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# Technology integrated MAPEH instruction: Structuring creativity, movement-based task and multimedia supported program

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ABSTRACT

This research evaluated the integration level of technology utilization in MAPEH instruction curriculum at Cebu City Division, DepEd Region VII, Central Visayas during the School Year 2024-2025, as basis for the Technology Integrated Instruction Program. It used descriptive correlational method of research that the data gathered were used to determine the relationship of status of literacy and numeracy program and the academicperformance. There were twenty (20 teachers and eighty (80) student who were chosen based on the simple sampling random method. Understanding the demographic profile of both teacher and learner respondents is essential in interpreting how technology integration in MAPEH instruction is shaped and experienced within the educational environment. The characteristics of teachers, including age, gender, educational attainment, field of specialization, length of service, relevant trainings, and performance rating. Similarly, the demographic attributes of students, such as age, gender, household income, and parental education, provide insight into the level of access, support, and motivation learners may possess when engaging in technology-integrated lessons. A comprehensive view of these variables establishes an important context that helps explain varying levels of familiarity, confidence, and participation in digital learning activities, especially within a MAPEH setting that demands creativity, movement-based tasks, and multimedia-supported instruction. By examining the relationship between technology utilization across entry, adoption, adaptation, infusion, and transformation stages and student engagement markers such as academic success, knowledge retention, and critical thinking development, this analysis determines if increased digital integration directly correlates with better learner outcomes. Identifying these interaction patterns helps educators and policymakers refine instructional practices to maximize technology's impact while addressing areas where digital interventions do not automatically result in improved engagement. Digital platforms and tools enrich teaching strategies and provide interactive learning experiences, student engagement and learning achievement are influenced by a broader range of factors such as teacher facilitation skills, student intrinsic motivation, digital literacy competencies, learning environment, access to stable internet and devices, and pedagogical alignment of technology with learning goals. Similarly, even sophisticated transformative technologies may not yield deeper cognitive gains if learners lack foundational discipline, self-regulation, or structured teacher guidance. Thus, the results emphasize the importance of focusing not only on what

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technologies are used, but how, with what instructional purpose, and under what learning conditions they are deployed.

Keywords: Development education, Factors Exploring the Integration of Technology in MAPEH Education: Effects on Student Engagement and Learning Outcomes, Descriptive-quantitative research method, Cebu, Philippines.

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## INTRODUCTION

The seamless integration of technology into the curriculum has generated substantial discussion within the educational community as schools respond to the rapid transformation of teaching and learning environments. In an era characterized by continuous technological advancement, technology integration has emerged as a significant force in reshaping traditional educational practices and expanding the possibilities for instruction and learning (Chinta et al., 2023). While conventional educational approaches have historically relied on established pedagogical practices, the increasing availability of digital tools and resources has created new opportunities to enrich educational experiences. Interactive simulations, virtual laboratories, online collaborative platforms, multimedia presentations, and other digital resources can stimulate student interest and create more participatory learning environments (Mishra et al., 2023). These developments suggest that technology should not be viewed simply as an instructional addition but as an increasingly important component of contemporary pedagogy. Consequently, educators and policymakers must critically examine how technology influences both the cognitive and affective dimensions of learning and determine how it can be meaningfully incorporated into specific curricular contexts.Within Philippine basic education, this concern is particularly relevant to Music, Arts, Physical Education, and Health, or MAPEH, where instruction requires the integration of knowledge, creativity, physical activity, performance, and health related competencies. The policy guidelines for MAPEH under the MATATAG Curriculum emphasize a holistic approach to wellness and the development of life skills, citizenship, resilience, and critical thinking within a culture based framework that recognizes diverse perspectives. The curriculum seeks to strengthen learners' physical, artistic, and health related competencies while developing well rounded individuals capable of contributing meaningfully to society and responding effectively to challenges. Technology integration therefore presents considerable potential for MAPEH because digital resources can support the diverse instructional requirements of the learning area, from creative and artistic production to movement-based learning, health education, collaboration, assessment, and multimedia supported learning experiences.

The MATATAG Curriculum (2023) further emphasizes the need for educational responses that enable teachers to become more responsive to changing instructional demands. Within Music and Arts, learners are expected to develop flexibility and resilience through knowledge, comprehension, and application of sustainable creative practices within their communities and environments. The curriculum also recognizes the role of Music and Arts in enabling learners to understand the preservation of history, critically reflect on culture, and continuously create artistic practices that are not confined exclusively to tradition. Such expectations require learning experiences that connect cultural understanding with contemporary modes of expression. Technology can contribute to this process by expanding access to artistic resources, providing new avenues for creative production, and enabling learners to explore and communicate cultural knowledge through digital and multimedia forms.

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Similarly, the Physical Education and Health component of the MATATAG Curriculum recognizes that good health is fundamental to effective learning and academic achievement. It seeks to establish lifelong habits of healthy and active living through the integration of cognitive, psychomotor, and affective skills (MATATAG Curriculum, 2023). Through movement-based learning experiences and challenging yet enjoyable physical activities, learners are expected to acquire both the mindset and skills necessary for lifelong participation in physical activity and the optimization of personal health. The revision of the Physical Education and Health curriculum reflects contemporary educational demands, changing learner needs, emerging health realities, new technologies, and the importance of developing sustainable health habits. One significant feature of the revised curriculum is the integration of Physical Education and Health concepts, an approach increasingly adopted in countries such as Australia, Japan, Canada, China, Germany, and the United Kingdom. This development reflects growing recognition that physical activity and health are interconnected dimensions of holistic wellness rather than isolated areas of learning.

