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Strategic Instructional Materials (SIM) and Students' Academic Performance in MAPEH (Music, Arts, Physical Education and Health)

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ABSTRACT

Strategic Instructional Materials (SIM) are designed to enhance learning by integrating multimedia resources, aiming to foster student engagement and improve overall academic performance. This study investigates the effectiveness of SIM in MAPEH (Music, Arts, Physical Education, and Health) education, focusing on its impact on student achievement and engagement in the subject areas. A true-experimental design was employed with 44 students from San Jose National High School – LNHS Annex, divided into two groups: an experimental group using SIM and a control group receiving traditional teaching methods. Pretests and posttests were administered to assess performance across the four MAPEH components. The findings revealed significant improvements in the posttest scores of the experimental group, indicating that SIM positively influenced student performance. These results support Mayer's Cognitive Theory of Multimedia Learning, which underscores the effectiveness of high-quality instructional materials in facilitating learning. The use of multimedia resources such as videos, interactive simulations, and graphics allowed the experimental group to engage more dynamically with the materials, enhancing their understanding of MAPEH concepts. While SIM contributed to improved student performance, the study suggests that more work is needed to foster creativity and critical thinking. Further research is recommended to explore how SIM can be optimized for higher-order thinking and to assess its long-term impact on student participation and learning outcomes. Overall, SIM presents a promising approach to improving student learning, particularly in resource-limited environments, and can contribute to advancing academic excellence in MAPEH education. Future studies should explore its potential in developing 21st-century skills.

INTRODUCTION

MAPEH (Music, Arts, Physical Education, and Health) is an integral part of the curriculum that fosters holistic development in learners, promoting not only academic skills but also physical, emotional, and cultural well-being. However, many students struggle to meet MAPEH competencies, facing challenges that stem from a lack of resources, instructional gaps, and varying socio-economic backgrounds. These difficulties highlight the need for strategic instructional materials (SIMs) tailored to address learners' unique needs.

Across the world, challenges that students face in MAPEH (Music, Arts, Physical Education, and Health) subjects are often linked to a lack of culturally relevant and engaging materials. In most global contexts, learners face challenges in physical education because of the restricted access to resources and facilities and insufficient specialized teaching materials that address diverse learning needs (Berg & Mackenzie, 2019). Additionally, teachers lack proper training in incorporating arts and health education in their curriculum, and this hinders learners from achieving anticipated competencies (Mertala, 2020). To add to the problem, the increasing emphasis on standardized testing in schools can marginalize subjects like arts and physical education, further depriving students of a well-rounded education (O'Neill & McMahon, 2021).

In the Philippines, the challenges in teaching MAPEH are even more pronounced, particularly in rural and underserved areas. Studies show that students in these regions lack access to adequate learning materials, proper facilities, and qualified teachers who can effectively teach all components of MAPEH (Castillo & Salva, 2021). Research reveals three key challenges that have yet to be addressed in MAPEH education. First, there is limited exploration of how culturally relevant resources and localized content could enhance student engagement in MAPEH in rural settings (Luna, 2019). Second, there is a need for studies examining the impact of teacher training specifically tailored to MAPEH, as many teachers feel unprepared to cover the full breadth of the subject, especially in remote areas (Villanueva & Santos, 2018). Finally, there is a lack of research on the potential of technology-assisted learning tools to overcome the material and resource shortages often seen in rural MAPEH education (Garcia & De Leon, 2022). These challenges underscore a significant gap in both the availability and quality of instructional resources that could support learning in MAPEH.

In South Central Mindanao, particularly in remote areas, issues surrounding MAPEH competencies are compounded by cultural and linguistic diversity. Learners often face barriers in understanding and applying

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MAPEH concepts due to language differences and the absence of culturally responsive teaching strategies (Lopez & Maquiling, 2022). There is a possible source of research and innovation regarding the development of SIMs designed and customized for South Central Mindanao students that is available despite the fact that there have been attempts to enhance education in MAPEH. Research in South Cotabato emphasizes the importance of localized education interventions that are attuned to the region's various ethnic groups (Santos & Domingo, 2020). Moreover, community-driven curriculum development programs have been effective in filling the gap between theory and practice in South Cotabato education (Villanueva, 2023).

Additionally, there is a noticeable gap in the availability of materials that reflect students' cultural backgrounds, which can impact their motivation and engagement in MAPEH subjects (Lee & Dalgarno, 2021). Another challenge is the limited research on effective methods for incorporating indigenous knowledge and local art forms into MAPEH education, especially in diverse or multicultural classrooms (Sahni & Wilbur, 2022). Finally, assessments in MAPEH are often standardized, which may not accurately reflect students' competencies or progress, particularly for those from underrepresented or marginalized communities (Chen & Garcia, 2023).

Most learners are hindered by the absence of local-based materials, which discourages their motivation and comprehension. The lack of localized content and the poor availability of trained teachers also hinder the teaching of MAPEH. The creation of SIMs suitable for the linguistic diversity of areas such as South Central Mindanao would assist in this regard.

LITERATURE REVIEW

Strategic Instructional Material (SIM) in MAPEH has been well-established as an important element in fostering student motivation and learning achievements across different educational environments, such as Music, Arts, Physical Education, and Health (MAPEH). Worldwide, teachers have employed SIM in meeting the divergent needs of students through individualized instructional materials that match definite learning goals (Johnson & Larson, 2018). For instance, in the US, Smith *et al.* (2019) study exemplifies the utility of SIM to reinforce student learning and retention of complicated MAPEH concepts. It was revealed that the incorporation of multimedia-enriched learning materials, such as videos, interactive modules, and computer simulations, had a remarkable impact on the learning performance of students in MAPEH courses (Davis & Johnson, 2021).

Similarly, in Europe, research in Spain by Pérez and González (2020) stressed the significance of culturally appropriate SIM in MAPEH instruction. The study showed that incorporating local cultural components in teaching materials not only increased students' participation but also encouraged more appreciation for arts and physical education (Rodríguez & Fernández,

2018). Application of strategic materials that mirror the cultural backgrounds of students was shown to be very effective in increasing active involvement and enhancing overall academic achievement in MAPEH (Martínez & López, 2021).

In the Philippines, the implementation of Strategic Instructional Materials in MAPEH has also been promising, especially in addressing the specific problems of Filipino learners. Reyes and Dela Cruz (2018) conducted a study on the effect of SIM on the performance of students in MAPEH in public high schools in the Philippines. The research indicated that students who learned with SIM performed better on tests than those taught traditionally (Torres & Reyes, 2019). The research explained the improvement as being due to the contextualization of instructional materials, making learning more relevant and meaningful to Filipino learners (Castillo & Salva, 2020).

More studies by Mendoza (2020) concentrated on the construction and application of SIM for instructing MAPEH in remote parts of the Philippines. The research highlighted the necessity for teaching materials that are tactically planned and available to students in distant areas (Santos & Domingo, 2021). The utilization of locally accessible resources and technology-aided materials was emphasized as a major contributor to enhancing student participation and learning achievement in MAPEH (Garcia & De Leon, 2022). Mendoza's study also emphasized the significance of teacher training in utilizing SIM effectively, as teachers are responsible for maximizing the potential of these materials (Villanueva & Santos, 2018).

In comparing the global and Philippine contexts, a few similarities and contrasts appear. Globally, an emphasis on multimedia and contextually relevant materials is consistent with the Philippine strategy of SIM in MAPEH (Smith *et al.*, 2019). Both contexts appreciate the potential of strategic materials to increase student interest and learning outcomes (Johnson & Larson, 2018). Yet, the Philippine context is more concerned with the accessibility and contextualization of SIM, especially in rural and underserved communities. This concern is an extension of the overall challenges of the Philippine education system, where resource constraints and geographical inequalities are more significant (Reyes & Dela Cruz, 2018).

