of ICT, noting that competent teaching can mediate and enhance music performance among MAPEH learners. Manuel (2022) also confirmed the positive effects of Google Classroom on learner output submission, while Aneslagon *et al.* (2023) found that teachers were proficient in integrating technology in MAPEH despite challenges like limited access.

These findings align with Yacob *et al.* (2020), who emphasized that ICT tools promote active learning by enhancing learners' collaboration, critical thinking, confidence, and accountability. Chatterjee (2021) further supported this by stating that technology empowers teachers not only through their own development but also by helping them stimulate their students' academic progress. In conclusion, the successful application of ICT-based materials in MAPEH supports the growing evidence that technology-integrated instruction fosters improved academic performance, deeper engagement, and more meaningful learning experiences among young learners.

Table 2: Frequency Counts of Post-test Score of Grade One Learners in MAPEH

Score	F	%	Description
41-50	6	20	Very High
31-40	12	40	High
21-30	8	27	Moderately High
11-20	4	13	Low
1-10	0	0	Very Low
Total	**30**	**100**	
Average Score	**31.96**		

7.3 Significant difference between the mean gain score of Grade 1 learners after the treatment

Based on the findings presented in Table 3, the Wilcoxon Rank Sum Test was utilized to examine whether there was a significant difference between the pre-test and post-test scores of the Grade 1 learners. The results showed that the pre-test rank sum was 287, while the post-test rank sum increased to 479, reflecting a 192-point difference. This statistical result led to the rejection of the null hypothesis, confirming that the observed improvement in scores was statistically significant and not due to random chance.

The substantial gain in scores indicates that the use of ICT-based supplementary materials in teaching MAPEH contributed positively to learners' academic growth. The data revealed that learners' performance improved meaningfully from the pre-test to the post-test, showing that the intervention was effective. This aligns with the idea that interactive and engaging instructional methods can significantly impact student achievement. The mean gain further supports that learners benefited from the ICT-enhanced lessons, which allowed them to understand MAPEH concepts more effectively than through traditional approaches alone.

These findings are supported by Samonte and De Guzman (2019), whose study demonstrated that the integration of technology into teaching practices enhances classroom engagement and promotes better comprehension. Instead of relying solely on conventional teaching strategies, the use of ICT introduces variety, creativity, and increased interactivity. Similarly, Sabit and Acledan (2024) found that students who were taught using technological tools showed greater enthusiasm and a more positive outlook toward the subject. Their study emphasized how technology can make the learning experience more enjoyable and meaningful, ultimately leading to improved academic performance and student motivation.

Table 3: Computed Wilcoxon Rank Sum Test

Variable	Result	Difference	Decision
Pre-test	287	192	Reject the null hypothesis
Post-test	479		

8. Conclusions

The pre-test scores of Grade 1 learners in MAPEH generally reflected a limited understanding of the subject matter. The results revealed that many learners scored below the expected proficiency level, indicating that traditional instructional methods may not have fully addressed their learning needs or sustained their interest, especially in a multifaceted subject like MAPEH that involves music, arts, physical education, and health.

The post-test scores showed a significant improvement in learners' academic performance after being exposed to ICT-based supplementary materials. The learners displayed a better grasp of concepts, improved recall, and higher levels of participation. These outcomes suggest that the use of digital tools and interactive content made the lessons more engaging and accessible, allowing learners to connect with the material in a way that was both meaningful and enjoyable.

The statistical analysis of the results confirmed that there was a significant difference between the mean gain scores of the learners before and after the intervention. This positive change provides compelling evidence that the integration of ICT in MAPEH instruction can effectively support learning and improve academic outcomes. The use of technology not only enhanced the delivery of the lesson content but also motivated learners to actively participate in the learning process.

9. Recommendations

Based on the findings, teachers should re-evaluate their current MAPEH teaching methods. Low pre-test scores suggest traditional approaches may not fully engage young learners. More interactive and engaging activities are needed to spark interest and support struggling students through personalized instruction.

The significant increase in post-test scores shows that ICT-based supplementary materials positively impact learning. Teachers are encouraged to continue using these tools while regularly updating them to meet evolving student needs. Ongoing training on ICT integration will also help enhance teaching effectiveness.

ICT tools offer a multisensory learning experience ideal for young learners. Educational videos, interactive quizzes, and digital flashcards help make complex topics more accessible. In MAPEH, such tools support different learning styles and make lessons more enjoyable and meaningful.

The improvement in test scores proves the effectiveness of ICT in MAPEH instruction. Schools should promote wider use of technology and adopt innovative strategies. Encouraging collaboration among teachers will help sustain improvements and boost student learning outcomes.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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Kimberly B. Patenia holds a Master of Arts in Education, major in Educational Management, and has a strong interest in conducting quantitative research studies that contribute to the improvement of educational practices and leadership. With a commitment to scholarly engagement, the author maintains an active presence on research platforms such as ORCID (https://orcid.org/0009-0006-7918-0340) and Academia.edu (https://deped.academia.edu/KIMPATENIA). For academic and professional correspondence, the author may be contacted at kimpate623@gmail.com.

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