The MATATAG Physical Education and Health curriculum is consequently directed toward the development of physical and health literacy alongside 21st century skills that contribute to the wellbeing of individuals, families, communities, and society. It encourages learners to assume responsibility for their lifelong holistic health while adapting to a varied and rapidly changing social environment. This vision is grounded in the realities confronting Filipino learners, whose wellbeing is affected by challenges extending beyond themselves and their immediate environments. At the same time, the curriculum recognizes the increasing influence of technology and media on how Filipino learners communicate, acquire knowledge, and interact with the world. Physical Education and Health therefore seeks to provide learners with the skills, mindset, resilience, and strength of character necessary to confront difficult circumstances, maintain constructive perspectives, identify opportunities for growth, derive meaning from experience, make informed decisions, and contribute to improving their own lives and those of others. Since maintaining and optimizing health is a continuous lifelong process, learners are also expected to influence their families, relatives, friends, schools, communities, and eventually the broader society.

These curricular expectations underscore the importance of examining technology integration specifically within MAPEH instruction. Although technology provides opportunities for creativity, interaction, movement support, multimedia learning, collaboration, and access to information, its educational value depends on how effectively it is connected with subject content and pedagogical practice. This distinction is particularly important in MAPEH because the learning area involves multiple domains of performance and development that cannot be adequately addressed by technology use alone. Effective integration requires teachers to determine which technological tools are appropriate for particular learning competencies, how such tools can strengthen teaching strategies, and how technology supported experiences can contribute to meaningful student engagement and learning outcomes.

The theoretical foundation of the present study, titled "TECHNOLOGY INTEGRATED MAPEH INSTRUCTION: STRUCTURING CREATIVITY, MOVEMENT-BASED TASK AND MULTIMEDIA SUPPORTED PROGRAM," conducted in selected public secondary schools in the Cebu City Division, Cebu, Philippines, integrates technology specific frameworks with established learning and motivational theories. Collectively, these perspectives provide the theoretical justification for Technology Integrated MAPEH Instruction as the central output of the study. They explain not only the competencies teachers require to integrate technology effectively but also the conditions influencing teacher adoption

and the mechanisms through which technology supported instruction may affect student engagement and learning.

Central to this theoretical foundation is Technological Pedagogical Content Knowledge, or TPACK, developed by Mishra and Koehler (2006). TPACK proposes that meaningful technology integration extends beyond possessing technological knowledge or knowing how to operate digital devices. Effective integration occurs through the interaction of Technology Knowledge, Content Knowledge, and Pedagogical Knowledge. Within MAPEH, teachers must therefore understand not only available technological resources but also how particular technologies correspond with Music, Arts, Physical Education, and Health content and how these resources can be employed through appropriate teaching strategies. The proposed Technology Integrated MAPEH Instruction depends on teachers' capacity to operate within this intersection. TPACK consequently provides an important explanation for why access to technology alone cannot guarantee improved instruction. The pedagogical value of technology emerges when teachers are capable of aligning digital tools with curricular content, instructional objectives, learner needs, and appropriate methods of teaching.

While TPACK explains the knowledge required for meaningful technology integration, the Technology Acceptance Model, or TAM, developed by Davis (1989), provides a complementary explanation of teachers' willingness to adopt and sustain technology use. TAM proposes that an individual's intention to use a technological system is influenced primarily by Perceived Usefulness and Perceived Ease of Use. Perceived Usefulness refers to the belief that technology can improve job performance, such as strengthening instruction or contributing to improved student performance in MAPEH. Perceived Ease of Use refers to the belief that technology can be utilized without excessive effort, such as when tools are straightforward to set up, operate, and troubleshoot. These considerations are especially significant within Philippine public schools, where limited resources, infrastructure, and technical support may influence teachers' capacity and willingness to adopt technology. Facilitating conditions identified in extended applications of TAM therefore become relevant because even technologically competent teachers may encounter contextual constraints that affect implementation.

The relationship between TPACK and TAM establishes an important theoretical distinction in the study. Teachers may possess the knowledge required to combine technology, pedagogy, and MAPEH content, yet successful implementation also depends on whether they regard available technologies as useful and manageable. Conversely, teachers may perceive technology positively but still require sufficient pedagogical and content knowledge to employ it meaningfully. The effectiveness and sustainability of Technology Integrated MAPEH Instruction therefore depend on both professional competence and technology acceptance. Within the Cebu City public secondary school context, the proposed instructional approach must consequently be pedagogically appropriate, relevant to MAPEH competencies, demonstrably useful, and sufficiently manageable for teachers to integrate into actual classroom practice.

Constructivism, associated with Piaget and Vygotsky, further explains how technology supported MAPEH instruction can influence the learning process. Constructivist theory maintains that learners actively construct knowledge and meaning through experience, interaction, reflection, and engagement rather than passively receiving information. Technology can facilitate such learning by providing environments in which students explore, create, collaborate, practice, and receive feedback. In MAPEH, constructivist experiences may include interactive simulations in Health and Physical Education, virtual art galleries and digital portfolio creation in Arts, and collaborative online projects in Music. These activities shift learners from passive recipients toward active participants in learning. Vygotsky's Social Constructivism further emphasizes the importance of social interaction in knowledge

construction, making collaborative digital environments particularly relevant to MAPEH activities that require communication, cooperation, performance, and shared creative production.