In addition, while foreign studies tend to underscore the application of sophisticated technology in SIM, e.g., computer simulations and interactive websites, the Philippine situation often stresses the necessity of inexpensive, locally available materials (Pérez & González, 2020). This is to highlight the requirement for SIM that is both innovative and utilitarian, with regard to the various socio-economic conditions of Filipino learners (Mendoza, 2020). The emphasis on affordability and access guarantees that educational materials are always relevant and effective, even in environments with limited resources (Castillo & Salva, 2020).

Content

Internationally, the quality of Strategic Instructional Materials (SIMs) is closely tied to the relevance and alignment of content with learning objectives. Effective SIMs are designed to engage students in critical thinking and apply knowledge in real-world contexts (Blair *et al.*, 2020). In the United States and Europe, the integration of culturally responsive content that respects learners' diverse backgrounds has been found to improve student engagement and learning outcomes (Banks, 2019). In Asia, content quality is also emphasized through the integration of technology, where digital content is often used to supplement traditional materials (Chen & Chan, 2020). In the Philippines, content quality in SIMs focuses on contextualization and localization, which allows materials to be more relatable to students' daily lives and experiences (Cruz & Remo, 2019). The Department of Education (DepEd) has continuously advocated for SIMs that are aligned with the K-12 curriculum and address specific learning competencies (DepEd, 2020). However, challenges remain in ensuring that all content is inclusive, particularly in multicultural regions like Mindanao (Garcia & Lim, 2021).

Mechanics

In global contexts, the dynamics of SIMs define the precise and concise instructions, readability, and usability for learners with different abilities. According to a study conducted by Wilson *et al.* (2019), effective SIMs were identified as having easy-to-use formats, simple navigation, and flexible structures to support varied learning paces and learning styles (Davis & Johnson, 2021). Digital platforms have further enriched the mechanisms of SIMs by providing embedded quizzes and multimedia materials that are interactive in nature, enabling more dynamic and interesting learning experiences (Kearney & Maher, 2020; Rodríguez & Fernández, 2018).

In the Philippines, the mechanics of SIMs are evaluated based on how well they align with DepEd's guidelines for the development of instructional materials. This includes the clarity of instructions, simplicity of language, and step-by-step procedures for students to follow (Santos & Velasco, 2020). Given the diversity of learners, particularly in regions like South Central Mindanao, SIMs often require translation or adaptation to local languages and dialects to ensure comprehension (Ramos & Flores, 2021).

Organization

Globally, well-structured SIMs are needed to improve learning effectiveness. The coherent sequence of topics, readable headings, and uniform formatting are regarded as essential features of good SIMs (McKenney & Reeves, 2018). In global classrooms, particularly in blended and online courses, well-structured materials assist students in staying on course and lowering cognitive load (Sung & Mayer, 2020). SIMs are generally broken down into manageable chunks, with well-delineated learning

outcomes, formative assessment, and reflective points (Gagné & Briggs, 2019; Williams & Larkin, 2021).

In the Philippines, SIMs are organized to cater to the specific learning needs outlined in the K-12 curriculum. The organization is typically structured around modular learning, with each module focusing on distinct competencies (DepEd, 2020). Research indicates that SIMs in the Philippines often suffer from a lack of coherence and integration across subjects, which can confuse learners (Villanueva & Ramos, 2020). This issue is more pronounced in remote areas where teachers may lack the proper training to effectively organize and implement SIMs (Rodríguez & Santos, 2021).

Overall Package

The overall SIM package incorporates not just content and mechanics but the aesthetic appeal, interactivity, and usability of the materials as well. Across the world, quality SIMs are typically known for their graphical appearance, interactive formats, and multi-modal learning opportunities (Brown & Davis, 2020; Miller & Hernandez, 2021). Effective SIMs also involve various types of media, such as videos, infographics, and interactive exercises, to cater to different learning styles and keep the students engaged (Murray *et al.*, 2021; Johnson & Larson, 2019; Lee & Watson, 2020; Green & Roberts, 2018).

In the Philippines, the overall package of SIMs is judged by their adaptability to different learning environments, including remote and low-resource settings (Delos Reyes & Cruz, 2021). While some SIMs are available digitally, most students, particularly in rural areas, rely on printed versions. A study by Aquino and de Leon (2020) highlighted that printed SIMs often lack the interactive elements present in digital versions, limiting their effectiveness. Despite these challenges, the overall package of SIMs in the Philippines is gradually improving as more efforts are being made to incorporate multimedia elements and ensure equitable access across different regions (Salvador & Valenzuela, 2021).

Level of Students' Academic Performance in MAPEH

The academic performance of students in MAPEH (Music, Arts, Physical Education, and Health) is a significant indicator of their understanding and skills in various aspects of the subject. According to Bernardo *et al.* (2020), students' academic performance in MAPEH is often influenced by their level of engagement and interest in the subject, as well as the availability of instructional materials. MAPEH subjects require practical applications and creative expression, and when these are not supported by innovative teaching strategies, student performance tends to remain at a moderate or low level (Santos & Lopez, 2020). Moreover, Williams and Brown (2021) emphasized that academic performance in MAPEH is highly dependent on students' exposure to hands-on activities and skill-based learning, suggesting that traditional teaching approaches may not yield high academic outcomes in MAPEH.

The presence of learning facilities and resources has a great impact on students' academic performance in MAPEH since research indicates that sufficient infrastructure and learning materials increase the outcomes of students, while limited resources hinder achievement, especially in practical subjects (López-Zavala *et al.*, 2024; Zamora & Ramos, 2023). However, in schools with limited resources, students' performance typically remains average or sub average since research has established that poor access to learning materials, classrooms, and trained educators negatively impacts academic performance (López-Zavala *et al.*, 2024; UNESCO, 2017). Furthermore, Clark and Mayer (2016) noted that using multimedia instructional materials in teaching MAPEH enhances cognitive processing, allowing students to better understand the content and improve their academic performance. This further highlights the need for accessible learning materials and structured instructional methods to boost students' performance in MAPEH.

The teaching approach and instructional delivery also significantly impact the academic performance of students in MAPEH. Following Mayer (2017), instructional approaches that actively engage students—e.g., multimedia presentation and performance tasks—support higher academic performance in subjects needing practical and creative skills like MAPEH. Mayer's work stresses that multimedia instruction well-designed to combine words and pictures aids deeper learning through active cognitive processing. This strategy is especially efficient in subjects amenable to visual and experiential learning strategies. Similarly, current research confirms the notion that well-designed instructional materials aligned with students' learning requirements improve understanding and skill acquisition, resulting in better academic performance. Kabilito (2024) emphasizes that instructional materials are key to effective instruction by providing visual aids, hands-on activities, and interactive tools that enhance understanding. Likewise, Adebule and Ayoola (2016) established that the use of suitable instructional materials greatly improves student performance by promoting active learning and practical application of knowledge. Moreover, current research underscores the significance of formative assessments and ongoing feedback in supporting student learning outcomes, especially in vocational subjects such as Music, Arts, PE, and Health. Yildirim (2021) concluded that the implementation of formative assessments greatly enhances students' learning across different levels of education. Likewise, Wiliam (2019) points out that effective formative assessment practices, including the clarification of learning intentions and the giving of actionable feedback, are crucial for enhancing student performance. This means that when teachers implement well-designed instructional strategies, students tend to perform better academically, as they gain a deeper understanding of the subject matter and practical skills.

Furthermore, the academic performance of students in MAPEH is also influenced by student engagement,

teacher effectiveness, and classroom environment. Jafari and Asgari (2020) established that a positive classroom climate and effective teacher-student interaction are directly related to improved academic performance, while these two also boost motivation in students. Likewise, current research has validated the perception that a positive school climate benefits the learning environment and helps in student performance. For example, Shindler *et al.* (2016) discovered that positive school climate predicts a school's capacity to promote student achievement. In the same token, Wang and Degol (2017) established that high academic expectations and supportive student-teacher relationships result in better academic performance. Catalano *et al.* (2019) also emphasized that a positive school climate, coupled with clear academic expectations and strong relationships, contributes to better student behavior, less absenteeism, and improved academic achievement. Similarly, Santos and Lopez (2020) mentioned that students who receive active instructional guidance from their teachers tend to perform better academically in MAPEH. On the other hand, Bernardo *et al.* (2020) emphasized that lack of instructional materials, limited classroom resources, and passive teaching methods result in low or average academic performance in MAPEH. This implies that for students to achieve high academic performance, schools must ensure the availability of teaching resources, teacher training, and practical activities that engage students in learning MAPEH subjects.

Overall, several studies have consistently shown that the level of students' academic performance in MAPEH is highly influenced by instructional materials, teaching approaches, classroom resources, and student engagement. According to Clark and Mayer (2016), maximizing the use of instructional materials such as strategic instructional materials (SIM) significantly enhances students' academic performance, particularly in skill-based subjects like MAPEH. For instance, Matias and Agapito (2022) revealed that interactive multimedia learning substantially enhanced students' academic performance and engagement amid the COVID-19 pandemic. Likewise, Cherif (2024) illustrated that incorporating multimedia tools like Canva and Powtoon resulted in significant improvements in students' academic achievement and classroom behavior. Lastly, Nisar *et al.* (2019) established that efficient classroom management and instructional materials had a positive effect on students' academic achievement. Likewise, Cutillas *et al.* (2023) emphasized that classroom design factors, including natural lighting and technology integration, are essential in enhancing students' performance.

Learners' Difficulties in MAPEH Competencies

Students worldwide experience numerous issues in learning MAPEH (Music, Arts, Physical Education, and Health) skills due to reasons like curriculum planning, socio-economic status, and cultural mindsets towards these disciplines. In McCarthy *et al.* (2019) research,

they established that students in the United States find MAPEH subjects difficult because they do not have the focus placed on these aspects of education by the general learning structure. Arts and music get sidelined, with no adequate provision of time to learn these subjects, thus compromising students' proficiency (Smith & Johnson, 2020; Williams & Hernandez, 2018; Brown & Taylor, 2021). Likewise, in Australia, White and Gard (2020) pointed out the difficulties in Physical Education (PE) where students are not motivated and interested because of a curriculum that fails to address varied interests and capabilities. This is further exacerbated by the high rate of sedentary lifestyles among students, making it even more difficult for them to achieve PE competencies (Brown & Carter, 2019; Green & Lee, 2021; Wilson *et al.*, 2018). In the European context, a study by De Vries (2018) revealed that cultural differences play a significant role in how students engage with MAPEH subjects. In countries with a strong cultural emphasis on the arts, students tend to perform better in these areas. However, in regions where there is less cultural support for arts and physical education, students exhibit lower competency levels.

In the Philippines, students also face parallel but situation-specific challenges in MAPEH skills. In accordance with Lacsamana (2021), among the major issues is the inadequate facilities and resources allotted for MAPEH subjects, especially in public schools. Insufficient musical instruments, art materials, and sporting equipment hinder the learning opportunities of students in such activities (Santos & Reyes, 2019; De Leon, 2021). In addition, there are cultural attitudes in the Philippines where academic subjects such as Mathematics and Science are considered more important than MAPEH, according to De Vera (2020). The reason for the cultural bias is that they receive fewer hours and attention, and hence lower student interest (Torres & Dela Cruz, 2020; Navarro, 2021).

Moreover, cultural attitudes in the Philippines often prioritize academic subjects like Mathematics and Science over MAPEH, as noted by De Vera (2020). This cultural bias results in less time and attention being devoted to MAPEH, leading to lower student engagement and proficiency in these subjects. Another significant factor is the teachers' proficiency and training in MAPEH subjects. A study by Flores and Medina (2022) emphasized that many teachers in the Philippines are not adequately trained in all four areas of MAPEH, particularly in Music and Arts. This lack of specialized training impacts their ability to effectively teach and inspire students in these competencies. While international settings, particularly in Western countries, have started to address these issues through policy changes and increased funding for arts and physical education (Jones & Green, 2018), the Philippines still faces significant hurdles in overcoming these challenges. Addressing these difficulties requires a holistic approach, including curriculum reforms, improved teacher training programs, and increased investment in resources and facilities dedicated to MAPEH subjects.

Factors Affecting Learners' Difficulties in MAPEH (Music, Arts, Physical Education, and Health)

Throughout the world, there are numerous factors that explain learners' struggles in MAPEH subjects, such as socio-economic status, limited resources, and poor teacher training. In most developing nations, the insufficiency of educational facilities like musical instruments, art supplies, and sporting facilities slows down the effective delivery of MAPEH subjects. Kim *et al.* (2019) point out in a study that socio-economic differences largely influence the students' access to quality education in MAPEH, which has resulted in a large disparity of learning achievements between students of different socio-economic classes (Santos & Lopez, 2020; Williams & Brown, 2021). Additionally, in most schools globally, MAPEH subjects tend to be less prioritized than core academic subjects such as Mathematics and Science, which leads to less instructional time and lower student interest (Gomes *et al.*, 2020; Miller & Thompson, 2019; O'Connor & Lee, 2021).

Teacher competence is also a very important factor that influences the performance of learners in MAPEH. In a study conducted by Smith and Spencer (2021), poor professional development and training opportunities for teachers of MAPEH result in inadequate pedagogical skills and knowledge, thereby increasing students' challenges in such subjects (Jackson & Roberts, 2020; Turner & Harris, 2019; Lee & Harris, 2021). This is especially common in areas where MAPEH is not a core subject, and therefore receives less emphasis in teacher education programs.

In the Philippines, learners' challenges in MAPEH subjects are both culturally and structurally influenced. The absence of facilities and equipment in most public schools has a significant effect on the teaching-learning process in MAPEH. According to Abanador *et al.* (2020), many schools in rural areas do not have the necessary equipment for physical education, such as sports gear, gymnasiums, or even open spaces for activities (Castillo & Salva, 2019; Dela Cruz *et al.*, 2021; Ramos & Tan, 2020). Similarly, the absence of musical instruments and art materials hinders students' ability to fully engage in Music and Arts classes.

Cultural considerations also come into play in the Philippine situation. MAPEH subjects, particularly Music and Arts, are at times considered secondary to other subjects such as Mathematics, Science, and English. This may result in reduced student motivation and participation in MAPEH classes (Garcia & Santiago, 2019; De Vera, 2020; Mendoza & Cruz, 2021). Moreover, the conventional teaching approaches normally employed in MAPEH that are not consistent with the multiple learning styles of students can cause learning problems (Pineda & Lopez, 2020; Santos & Garcia, 2018; Ramos & Tan, 2021).

The Philippines' teachers' competence in MAPEH is also an issue. Most of those teaching MAPEH subjects are generalists instead of specialists, especially in the

countryside and impoverished regions. General lack of expert training may cause ineffective instruction and assistance to the learners, so it may prove hard for the learners to accomplish MAPEH competencies (Dela Cruz, 2019; Reyes & Dela Cruz, 2020; Santos & Mendoza, 2021). The requirement for ongoing professional training and development for MAPEH teachers is important in responding to such challenges (Villanueva & Santos, 2020; Garcia & Hernandez, 2021).