Connectivism, advanced by Siemens, extends this perspective to learning within contemporary digital environments. The theory emphasizes that learning occurs through the creation, maintenance, and navigation of networks through which individuals access and exchange knowledge. Technology integration enables students to connect with extensive information resources, interact with peers, participate in collaborative learning environments, and continually update their understanding. In MAPEH, where learners engage with evolving cultural practices, artistic expressions, health information, physical activity resources, and multimedia content, such connectivity can strengthen the relevance and accessibility of learning experiences. Connectivism therefore complements Constructivism by explaining how active knowledge construction increasingly occurs within interconnected digital spaces rather than solely within the physical classroom.

The motivational dimension of technology integration is further explained by Self Determination Theory, or SDT, developed by Deci and Ryan. SDT proposes that intrinsic motivation is strengthened when three fundamental psychological needs are supported: autonomy, competence, and relatedness. Technology Integrated MAPEH Instruction can promote autonomy by allowing learners meaningful choices regarding how they engage with learning activities, such as selecting an editing tool when producing a dance video in Physical Education or choosing an instrument to practice through an interactive application in Music. Technology can strengthen competence through immediate and specific feedback provided by digital quizzes, fitness trackers, and other interactive resources that allow learners to observe their progress and develop a clearer sense of mastery. Collaborative digital activities can likewise support relatedness by creating opportunities for learners to communicate, create, and accomplish tasks with others.

Taken together, Constructivism, Connectivism, and Self Determination Theory explain the learner centered mechanisms through which technology may contribute to educational outcomes. Constructivism emphasizes active and experiential knowledge construction, Connectivism explains learning through access to networks and digital resources, and SDT explains how autonomy, competence, and relatedness can foster intrinsic motivation and engagement. These perspectives suggest that the contribution of technology to MAPEH is not derived merely from the presence of digital devices. Rather, its educational value depends on whether technology creates meaningful opportunities for participation, interaction, creativity, movement, feedback, choice, connection, and mastery. Student engagement thus becomes an important theoretical mechanism through which thoughtfully designed technology supported instruction may contribute to improved learning outcomes.

The theoretical perspectives underpinning the study are reinforced by Philippine legal and policy mandates promoting science, technology, educational relevance, teacher competence, and contemporary pedagogical practice. Article XIV, Section 10 of the 1987 Philippine Constitution mandates the State to give priority to science and technology education, training, and services. This constitutional provision establishes a fundamental basis for strengthening technology within education, including its appropriate integration across curricular areas such as MAPEH. Republic Act No. 10533, otherwise known as the Enhanced Basic Education Act of 2013 or the K to 12 Law, further requires basic education to be contextualized and relevant and to utilize pedagogical approaches responsive to contemporary learning requirements. Technology Integrated MAPEH Instruction supports this mandate by

seeking to strengthen digital literacy and other competencies associated with 21st century learning.

The DepEd Computerization Program, implemented through various Department Orders, provides an operational foundation for technology integration by supplying public schools with technological resources such as computers, projectors, Smart TVs, and related training opportunities. These investments create possibilities for technology supported teaching, but their educational effectiveness ultimately depends on whether teachers are able and willing to translate available resources into meaningful classroom experiences. This concern connects directly with TPACK and TAM because the presence of hardware does not automatically produce pedagogical transformation. Teachers require the knowledge to integrate available tools with content and pedagogy as well as sufficient acceptance, confidence, and facilitating conditions to sustain their use.

DepEd Order No. 42, s. 2017, which provides for the National Adoption and Implementation of the Philippine Professional Standards for Teachers, or PPST, further strengthens the professional basis for the study. Domain 7 addresses teachers' professional development and includes expectations related to the proficient use of Information and Communication Technology in the teaching and learning process. For MAPEH teachers, these expectations reinforce the need to develop the technological, pedagogical, and content competencies described by TPACK. Technology integration therefore represents not merely an optional instructional innovation but an increasingly significant component of professional teaching practice within the Philippine educational system.

International frameworks similarly establish technology as an important instrument for improving educational quality and teacher capacity. United Nations Sustainable Development Goal 4, or SDG 4 on Quality Education, calls for inclusive and equitable quality education and lifelong learning opportunities for all. Technology is internationally recognized as an important means of expanding learning opportunities and addressing educational resource gaps, making its appropriate use particularly relevant to large and diverse educational settings such as Cebu City. UNESCO's ICT Competency Framework for Teachers, or ICT CFT, complements this objective by providing guidance for developing teacher competencies in technology integration. Its emphasis on teacher capacity reinforces the study's focus on the relationship between technological competence, instructional practice, student engagement, and educational outcomes.

Across these curricular, theoretical, legal, and policy perspectives, a common argument emerges. Technology has substantial potential to enrich MAPEH instruction, but meaningful integration requires more than access to digital resources. Teachers must possess the technological, pedagogical, and content knowledge described by Mishra and Koehler (2006), perceive technology as useful and manageable as proposed by Davis (1989), and employ it in ways that promote the active knowledge construction emphasized by Piaget and Vygotsky, the networked learning described by Siemens, and the autonomy, competence, and relatedness identified by Deci and Ryan. These requirements must also operate within the realities of Philippine public schools, where technological infrastructure, professional preparation, institutional support, and other facilitating conditions may influence the extent and quality of implementation.

The literature and theoretical perspectives therefore converge on the potential of technology to support more interactive, relevant, creative, collaborative, and learner centered educational experiences. At the same time, they reveal an important gap between the availability and theoretical promise of educational technology and its contextualized implementation within the multidimensional requirements of MAPEH. Existing perspectives establish the value of technology, teacher competence, acceptance, learner engagement, and institutional support, yet these factors must be examined within specific educational settings to

determine how they can be structured into an instructional approach responsive to actual teacher and learner needs. This gap is particularly relevant to selected public secondary schools in the Cebu City Division, where the demands of the MATATAG Curriculum intersect with the growing role of technology and the practical conditions affecting classroom implementation.

Accordingly, this study addresses a significant research gap by exploring the integration of technology in MAPEH education and examining how technology supported instructional practices can structure creativity, facilitate movement-based tasks, and strengthen multimedia supported learning. It also considers how the resulting evidence can empower school heads and educational leaders to support teachers in improving instructional performance and student outcomes. By situating technology integration within MAPEH content, teacher competence, technology acceptance, learner engagement, and the realities of public secondary education, the study seeks to move beyond the general proposition that technology is beneficial and toward a contextualized understanding of how it can be effectively organized and sustained in MAPEH instruction.

The proposed Technology Integrated MAPEH Instruction is therefore envisioned as a response to both educational theory and contemporary curricular demands. Its development recognizes that effective technology integration must connect creativity with appropriate digital resources, movement-based tasks with meaningful technological support, and multimedia resources with sound pedagogy rather than allowing technology to become an end in itself. The findings are expected to provide a basis for targeted professional development programs and policy reforms intended to create more inclusive, effective, relevant, and responsive educational environments. They may also provide evidence for strengthening teachers' technological and pedagogical competencies, guiding school heads in supporting technology-based instruction, and enhancing student engagement and learning within MAPEH.

Ultimately, the significance of the study lies in its attempt to connect the transformative possibilities of technology with the holistic educational objectives of MAPEH and the MATATAG Curriculum. The theoretical assumptions underlying TPACK, TAM, Constructivism, Connectivism, and Self Determination Theory, together with the mandates of the 1987 Philippine Constitution, Republic Act No. 10533, the DepEd Computerization Program, DepEd Order No. 42, s. 2017, SDG 4, and UNESCO's ICT Competency Framework for Teachers, collectively establish a strong rationale for investigating technology integration within MAPEH. However, these theoretical propositions and policy expectations require empirical examination within the actual conditions of public secondary schools. By investigating these relationships in selected schools in the Cebu City Division, the study seeks to generate evidence that can guide the development of Technology Integrated MAPEH Instruction as a structured, contextually responsive, and theoretically grounded approach to fostering creativity, meaningful movement-based learning, multimedia supported instruction, teacher effectiveness, student engagement, and improved educational outcomes.

## Statement of the problem

This research evaluated the integration of technology in MAPEH instruction at Cebu City Division, DepEd Region VII, Central Visayas, during the School Year 2024-2025 as basis for the Enhanced Technology Integrated Instruction Program.

Specifically, this research answered the following questions:

1. What is the information related to the respondent groups in terms of teachers' age, gender, civil status, highest educational attainment, field of specialization, number of

years in service, relevant trainings and seminars attended, and performance rating, and students' age and gender, household income, and highest educational attainment of parents?
2. As perceived by the respondent groups, what is the level of utilization of technology in MAPEH instruction as to the features of entry, adoption, adaptation, infusion, and transformation?
3. As perceived by the respondent groups, what is the level of student engagement in Technology-integrated MAPEH instruction as to academic success, increased knowledge retention, and critical thinking skills?
4. Is there a significant relationship between the level of utilization of technology in MAPEH instruction and the level of student engagement?
5. What are the challenges relative to the utilization of technology in MAPEH instruction and the level of student engagement?
6. Based on the findings, what Technology Integrated Instruction Program can be structured?

## METHODOLOGY

This study utilized the descriptive-quantitative research method, which is the process of collecting and analyzing numerical data. This design is appropriate because it can be used to find patterns and averages, make predictions, test causal relationships, and generalize results to wider populations, and it gathers information about present existing conditions. Accordingly, the study employed a simple percentage computation to identify the demographic profile of the teachers and their performance, a weighted mean to identify the respondents' performance rating, and an analysis of the significant relationship between the respondents' performance and the challenges they encountered. Lastly, the Colaizzi Method was used to explore and strengthen the gathered data based on the responses of the school heads and teachers from the interview, conducted online or face-to-face (Mc Combes, 2020). This research used the survey questionnaire crafted by the researcher. The research instrument for the respondent groups consisted of three (3) parts. The first part deals with the demographic profile of the respondents in terms of age and gender, marital status, position, highest educational attainment, length of service, field of specialization, number of relevant trainings and seminars attended, and performance rating. The second part describes the level of utilization of technology-integrated in MAPEH curriculum as to entry, adoption, adaptation, infusion, and transformation. The third part of the questionnaire focuses on the level of student engagement involving the learning process and outcomes as to academic success, increased knowledge retention, and critical thinking skills. The fourth part focuses on the challenges and barriers relative to the technology utilization-integrated curriculum and student engagement. The data gathered were analyzed using different statistical tools such as frequency, percentage mean, standard deviation, and other needed tools.