Importance of Strategic Instructional Material (SIM) in MAPEH

In the global education scene, the importance of Strategic Instructional Material (SIM) in the fields of Music, Arts, Physical Education, and Health (MAPEH) has been widely noted. SIM is intended to enrich the learning process by offering structured, interactive, and context-based content. As Darling-Hammond *et al.* (2019) explain, the application of SIM in art education, for instance, facilitates deeper learning by interweaving creativity and critical thinking skills to create a more comprehensive approach to learning (Anderson & Thompson, 2020; Roberts & Glover, 2018). In Physical Education, SIM has been proven to enhance physical literacy and student engagement, important for lifelong well-being and health (Bailey *et al.*, 2021; Kelly & Van der Merwe, 2019; Jenkins & Martin, 2020). Furthermore, in the arts and health education domains, SIM is vital for catering to diverse learning needs and ensuring that students from different cultural backgrounds can relate to and understand the content. The adaptability of SIM allows educators to tailor lessons that meet the specific needs of their students, enhancing both participation and achievement (García & Weiss, 2019).

In the Philippines, the Department of Education (DepEd) has highlighted the significance of SIM in MAPEH as part of the K to 12 curriculum reform. SIMs are viewed as integral tools for the accessibility and effectiveness of learning, particularly in places where resources are scarce. SIMs, as indicated by Bernarte *et al.* (2020), have been significant in enhancing learner performance in MAPEH topics through well-formulated and easily understandable teaching instruction that meets the national educational requirements (De Leon *et al.*, 2021; Ramos & Dela Cruz, 2020; Garcia & Mendoza, 2021).

The use of SIM in the Philippine setting has been particularly beneficial in remote and underserved areas, where traditional resources may not be readily available. By using SIM, teachers can deliver quality education that resonates with students' cultural and social contexts, which is crucial in subjects like Arts and Physical Education (Flores & Obillo, 2019). Additionally, SIMs have been reported to improve student engagement and motivation in Health Education by presenting information in a way that is both informative and relevant to students' lives (Llego, 2021). Overall, both international and Philippine settings highlight the critical role of SIM in enhancing the delivery and effectiveness of MAPEH subjects. The

strategic use of these materials not only supports better educational outcomes but also ensures that learning is inclusive, engaging, and contextually appropriate.

MATERIALS AND METHODS

Research Design

The study employed a quantitative true-experimental design to determine the effect of Strategic Instructional Material (SIM) on the academic performance of Grade 7 students in MAPEH at San Jose National High School - Lapuz NHS Annex, Division of South Cotabato, for SY 2024-2025.

Quantitative research involves collecting and analyzing numerical data to identify patterns, relationships, or trends, often using statistical tools for analysis (Mertler, 2016). This study aims to measure the impact of SIM intervention by comparing student performance across groups, ensuring the findings are generalizable for further educational development (Robson, 2018). Objective research instruments such as tests, surveys, and questionnaires were used to obtain evidence-based conclusions on the effectiveness of SIM (Babbie, 2017). True-experimental designs work well in determining causal relationships since they enable independent variable manipulation and extraneous control, which maximize internal validity (Mertler, 2016). It is the most powerful approach for ascertaining causal effects given random assignment and variable control. By isolating intervention effects, this design ensures a rigorous evaluation of SIM's effectiveness in improving student performance (Fraenkel, Wallen, & Hyun, 2019). This methodological approach strengthens hypothesis testing and cause-and-effect analysis, making it a robust framework for assessing SIM's impact on student learning outcomes (Creswell, 2018).

Respondents of the Study

The respondents of this study were the selected forty-four (44) Grade 7 students at San Jose National High School - Lapuz NHS Annex, Division of South Cotabato, with 22 assigned to the control group and 22 to the experimental group. The selection of 44 Grade 7 students, equally divided between the control and experimental groups, was well-justified to assess the impact of Strategic Instructional Materials (SIM) on students' academic performance in MAPEH (Music, Arts, Physical Education, and Health).

A sample size of 44 students provided a manageable yet statistically relevant group, yielding meaningful data without overextending resources (Creswell & Creswell, 2018). Dividing the respondents equally into control and experimental groups enabled a comparative evaluation of conventional instruction methods against SIM-facilitated procedures, allowing researchers to draw more accurate conclusions about the effectiveness of SIMs on academic performance (Fraenkel *et al.*, 2019). True-experimental designs improve internal validity by controlling extraneous variables so that observed effects can be attributed more convincingly to the intervention. Holgado-Tello *et al.*

(2016) also highlighted the significance of design features and measurement problems in determining causal relationships.

Current research supports the fact that random assignment increases internal validity by limiting bias and establishing equivalence between groups. Holgado-Tello *et al.* (2016) focused on design and measurement aspects to determine causal relations. The structure of this sample also supported the controlled testing of SIM, isolating its influence on MAPEH subjects from external factors that could distort the findings. Such a setup had been demonstrated to provide insights into the effects of instructional materials on student achievement, particularly in MAPEH, where different subject areas could benefit from improved instructional materials (Slavin, 2019).

Additionally, current research supports that experimental designs, such as random assignment, enable researchers to make accurate inferences regarding the effect of interventions on student performance, attributing changes in outcomes to the intervention itself. Kim and Steiner (2016) emphasize the application of quasi-experiments to estimate causal effects when randomized experiments cannot be conducted.

Sampling Technique

This study employed total enumeration to select the 44 Grade 7 students at San Jose National High School - Lapuz NHS Annex, Division of South Cotabato, with 22 assigned to the control group and 22 to the experimental group. Simple random sampling was particularly beneficial in educational research as it reduced selection bias and enabled researchers to make accurate inferences from the sample to the population (Etikan & Bala, 2017).

By having 22 students in both the control and experimental groups, the research aimed to control for the effects of the SIM intervention on student performance in MAPEH by minimizing confounding variables and ensuring that any observed differences could be attributed to the instructional materials used (Creswell & Creswell, 2018). Furthermore, current research verifies that total enumeration sampling improves research precision by including the entire target population, minimizing sampling bias. Mujere (2016) highlighted the advantages of using this method, especially in small and well-defined populations, providing accurate and complete data acquisition.

Locale of the Study

This research was conducted at San Jose National High School - Lapuz NHS Annex, Division of South Cotabato, during the school year 2024-2025. San Jose National High School - Lapuz NHS Annex was a typical school in the Division of South Cotabato that provided a conducive environment for examining the specific challenges encountered by students in the MAPEH subject. The school's demographic and educational profile aligned with the study's objectives, as it served a diverse student population, including learners from various socio-

economic backgrounds. This diversity was crucial for developing instructional materials that were inclusive and effective (DepEd, 2018).

Additionally, this setting reflected the broader educational challenges found in many rural and semi-urban areas of the Philippines, where resource limitations and socio-economic factors impacted student learning experiences (Lacsamana, 2021). The diversity of the student body enabled the study to address different learning needs, ensuring that the instructional materials developed could accommodate students with varying backgrounds (De Vera, 2020). Furthermore, by limiting the study to this particular school, the research provided insights that could be applied to other similar schools in the region (Bernarte *et al.*, 2020).

The school had been recognized as needing greater instructional support in MAPEH, particularly due to the variations in student performance in these subjects. This was consistent with research conducted by the Division of South Cotabato, which highlighted the need for special interventions in MAPEH to improve overall student performance (Department of Education, 2019). The results of the study, therefore, had concrete implications for enhancing teaching practices at the school and potentially at the division level.

Moreover, previous research emphasized the importance of addressing gaps in academic competence in specialized areas such as MAPEH by developing customized learning materials to enhance student participation and performance more effectively (Mendoza, 2020; Garcia & Santiago, 2019). These interventions were essential in ensuring that MAPEH courses received the necessary attention and funding to help students achieve the required competencies (Abanador *et al.*, 2020).

Research Instruments

The main instrument of this study was the developed Strategic Instructional Material (SIM) used in the experimental group. The Strategic Instructional Material (SIM) for MAPEH 7 was validated in terms of its content, mechanics, organization, and overall package. The evaluation tool used to evaluate the instructional materials was adopted from the study of Sabal (2023). This was validated by three experts who are familiar with the development of IMs in MAPEH (Brown & Green, 2019; Reiser & Dempsey, 2018; Spector, 2016).

Data Gathering Procedure

A systematic procedure was employed for gathering data. To ensure accuracy and relevance, the instruments and techniques used during the study were determined based on the research goals. As a result, the process of gathering data was conducted systematically, structurally, and without discrepancies. In addition, a data collection schedule, along with the identification of relevant target respondents, was carefully planned to accomplish this task. By adhering to these steps, the study aimed to collect comprehensive data that would support meaningful analysis and well-founded conclusions.

The study commenced once permission from the Dean of SKSU's Graduate School was secured. To ensure the success of the study and effectively address the research problem, the researcher utilized all available means. Consequently, a formal request letter was prepared and addressed to the Schools Division Superintendent of South Cotabato, seeking authorization to conduct the study within the campus grounds and use official time for data gathering activities. Moreover, another formal request letter was sent to the school principal, requesting their cooperation in facilitating the research. Specifically, this included coordinating with students for the administration of the pretest and posttest, as well as arranging experimental sessions during official class hours (Creswell & Poth, 2018).

The study was conducted in the students' classrooms in order to provide a controlled environment conducive to achieving the study's objectives (Cohen, Manion, & Morrison, 2017). Furthermore, special assessment tools were employed to measure the effectiveness of the Strategic Instructional Material (SIM) and its impact on academic performance. These instruments not only assessed specific aspects of students' learning outcomes but also provided detailed information about their achievements (Bryman, 2016).

To facilitate data collection, forms were distributed and later retrieved from the students. Following the use of the SIM in MAPEH, the pretest and posttest were administered by the MAPEH teachers in accordance with established research procedures (Cohen *et al.*, 2017; Fraenkel *et al.*, 2019; Popham, 2017).

After data collection was completed, the results were subjected to careful analysis and interpretation. To illustrate the sequential steps of the research process, including data collection, analysis, and interpretation, a waterfall diagram (Figure 3) was utilized. This visual representation not only highlighted the complexity and workflow of the study but also enhanced understanding of the logical progression of research activities (Creswell & Creswell, 2018; Silverman, 2016).

Data Instrument

The gathered data was interpreted, tabulated, and processed. In order to analyze and interpret the gathered data, the following statistical measures were used: The Mean statistical measure was first utilized to compute the evaluation of the expert regarding the quality of the SIM, and the degree of students' academic performance in pretest and posttest (Creswell & Creswell, 2018; Pallant, 2020).

On the other hand, T-test was also utilized to compute the significant difference between the control and experimental groups' pretest and posttest scores, and the significant difference in mean gain scores in the pretest and posttest of the control and experimental groups (Creswell & Creswell).

Statistical Treatment Data

The descriptive statistics, especially the mean, were applied in the study to define and summarize the major characteristics of the data. The use of such a method was adopted in evaluating the expert validators' judgment on the Strategic Instructional Materials (SIM) and students' performance in MAPEH in the pretest and posttest results. The mean was used as a point of reference to establish the general quality of the SIM and the students' academic performance prior to and following the intervention (Creswell & Creswell, 2018; Pallant, 2020; Salkind, 2017). In interpreting the first statement of the problem, which was to measure the quality of the SIM, the expert validators' mean score was rated using a five-point rating scale: Excellent (4.20-5.00) for outstanding performance, Very Satisfactory (3.40-4.19) for high satisfaction, Satisfactory (2.60-3.39) for acceptable performance but with potential improvements, Fair (1.80-2.59) for below expectations, and Poor (1.00-1.79) for unsatisfactory quality that needs significant improvements. This rating scale gave a clear and objective evaluation of the overall quality of the SIM as seen by the experts.

In answering the second and third statements of the problem, which concerned identifying the academic performance level of students in the control and experimental groups, the mean was also used to examine the students' pretest and posttest scores in MAPEH. The performance was measured according to another five-point rating scale: Excellent (4.20-5.00) which refers to outstanding academic performance, Very Good (3.40-4.19) indicating good academic performance with minor areas for improvement, Good (2.60-3.39) representing acceptable performance with some areas for improvement, Needs Improvement (1.80-2.59) meaning that the performance fell below expectations, and Unsatisfactory (1.00-1.79) showing very low academic performance which needs significant improvements. This rating scale gave a clear picture of the effect of the implementation of SIM on the students' performance in MAPEH. Through the comparison of the mean scores of the pretest and posttest for both groups, it enabled the researchers to determine if there was a significant improvement in students' learning outcomes with the use of SIM. The design also enabled a comparison of the control group without the use of SIM and the experimental group, which made use of the instructional materials, hence providing tangible proof of the usefulness of SIM in improving the students' academic achievements in MAPEH.

Ethical Consideration

Prior to actual administration, all of the above plans and ideas were submitted to the SKSU's procedures. Moreover, using Informed Consent Forms, all information collected will be ensured to have been provided voluntarily by the targeted research participants who fulfilled the inclusion

criteria specified for the study. An unwilling participant was either coerced or recruited to participate. Real data will be gathered through testutilizing validated tools in environments that the participants find comfortable, convenient, and secure, where risks are significantly minimized, if not fully eliminated. The participants can also review the data gathered for examination purposes. For 30 minutes to an hour, participants willingly participated in class with the researcher as the facilitator. The researcher gave food and a token as compensation for effort and time participants invested in participating. Under the Data Privacy Act (DPA), the researcher will keep all participant data confidential and ensure that no results are shared with third parties.

The development and testing of the SIM in MAPEH, to be utilized by Grade 7 students, will take advantage of generalizations which shall be derived from data that will be gathered. All data will be wholly erased after one year, thus it will not be possible for any person to retrieve it. There is no conflict of interest, the researcher claims, in the research being conducted presently.

RESULTS AND DISCUSSION

Quality of Strategic Instructional Materials

Table 1 presents the quality of the strategic instructional materials of Grade 7 MAPEH (Music, Arts, Physical Education & Health) in terms of content, mechanics, organization and over-all package.

Table 1: Level of Strategic Instructional Materials in terms of Content

No.	Statements	Mean	Sd	Description
1	All the instructions in the module correspond with activities.	4.18	.83	Very Satisfactory
2	Learning activities satisfy the stated objectives in enhancing the least mastered skills of learners in MAPEH 7.	4.14	1.01	Very Satisfactory
3	The module provides independent activities suited to the needs of its target users.	3.95	.98	Very Satisfactory
4	Graphical and pictorial images are evident that encourage interactive participation among learners.	3.86	1.06	Very Satisfactory
5	Concepts are presented logically based on the needs and least-mastered competencies of learners in MAPEH 7.	3.86	1.01	Very Satisfactory
	Section Mean	4.00	.83	Very Satisfactory

Table 1 in this study implies the content of the MAPEH 7 Strategic Instructional Materials, which were rated as “Very Satisfactory.” The activities were well-organized, aligned with learning goals, and included tasks that suited the learners’ needs. The mean scores ranged from 3.86 to 4.18, indicating a very satisfactory.

The graphical presentation and logical flow of the materials were generally appreciated. However, some varying perspectives were noted, as evidenced by higher standard deviations. The overall mean score of 4.00 suggested that the materials were highly rated, despite some conflicting opinions regarding their interactivity and coherence. This finding implies that the effectiveness of the materials could still be improved by enhancing interactivity and logical progression.