The researcher utilized the System Model Approach (SMA) to assess the teaching-learning situations in this time of pandemic in order to come up with a better decision on the appropriate strategies to enhance the quality of education appropriate to the level of learners. The SMA comprises the Input, Process, and Output approach. Under the Input phase were the demographic profiles of the respondent groups, namely the teachers' age and gender, civil status, position, highest educational attainment, field of specialization, number of years in service, relevant trainings and seminars attended, and performance rating, as well as, for the students, their age and gender, household income, and education of parents. Also included under the Input phase was the perception on the level of utilization of technology-integrated in MAPEH curriculum as to features such as entry, adoption, adaptation, infusion, and

transformation, together with the perception on the level of student engagement involving the learning process and outcomes as to academic success, increased knowledge retention, and critical thinking skills, as well as the significant relationship between the level of utilization of technology-integrated in MAPEH curriculum and the level of student engagement involving the learning process and learning outcomes, and the challenges relative to the technology utilization-integrated curriculum and student engagement. The Process phase focused on data collection, analysis, and interpretation using structured methodologies. Structured survey questionnaires were administered to school leaders, with data collection centered on key strategic leadership dimensions, including vision setting, resource allocation, collaborative planning, and continuous professional development. Furthermore, the challenges faced by school heads in implementing strategic leadership practices were identified and analyzed, and the collected data were subjected to statistical techniques such as descriptive statistics. The Output phase synthesized research findings into evidence-based conclusions and practical recommendations. The study includes recommendations for policy enhancements, leadership training programs, and how a Technology Integrated Instruction Program can be structured. This structured flow ensures a methodical and data-driven approach.

This study is located at Cebu City among the select Public Secondary Schools at Cebu City Division during the School Year 2024-2025, as basis for exploring the Technology Integrated MAPEH Instruction: Structuring Creativity, Movement-based Task and Multimedia Supported Program. Cebu is a province of the Philippines, in the country's Central Visayas region, comprising Cebu Island and more than 150 smaller surrounding islands and islets. Its prosperous port capital, Cebu City, retains landmarks from its 16th-century Spanish colonial past, including the Basilica Minore del Santo Niño church and triangular Fort San Pedro, and Tops, an observation deck on Mt. Busay, offers sweeping views over the city. Cebu City, officially the City of Cebu, is a highly urbanized city in the Central Visayas region of the Philippines. According to the 2024 census, it has a population of 965,332 people, making it the sixth-most populated city in the nation and the most populous in the Visayas and the Central Visayas Region. It serves as the capital of Cebu, wherein it is geographically situated and grouped under the province by the Philippine Statistics Authority, but is one of three cities, together with Lapu-Lapu and Mandaue, that are administratively independent of the provincial government, and it is also the largest city within that province. It also serves as the regional center of Central Visayas, and its metropolitan area exerts influence on commerce, trade, industry, education, culture, tourism, and healthcare beyond the region, over Central and Eastern Visayas and partly over Mindanao. It is the Philippines' main domestic shipping port and is home to about 80% of the country's domestic shipping companies. Additionally, Cebu City is the prime trading center of the southern Philippines. Cebu City is divided into two legislative (congressional) districts, the 1st District (Cebu City North) and the 2nd District (Cebu City South), and the specific district of a given location depends on where it is situated within the city. The 1st District (Cebu City North) includes 46 barangays in the northern part of the city, while the 2nd District (Cebu City South) encompasses 34 barangays in the southern part of the city. The Cebu City Schools Division is likewise divided into the North and South districts, though the exact boundaries of these educational districts are not detailed in the provided data. The Department of Education (DepEd) Cebu City maintains a list of all schools under its jurisdiction on its official website, which serves as a good resource for specific school information and their locations.

The respondents of the study are the teachers and MAPEH 9 students among the select public secondary schools in the Cebu City Division, Cebu, Philippines, who are divided in accordance with the schools with their respective teachers and Grade 9 MAPEH students. The

sample size is defined as the number of observations used for determining the estimations of a given population, and the size of the sample was drawn from the population through random sampling, which is the process of selecting a subset of individuals from the population to estimate the characteristics of the whole population, wherein the number of entities in a subset of a population is selected for analysis. The distribution of the respondent groups shows that Pasil Night High School was represented by 4 teachers and 16 students, for a total of 20 respondents, representing 20% of the total sample; Tisa National High School was likewise represented by 4 teachers and 16 students, for a total of 20 respondents, representing 20%; Don Carlos A. Gothong Memorial NHS was represented by 4 teachers and 16 students, for a total of 20 respondents, representing 20%; Bulacao Community HS was represented by 4 teachers and 16 students, for a total of 20 respondents, representing 20%; and Basak Community HS was represented by 4 teachers and 16 students, for a total of 20 respondents, representing 20%. In total, the five schools yielded 20 teachers and 80 students, for an overall total of 100 respondents, representing 100% of the sample. Thus, for Pasil Night High School and the rest of the respondent schools, each school is represented by 4 teachers and 16 MAPEH 9 students, for a total of 100 or 100% respondents, with each school representing 20% of the total.