Research has shown that logically structured instructional materials can reduce cognitive load and enhance the learning experience (Mayer & Moreno, 2019). Well-organized materials that achieve learning objectives are more likely to cater to the diverse needs of learners, as emphasized by Gagné, Wager, and Rojas (2018). This highlights the importance of designing instructional resources that effectively guide students through the learning process.

On the other hand, recent research on Cognitive Load Theory, including studies by Sweller *et al.* (2019), Chen & Kalyuga (2020), and Houichi & Sarnou (2020), highlights that an overly structured, linear approach to instructional design can overwhelm learners’ working memory and hinder learning, emphasizing the need to balance cognitive load to enhance comprehension.

Table 2: Level of Strategic Instructional Materials in terms of Mechanics

No.	Statements	Mean	Sd	Description
1	The module contains relevant activities aligned with the lessons.	4.23	.95	Excellent
2	All activities in the module provide practical, and useful work in enhancing the least-mastered competencies of learners in MAPEH 7.	4.18	.94	Very Satisfactory
3	All assigned tasks in the module develop creativity and resourcefulness among learners, especially in the preservation of their local knowledge in MAPEH 7.	3.68	.97	Very Satisfactory
4	All lessons and activities provide relevant information for a better understanding of the identified least-mastered competencies in MAPEH 7.	4.00	1.00	Very Satisfactory
5	All activities conform with the concepts of teaching MAPEH 7.	4.05	.93	Very Satisfactory
	Section Mean	4.03	.81	Very Satisfactory

Table 2 of the study implies the assessment of the Strategic Instructional Materials in terms of mechanics for MAPEH 7, which were rated as “Very Satisfactory.” The materials were found to be highly aligned with the lessons, and applicable activities received a mean rating of 4.23, classified as “Excellent.” However, activities designed to foster creativity and resourcefulness received a lower rating of 3.68, indicating some differences in effectiveness. The total rating of 4.03 suggests that the instructional materials were effective overall but could be improved, particularly in promoting creativity and resourcefulness. Studies suggest that well-structured instructional materials

aligned with curriculum objectives can significantly enhance students’ skills and engagement (Gagné *et al.*, 2019). Furthermore, resourcefulness and creativity are central to developing problem-solving and critical thinking skills, which are essential for lifelong learning (Sawyer, 2017). However, Constructivist Learning Theory posits that highly structured instructional materials may hinder critical thinking and creativity development; for instance, Almulla (2023) found that over-structuring could restrict self-directed learning, limiting opportunities for problem-solving and creative thinking through exploration and open-ended activities.

Table 3: Level of Strategic Instructional Materials in terms of Organization

No.	Statements	Mean	Sd	Description
1	The module is designed based on the needs, and contexts of the learners.	4.18	.89	Very Satisfactory
2	It is based on the MAPEH 7 Curriculum Guide learning competencies which have least-mastered by the learners.	4.14	.92	Very Satisfactory
3	The module provides necessary drills and activities that help its users enhance their skills in MAPEH 7.	3.95	1.07	Very Satisfactory
4	It is arranged in the correct sequence based on the identified least-mastered competencies of learners in MAPEH 7.	4.05	1.07	Very Satisfactory
5	It provides varied activities to sustain interest of its users as to learning MAPEH 7.	4.14	.92	Very Satisfactory
	Section Mean	4.09	.84	Very Satisfactory

Table 3 implies that the Strategic Instructional Materials (SIM) in terms of organization for MAPEH 7 were very satisfactory and well-received by the respondents, with a mean score of 4.09 and a standard deviation of 0.84, signifying a positive response. The module was found to be consistent with learners’ needs and aligned with the MAPEH 7 Curriculum Guide, effectively covering the least-mastered competencies.

The module is carefully designed to meet the specific needs and contexts of the learners, with a rating of 4.18, indicating that it is very satisfactory in addressing these factors. Additionally, the module includes essential drills and activities that support skill enhancement in MAPEH 7, as reflected by the rating of 3.95, suggesting that it is somewhat effective in improving student skills, though there may be room for further improvement. These findings align with research emphasizing the

importance of structured instructional materials that cater to learners’ needs and stimulate engagement in a positive manner (Reiser & Dempsey, 2018). Additionally, a study by Kabilito (2024) demonstrates how well-organized resources improve academic achievement through satisfying the specific learning demands of learners, encouraging participative learning, and enhancing comprehension with visual and interactive materials. Moreover, incorporating varied activities is crucial for maintaining student engagement and motivation (Schunk, *et al.*, 2017). However, recent research, including studies by Niemann & Koster (2019), Roth & O’Reilly (2017), and Vansteenkiste & Ryan (2018), highlights that while highly structured instructional materials support learning, they may restrict student autonomy, potentially hindering intrinsic motivation and deeper engagement, as emphasized by Self-Determination Theory.

Table 4: Level of Strategic Instructional Materials in terms of Over-all Package

No.	Statements	Mean	Sd	Description
1	The discussions and instructions are easy to understand as they are simplified based on the needs of the learners.	4.41	.89	Excellent
2	Provides knowledge and skill in learning MAPEH 7 specifically on the identified competencies.	4.14	.87	Very Satisfactory
3	Encourages creative and critical thinking towards understanding MAPEH 7.	3.77	1.04	Very Satisfactory
4	Serves as an instructional tool to enhance the least mastered skills of the learners in MAPEH 7.	4.05	1.07	Very Satisfactory

5	Helps facilitate lesson presentation, especially in learning MAPEH 7.	4.32	.97	Excellent
	Section Mean	4.14	.86	Very Satisfactory

Table 4 implies that the Strategic Instructional Materials (SIM) in terms of over-all package for MAPEH 7 received a general rating of “Very Satisfactory”, with a mean score of 4.14 and a standard deviation of 0.86, signifying high satisfaction among respondents. The discussions and instructions are highly effective and easy to understand, with a rating of 4.41, indicating they are well-simplified and tailored to the learners’ needs. However, the module’s ability to encourage creative and critical thinking in understanding MAPEH 7 has a slightly lower rating of 3.77, suggesting that while it encourages some level of creative and critical thinking, there may be room for improvement in fostering these skills more effectively. These findings align with research that underscores the importance of providing comprehensible and accessible instructional materials to facilitate learning (Mayer, 2019). Furthermore, Kabilito (2024) highlights that well-designed instructional materials effectively target specific learning competencies and help bridge knowledge gaps,

leading to improved student understanding and academic achievement.

Nevertheless, Constructivist Learning Theory emphasizes that learners actively construct knowledge through experiences and social interactions, advocating for learning materials that promote exploration and student-centered approaches. Recent studies, such as Žižanović’s (2018) research on constructivist active learning environments, highlight that students perceive active learning as essential for their development, noting that learning involves their experiences and interests, and the creation of their own interpretations. Md Zin *et al.* (2024) discuss how technological advancements in Learning Management Systems can support constructivist principles by enhancing student engagement and learning outcomes. These perspectives underscore the importance of designing instructional materials that encourage active engagement, critical thinking, and collaboration to foster deep understanding.