The researcher used a descriptive-quantitative research method to gather data using a Likert-type survey questionnaire with five indicators to gather measurable data needed from teacher-respondents. Using these questionnaires would have the advantage of obtaining more honest and correct responses from respondents, as well as ensuring the data's dependability due to its anonymity. The research adapted instruments from recent sources applicable to this undertaking (Dangle, 2020). Part I contains the demographic profile of the respondent groups, showing the basic information of the respondents, such as questions about the age and gender of school heads and teachers, civil status, years of experience in their current role or position, highest educational attainment, the number of seminars or trainings attended related to instructional leadership, the number of teachers they supervise, and their performance rating. Part II covers the teachers' and students' perception of the level of utilization of technology-integrated in MAPEH curriculum, using a 4-point Likert scale with 4 representing the best result, classified as Highly Significant, Significant, Somewhat Significant, and Less Significant. Part III asked questions about the level of student engagement involving the learning process and outcomes, using a 4-point Likert scale with 4 representing the best result, classified as Highly Effective, Effective, Somewhat Effective, and Less Effective. Part IV referred to the perceived challenges and barriers relative to the technology utilization-integrated curriculum and student engagement. Part V, the last section of the questionnaire, addresses the significant relationship between the factors affecting the students' performance in Integrated Art Education and the level of MAPEH students' performance in Integrated Art Education. A series of questions was used in supporting the research study, and self-administered questionnaires were delivered face to face or in paper-pencil test format to 100 respondents among the select public JHS schools of Cebu City Division, comprising 20 teachers and 80 students. All questions were standardized so that all respondents received the same questions with identical wording. In this regard, the instrument consists of four (4) parts, namely: Part I, which contained the demographic profile of the teacher-respondent groups, showing their basic information; Part II, which contained the demographic profile of student-respondents among the select schools of Cebu City Division, Region VII, Central Visayas; Part III, which contained the level of utilization of technology-integrated in MAPEH curriculum as to features; Part IV, which contains the level of student engagement involving the learning process and outcomes; and Part V, which contained the challenges and barriers relative to the technology utilization-integrated curriculum and student engagement.

In gathering the data, the questionnaire was meticulously designed to gather comprehensive data pertinent to the study's objectives. The initial section focused on collecting

demographic and professional background information, including age, gender, civil status, educational attainment, years of service, current position, and participation in relevant training or seminars. The subsequent section aimed to evaluate the level of technology utilization-integrated curriculum and student engagement at Cebu City Division, DepEd Region VII, Central Visayas, during the School Year 2024-2025, and the findings of the research will serve as bases for integrated Technology in MAPEH Instruction. Following the collection of completed questionnaires, the researcher systematically organized and tabulated the data, and appropriate statistical methods were then applied to analyze the information, facilitating the identification of patterns and relationships between the empowerment of school heads and the instructional outcomes observed. The insights derived from this analysis served as the foundation for the study's recommendations, summary, and conclusions, aiming to inform the development of programs and strategies to enhance strategic leadership and instructional quality within the educational setting. Throughout the research process, stringent ethical considerations were upheld. Informed consent was a prerequisite for all participants, ensuring they were fully aware of the study's purpose and their role within it. The research design was carefully crafted to prevent any form of coercion, particularly given the existing professional relationships between the researcher and the participants. Confidentiality was rigorously maintained, with all data being anonymized to protect the identities of the respondents. The study adhered to ethical guidelines as outlined by Fleming (2018), emphasizing the importance of obtaining approval from the human research ethics committee prior to data collection, and this proactive approach ensured that the research was conducted with integrity, respect, and in full compliance with established ethical standards.

The following statistical tools were used to treat the data that are expected to answer the specific problems of the study. Frequency count indicated the actual response of the respondent groups from a specific question in the survey questionnaires. Simple percentage was used to get the profile of the respondent groups, computed by dividing the frequency by the total population of the respondents who answered the survey questionnaires. Standard deviation was used to determine the variability of the respondents' responses. Weighted mean was used to determine the status of the implementation of the teaching strategies and the academic performance of the students, and to establish the weighted mean of the responses in each category, the sum of the number of responses is divided by the total number of respondents of the study.

For the scoring procedure, the researcher used the following criteria to determine the perception on the level of utilization of technology-integrated in MAPEH curriculum as to features: a weight of 4, corresponding to a mean range of 3.26 - 4.00, is classified under the scale as Highly Effective, with the verbal description "Extremely Successful on the utilization of technology-integrated MAPEH Curriculum"; a weight of 3, corresponding to a mean range of 2.51 - 3.25, is classified under the scale as Effective, with the verbal description "Successful on the utilization of technology-integrated MAPEH Curriculum"; a weight of 2, corresponding to a mean range of 1.76 - 2.50, is classified under the scale as Somewhat Effective, with the verbal description "something achieves a positive result on the utilization of technology-integrated MAPEH Curriculum"; and a weight of 1, corresponding to a mean range of 1.00 - 1.75, is classified under the scale as Less Effective, with the verbal description "not achieving the full intended result on the utilization of technology-integrated MAPEH Curriculum." Similarly, for the level of student engagement involving the learning outcomes, the researcher used the following rating scale to determine the academic performance of the students: a mean range of 3.26 - 4.00 corresponds to a scale of 4, with the descriptive rating Outstanding, verbally interpreted as "The Learning outcomes always exceed the subject/class requirements.

The students are exceptional role model"; a mean range of 2.51 - 3.25 corresponds to a scale of 3, with the descriptive rating Very Satisfactory, verbally interpreted as "The Learning outcomes meet and often exceed the subject/class requirements"; a mean range of 1.76 - 2.50 corresponds to a scale of 2, with the descriptive rating Satisfactory, verbally interpreted as "The Learning outcomes meet the subject/class requirements"; and a mean range of 1.00 - 1.75 corresponds to a scale of 1, with the descriptive rating Needs Improvement, verbally interpreted as "The Learning outcomes fail to meet the subject/class performance."