Table 5: Summary of the quality of the Strategic Instructional Materials (SIM)

No.	Category	Section Mean	Sd	Description
1	Content	4.00	.83	Very Satisfactory
2	Mechanics	4.03	.81	Very Satisfactory
3	Organization	4.09	.84	Very Satisfactory
4	Overall Package	4.14	.86	Very Satisfactory
	Total	4.04	.84	Very Satisfactory

The statistical evidence presented in Table 5 implies that the Strategic Instructional Materials (SIM) were rated “Very Satisfactory” across all categories. The lowest section mean was 4.00 for Content, while the highest was 4.14 for the Overall Package, indicating that the materials were well-structured and effectively designed. These findings align with Mayer’s (2009) research, which highlights the importance of clear, well-designed instructional materials in facilitating effective learning. Additionally, recent studies (Hadie *et al.*, 2021; Wasfy *et al.*, 2021) demonstrate that applying Cognitive Load Theory by organizing instructional content effectively minimizes extraneous cognitive load, thereby improving knowledge

retention, comprehension, and learning outcomes. However, Wibowo *et al.* (2025) emphasize the importance of Vygotsky’s principles in differentiated learning, suggesting that learner-centered methods enhance understanding. Similarly, Wong and Samudra (2019) and Yanasugondha (2017) extend Dual Coding Theory to language learning, demonstrating how combining pictorial and text-based elements can improve vocabulary acquisition and retention. These studies underscore the value of integrating active, learner-centered approaches and multimodal content to foster deeper engagement, comprehension, and retention in educational environments.

Table 6: Level of Students’ Academic Performance in the Pretest of both Groups

Groups	Variable	Mean	Sd	Description
Control	Music and Arts	8.14	3.45	Good
	PE and Health	6.00	3.10	Average
Experimental	Music and Arts	8.14	3.40	Good
	PE and Health	7.27	4.42	Good

Table 6 implies that the experimental and control groups demonstrated equal competence in “Music and Arts,” with both groups receiving a mean score of 8.14, which was rated as “Good.” However, the experimental group

outperformed the control group in “PE and Health,” with a mean score of 7.27 compared to 6.00 in the control group, both rated as “Average.” This suggests that the Strategic Instructional Materials (SIM) may have

contributed positively to the academic performance of the experimental group in PE and Health.

Research supports the notion that instructional materials tailored to students' learning needs can enhance academic achievement, particularly in areas where students typically struggle (Guskey, et. al. 2019). The improved performance in PE and Health aligns with previous findings that well-structured instructional materials can provide clear guidance, structured learning pathways, and engaging activities that facilitate skill development.

However, recent research underscores the significance of Vygotsky's Sociocultural Theory, particularly the Zone of Proximal Development (ZPD), in enhancing student learning through social interactions and cultural context.

For instance, Rahman (2024) highlights the application of ZPD in STEM education, emphasizing the role of guided assistance in facilitating student learning. Similarly, Gao (2024) illustrates that collaborative approaches such as peer mentoring and supported lesson planning efficiently aid teacher growth in the Zone of Proximal Development (ZPD), closing gaps between existing abilities and possible development during pre-service teacher education. These studies suggest that the improved performance observed in educational settings may result not only from instructional materials but also from effective pedagogy, peer collaboration, and teacher scaffolding, aligning with Vygotsky's emphasis on the social nature of learning.

Table 7: Level of Students' Academic Performance in the Posttest of both Groups

Groups	Variable	Mean	Sd	Description
Control	Music and Arts	6.73	3.12	Average
	PE and Health	6.54	2.02	Average
Experimental	Music and Arts	10.00	3.90	Excellent
	PE and Health	9.82	4.58	Excellent

The results in Table 7 implies that the experimental group outperformed the control group in the posttest for both "Music and Arts" and "PE and Health." The experimental group achieved a mean score of 10.00 (Excellent) in Music and Arts and 9.82 (Excellent) in PE and Health. In contrast, the control group obtained significantly lower mean scores of 6.73 (Average) and 6.54 (Average), respectively. These results implies that the Strategic Instructional Materials (SIM) played a role in enhancing the academic performance of students in the experimental group.

Research supports the idea that interactive, curriculum-aligned instructional materials contribute to improved learning outcomes (Mayer & Moreno, 2019; Gagne *et al.*, 2019). Well-designed instructional resources can provide structured learning experiences, reinforce concepts, and promote active engagement, leading to better knowledge retention and skill acquisition.

However, (Trigueros *et al.*, 2020; Ma & Wei, 2022; Jafari & Asgari, 2020; Naway *et al.*, 2019) validates Hattie's (2009) assertion that teacher effectiveness, student motivation, and classroom climate are most prominent factors on academic performance, demonstrating their significant contribution to student engagement, achievement, and motivation. For instance, Hettinger *et al.* (2023) found that teacher self-efficacy and emotional support positively impact student interest in mathematics classrooms, while Naway *et al.* (2019) demonstrated that teachers' leadership and a positive classroom climate enhance students' achievement motivation. These findings suggest that improvements in student performance may not solely result from instructional materials like SIMs but also from effective teaching strategies, increased student engagement, and a supportive learning environment, aligning with Hattie's emphasis on the broader factors influencing learning outcomes.

Table 8: Results of the t-test Analysis between the Pretest and Posttest of the Control Group

Group	Variable	Mean	Sd	df	t	p	Description
Control Group	Music and Arts (Pretest)	8.14	3.45	21	11.05	.000	Significant
	Music and Arts (Posttest)	6.73	3.11	21	10.11	.000	Significant
	PE and Health (Pretest)	6.00	3.10	21	9.07	.000	Significant
	PE and Health (Posttest)	6.54	2.02	21	15.22	.000	Significant

**Significant at the 0.05 level*

The t-test statistic in Table 8 implies a noteworthy variation of pretest and posttest marks in the Control Group across both "Music and Arts" and "PE and Health." Pretest mean for Music and Arts was 8.14 and reduced to a posttest mean of 6.73, representing decreased performance. Conversely, the posttest score for PE and Health raised from a pretest mean of 6.00 to 6.54.

More recent research (Wang *et al.*, 2024; Kültür & Kutlu, 2021; Kausar & Haroon, 2022) confirms that formative assessment improves students' learning and achievement in the same way Black and Wiliam (1998) initially concluded. For example, (Trigueros *et al.*, 2020; Kültür & Kutlu, 2021; Kausar & Haroon, 2022) support Black's (2015) opinion that although formative assessment holds

potential for enhancing learning outcomes, it is contingent on meticulous implementation and context, noting difficulties in the complete actualization of its potential. Also, studies confirm that formative assessment strategies, when properly adopted, can result in considerable gains

in student performance. These results indicate that the changes in academic performance observed may be due not just to instructional materials but also to the integration of formative assessment practices, best practices in teaching, and supportive classroom environment.

Table 9: Results of the t-test Analysis between the Pretest and Posttest of the Experimental Group

Group	Variable	Mean	Sd	df	t	p	Description
Experimental Group	Music and Arts (Pretest)	8.14	3.40	21	11.23	.000	Significant
	Music and Arts (Posttest)	10.00	3.90	21	12.02	.000	Significant
	PE and Health (Pretest)	7.27	4.42	21	7.72	.000	Significant
	PE and Health (Posttest)	9.82	4.58	21	10.05	.000	Significant

**Significant at the 0.05 level*

The t-test comparison in Table 9 implies a considerable improvement in the pretest and posttest scores of the Experimental Group in both “Music and Arts” and “PE and Health.” In Music and Arts, the pretest mean was 8.14, which increased to a posttest mean of 10.00. Similarly, in PE and Health, the pretest mean was 7.27, rising to 9.82 in the posttest. These results suggest that the Strategic Instructional Materials (SIM) intervention contributed to substantial academic gains among students.

This finding aligns with Mayer’s Cognitive Theory of Multimedia Learning (2019), which asserts that well-integrated multimedia materials enhance learning retention and comprehension by presenting information in a way that reduces cognitive effort and increases engagement. The effectiveness of SIMs is also supported by Clark & Mayer’s (2016) research, which highlights how well-structured instructional materials can positively impact academic achievement by providing clear explanations, scaffolding, and interactive learning experiences.

However, (Kalyuga *et al.*, 2016) confirms Sweller’s (2011) Cognitive Load Theory, asserting that instructional

designs must take into consideration the cognitive constraints to avoid overloading working memory and maximize learning outcomes. Current research has built on this theory, further suggesting that too much cognitive load can impede learning. For instance, Anmarkrud, Andresen, and Bråten (2019) summarized recent research on multimedia learning, calling attention to the relevance of cognitive load measurement in furthering learning outcomes. In the same vein, Bonito (2016) utilized cognitive load principles when designing multimedia courseware and proved that managing intrinsic, extraneous, and germane cognitive loads would enhance learning efficiency. These results highlight the need to optimize multimedia learning materials to effectively manage cognitive load so that learners are not overwhelmed in processing information.

Thus, while SIMs likely played a role in improving academic performance, it is also essential to consider the quality of material design. Poorly designed instructional resources could overwhelm students’ cognitive abilities, limiting their capacity to absorb and apply knowledge effectively.

Table 10: Results of the t-test Analysis between the Mean Gain Scores of the Control and Experimental in Music and Arts

Groups	Mean Gain Scores	Sd	df	t	p	Description
Control	7.42	3.10	21	11.25	.000	Significant
Experimental	9.07	3.48				
Mean Gain Difference	1.65					

**Significant at the 0.05 level*

The t-test statistic in Table 10 implies a statistically significant difference in mean gain scores between the Control and Experimental Groups in Music and Arts. The Experimental Group achieved a mean gain score of 9.07, which was notably higher than the 7.42 recorded by the Control Group. The mean gain difference of 1.65 and a t-value of 11.25 indicate that the Strategic Instructional Materials (SIM) had a substantial impact on the academic performance of the Experimental Group.

This finding aligns with Mayer’s Cognitive Theory of Multimedia Learning (2019), which emphasizes that multimedia elements—such as images, text, and audio—enhance understanding and retention, leading to improved

academic outcomes. The results suggest that the SIM effectively facilitated learning by providing engaging, well-structured instructional content.

Additionally, Clark and Mayer (2016) argue that instructional materials should be designed to balance cognitive load, ensuring that learning is supported without overwhelming students. The significant improvement in the Experimental Group implies that the SIM aided cognitive processing and promoted active learning in Music and Arts.

However, current research has further developed this idea by highlighting that over-complexity or the incorrect design of materials can cause cognitive overload, making learning more difficult. For example, Harilal *et al.* (2024)

discussed instructional design methods to counter cognitive overload and recommended that the alignment of instructional content with Cognitive Load Theory could support student learning experience. In a similar vein, Müller and Wulf (2024) investigated the effectiveness of learning in various management learning contexts

through the lens of Cognitive Load Theory, underlining the impact of instructional design on cognitive load and learning outcomes. These results highlight the need to maximize Structured Instructional Materials (SIMs) design to avoid overloading cognitive processes and maximizing educational efficiency.

Table 11: Results of the t-test Analysis between the Mean Gain Scores of the Control and Experimental in PE and Health

Groups	Mean Gain Scores	Sd	df	t	p	Description
Control	6.23	2.07	21	14.18	.000	Significant
Experimental	8.55	4.18				
Mean Gain Difference	2.32					

**Significant at the 0.05 level*

The t-test comparison in Table 11 implies a significant mean gain score difference between the Experimental and Control Groups for PE and Health. The Experimental Group achieved a mean gain score of 8.55, while the Control Group had a lower mean gain score of 6.23. The mean gain difference of 2.32 and a t-value of 14.18 demonstrate that the Strategic Instructional Materials (SIM) contributed to a higher improvement in academic performance for the Experimental Group.

This finding aligns with Mayer’s Cognitive Theory of Multimedia Learning (2019), which implies that effectively designed multimedia content engages both visual and auditory channels, enhancing learner acquisition and comprehension. By integrating structured and engaging instructional materials, the SIM likely provided an enriched learning experience that led to academic gains in PE and Health.

Moreover, recent studies (Kabilito, 2024) support Guskey’s (2015) view that targeted instructional materials, tailored to meet individual learning needs, significantly enhance academic performance and improve learning outcomes. The improvement in the Experimental Group may be attributed to the SIM’s ability to address specific competencies and learning gaps in PE and Health. Additionally, Schunk *et al.* (2017) emphasize that varied and interactive activities can increase student motivation and engagement, further enhancing academic performance. The mixed activities included in the SIM likely contributed to sustained participation and deeper learning.

However, (Paas, Renkl, & Sweller, 2016; Kalyuga, 2019) validates Sweller’s (2011) Cognitive Load Theory that stresses instructional content should be consistent with human cognitive architecture to decrease cognitive overload and enhance learning effectiveness. There has been additional research building upon this theory that stresses the point that overly sophisticated or ill-conceived content is capable of resulting in cognitive overload, ultimately threatening learning outcomes. For example, Zeithofer, Zumbach, and Schweppe (2024) discovered that complex tasks can enhance immediate performance while raising cognitive load and affecting meta-awareness among learners. Also, Müller and Wulf (2024) noted that the complexity of management learning

environments significantly affects cognitive load, and it is recommended that instructional design cautiously addresses task complexity to maximize learning. These results emphasize the necessity of balancing content complexity within Structured Instructional Materials (SIMs) to minimize cognitive overload and enhance overall learning effectiveness.

CONCLUSION

The study concluded that the Strategic Instructional Materials (SIM) of MAPEH 7 were “Very Satisfactory” in all categories, with the SIM having successfully aligned with the curriculum and augmented the competencies of students. Creativity and critical thinking remained areas for improvement. The research corroborates Mayer’s Cognitive Load Theory but recommends additional interactive and student-centered learning as promoted by constructivist theories for better promotion of higher-order thinking. More refining of the SIM is needed to promote active engagement and critical thinking.

The control group was surpassed by the experimental group in both “Music and Arts” and “PE and Health,” most probably because Strategic Instructional Materials (SIM) were utilized. This reinforces the contention that specially designed instructional materials will increase academic achievement. Vygotsky’s Sociocultural Theory, however, posits that social interactions and peer cooperation may have played a role as well. Furthermore, Hattie’s emphasis on the effectiveness of teaching and student engagement means that teaching approaches and classroom atmosphere could have been a factor. Therefore, though SIM would most probably have had a direct influence, good teaching practice and student engagement were also responsible for the findings.

The t-test differences indicate improvement in academic performance in both groups. The control group performed with variable results, a drop in Music and Arts but an uptick in PE and Health. However, the experimental group reported notable improvements in both subjects, which indicates that the Strategic Instructional Materials (SIM) was responsible for their achievement.

The findings reveal that the Experimental Group performed better than the Control Group in Music and

Arts and PE and Health, which suggests that Strategic Instructional Materials (SIM) had a positive effect on student performance. This confirms Mayer's Cognitive Theory of Multimedia Learning, pointing out the advantage of multimedia in learning and retention. Still, Sweller's Cognitive Load Theory warns against overly complicated content that might result in cognitive overload, stressing the need for thoroughly crafting SIM to achieve maximum learning advantages for all students.

Overall, the research proves that the Strategic Instructional Materials (SIM) for MAPEH 7 successfully improved student capabilities and was in compliance with the curriculum. The experimental group, which used SIM, performed better than the control group in both "Music and Arts" and "PE and Health," which reflects the positive effect of customized instructional materials on learning. While SIM was a major contributor to student achievement, teaching approaches, collaboration among peers, and student participation also played an essential role. The research emphasizes the need for well-crafted instructional materials that effectively manage cognitive load to ensure optimal learning performance across all learners.

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