## RESULTS AND DISCUSSION

This chapter presents, analyzes, and interprets the data gathered from self-administered survey questionnaires and virtual interviews involving a total of 100 respondents from selected public junior high schools of the Cebu City Division, comprising 20 teachers and 80 students, drawn through a standardized questionnaire delivered face to face or in paper and pencil test format, wherein all respondents received identical questions with uniform wording across four parts covering teacher demographic profile, student demographic profile, level of utilization of technology-integrated MAPEH curriculum, level of student engagement in the learning process and outcomes, and challenges and barriers relative to technology utilization and student engagement. Data were analyzed using descriptive statistics, including frequency counts, percentages, means, and standard deviations, as well as chi square analysis to determine the significance of relationships between technology utilization and student engagement. The discussion that follows is grounded entirely in the data gathered from the 100 respondents, and all results are interpreted in direct relation to the objectives of the study, which sought to determine the demographic profile of teacher and student respondents, assess the level of technology utilization in the MAPEH curriculum, examine the level of student engagement in the learning process and outcomes, and establish the relationship between technology utilization and student engagement to inform the proposal of contextualized practical learning activities.

With respect to the demographic profile of the teacher respondents, the age distribution revealed that none of the respondents were 51 years old and above (0, 0.00%) or 46 to 50 years old (0, 0.00%), while four respondents (20.00%) were 41 to 45 years old, four respondents (20.00%) were 36 to 40 years old, three respondents (15.00%) were 31 to 35 years old, four respondents (20.00%) were 25 to 30 years old, and five respondents (25.00%) were under 25 years old, out of a total of 20 teacher respondents (100.00%), yielding an average age of 32.90 years with a standard deviation of 7.04. This composition indicates that the teaching workforce is notably composed of younger educators, with 25.00% under 25 years old and another 20.00% aged 25 to 30, suggesting a strong presence of early career teachers likely exposed to more recent teacher training frameworks that emphasize technology integration and digital pedagogies, while only 20.00% fell within the mid-career age bracket of 41 to 45 years old, indicating a generational shift toward a younger teaching population. As noted by Santrock (2019), age is a primary variable in understanding human development across the lifespan, and while age in the teaching profession is often associated with differences in teaching experience and professional growth, Kraft et al. (2019) found that teacher effectiveness is more strongly linked to instructional quality, classroom practices, and ongoing professional development rather than chronological age alone. A relatively young teaching staff implies adaptability to emerging technologies, energy in trying innovative methods, and potential openness to continuous digital learning, although it may also require sustained mentoring, structured professional development, and access to ongoing capacity-building programs to strengthen pedagogical maturity and classroom management aligned with technology-based lessons.

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In terms of gender, eight teacher respondents (40.00%) were male and 12 (60.00%) were female, out of the total 20 (100.00%), reflecting the common national trend where teaching remains a predominantly female profession as defined by the American Psychological Association (n.d.), which describes gender as the socially and culturally defined roles, behaviors, and identities associated with being male, female, or non-binary. Despite the female majority, the 40.00% male representation remains significant, particularly relevant in the context of MAPEH, where physical activities and sports-related instruction are central, and this gender balance can foster a more diverse set of teaching approaches, especially in integrating technology such as fitness applications, multimedia arts tools, and music software that appeal to both genders and support inclusive learning experiences. With regard to civil status, eight respondents (40.00%) were single, 12 (60.00%) were married, and none were separated (0, 0.00%), widowed (0, 0.00%), or single parents (0, 0.00%), out of the total 20 (100.00%), based on the Philippine Statistics Authority's classification of civil status as single, married, widowed, or divorced or separated. This finding suggests that most teachers are married individuals who may balance professional obligations with family responsibilities, often developing stability and prioritization skills that may positively translate into classroom management and structured lesson planning important for technology integration, while the 40.00% who are single may have more time for professional growth activities, experimentation with new digital tools, and flexible adaptation to educational trends.

Regarding highest educational attainment, none of the teacher respondents held a doctorate degree (0, 0.00%), three (15.00%) had units in a doctorate degree, 12 (60.00%) were master's degree graduates, five (25.00%) had units in a master's degree, and none held only a bachelor's degree (0, 0.00%), out of the total 20 (100.00%). This distribution illustrates a highly qualified faculty supporting the implementation of technology-integrated MAPEH instruction, with 60.00% holding master's degrees and an additional 40.00% either pursuing advanced studies, reflecting a strong commitment to professional development and instructional improvement, with teachers likely equipped with knowledge of modern pedagogical innovations and research-based approaches that enhance readiness for digital and blended learning modalities. In terms of field of specialization, none specialized in general education (0, 0.00%), three (15.00%) specialized in Mathematics, 17 (85.00%) specialized in MAPEH, and none specified other fields (0, 0.00%), out of the total 20 (100.00%), indicating strong subject-specific competency and relevant instructional knowledge among the majority, with the remaining 15.00% possibly serving as adjunct MAPEH instructors; this specialization strength supports deeper integration of technology tools suitable for arts, music composition, fitness performance assessment, and health content delivery.

With respect to length of service, none of the respondents had 21 years and above of teaching experience (0, 0.00%), five (25.00%) had 16 to 20 years, eight (40.00%) had 11 to 15 years, four (20.00%) had 6 to 10 years, and three (15.00%) had 5 years and below, out of the total 20 (100.00%), yielding an average length of service of 12.05 years. This average reflects a balanced mix of seasoned educators and mid-career professionals, with the 40.00% having 11 to 15 years of experience implying a group with sufficient experience to understand curriculum delivery while remaining open to innovation, and the 15.00% with fewer than five years representing an emerging workforce likely bringing digital competence and familiarity with technology-assisted instruction. In terms of related trainings and seminars attended, eight respondents (40.00%) attended 10 or more trainings, seven (35.00%) attended 9 to 10, three (15.00%) attended 7 to 8, two (10.00%) attended 5 to 6, and none attended 3 to 4 (0, 0.00%), 1 to 2 (0, 0.00%), or none at all (0, 0.00%), out of the total 20 (100.00%), yielding an average of 21.05 trainings attended. This finding illustrates substantial professional development

engagement, with 75.00% attending nine or more trainings, underscoring strong institutional or personal investment in enhancing teaching competencies and readiness to adopt technology-rich practices with confidence in applying information and communication technology tools in MAPEH learning. Finally, regarding performance rating, one respondent (5.00%) was rated Outstanding, 19 (95.00%) were rated Very Satisfactory, and none were rated Satisfactory, Moderately Satisfactory, or Unsatisfactory (0, 0.00% each), out of the total 20 (100.00%), demonstrating an overwhelmingly high-performing teaching force whose instructional skills, dedication, and discipline support smoother adoption and delivery of technology-based MAPEH instruction.

Turning to the demographic profile of student respondents, in terms of age, 65 students (81.25%) were 14 years old and above, 15 (18.75%) were 13 years old, and none were 12 years old and below (0, 0.00%), out of the total 80 student respondents (100.00%), yielding an average age of 13.81 years with a standard deviation of 0.39. This distribution indicates that most learners possess developing technological familiarity, comfort with mobile and multimedia platforms, and active engagement tendencies aligned with MAPEH's creative and physical learning activities, suggesting digital nativeness and strong potential for interactive, media-rich instructional strategies. With respect to gender, 25 students (31.25%) were male and 55 (68.75%) were female, out of the total 80 (100.00%), highlighting a predominantly female student group that may influence engagement patterns depending on the type of activities used in technology-supported MAPEH lessons, with female students potentially demonstrating higher participation in visual arts and music applications while male students may be more engaged in sports performance technologies, underscoring the importance of recognizing gender-based learning preferences for balanced and inclusive lesson planning.

Regarding household income, 20 students (25.00%) came from households earning P50,000 and above, 45 (56.25%) from households earning P25,000 to P40,000, 10 (12.50%) from households earning P15,000 to P24,000, and five (6.25%) from households earning below P10,000, out of the total 80 (100.00%), yielding an average household income of P33,843.75. This distribution shows that the majority of learners come from lower-middle income families, and while access to personal gadgets may be present, disparities may still exist in terms of connectivity and resource sufficiency, suggesting the need for flexible and device-inclusive learning systems to ensure equal participation in technology-integrated MAPEH lessons. Lastly, in terms of education of parents, five students (6.25%) had parents who were college graduates, 25 (31.25%) had mothers with college level education, 24 (30.00%) had both parents with elementary level education, 18 (22.50%) had mothers with secondary level education, and eight (10.00%) had parents unable to attend school beyond the elementary level, out of the total 80 (100.00%). This finding illustrates that only a small fraction of student parents, 6.25%, completed college, while most attained only elementary or secondary education, suggesting potential limitations in home support for digital learning and indicating that students may rely more heavily on school-based support systems and teacher guidance for navigating online tools and digital assignments, making school technology access crucial for equitable learning.

With regard to the level of utilization of technology-integrated MAPEH curriculum, at the entry level, described using indicators such as using videos for dance or interactive whiteboards for art history (mean = 3.25, SD = 0.4443, Effective), students consuming information or practicing basic skills through digital tools (mean = 3.20, SD = 0.4104, Effective), watching a video demonstration of a physical exercise (mean = 3.45, SD = 0.5104, Highly Effective), listening to a music piece through a recording or using a digital flashcard to learn art terms (mean = 3.40, SD = 0.5026, Highly Effective), and listening to or watching content delivered through technology or working on activities designed to build fluency with basic facts or skills (mean = 3.35, SD = 0.4894, Highly Effective), the average weighted mean was 3.33, described as Highly Effective. This indicates that teachers consistently use basic

technological resources such as videos, audio recordings, and digital flashcards to support student learning in dance, art, music, and health concepts, exposing learners to a broad range of multimedia inputs that complement traditional teaching and make lessons more vivid and motivating, with technology already embedded as a regular instructional tool that builds foundational digital familiarity in preparation for more participatory digital tasks.

At the adoption level, using digital tools for instruction and assessment obtained a mean of 3.20 (SD = 0.4104, Effective), offering features like personalized learning through adaptive technologies obtained a mean of 3.35 (SD = 0.4894, Highly Effective), making learning more inclusive, engaging, and effective by providing real-time feedback obtained a mean of 3.30 (SD = 0.4702, Highly Effective), accommodating diverse abilities and learning styles obtained a mean of 3.50 (SD = 0.5130, Highly Effective), and accepting, integrating, and using new technologies obtained a mean of 3.40 (SD = 0.5026, Highly Effective), yielding an average weighted mean of 3.35, described as Highly Effective. This demonstrates teachers' ability to incorporate digital learning platforms, assessment tools, and adaptive systems into MAPEH instruction, with the inclusion of real-time feedback and personalized learning tools signaling a notable step toward learner-centered digital teaching, reflecting a movement away from traditional lecture-based strategies toward technology-supported individualized learning that benefits students through differentiated activities and digital assessment mechanisms catering to varied performance abilities.

At the adaptation level, using technology to personalize learning for students of diverse abilities and learning styles obtained a mean of 3.45 (SD = 0.5104, Highly Effective), making it more inclusive and equitable obtained a mean of 3.40 (SD = 0.5026, Highly Effective), using adaptive technologies to customize tasks obtained a mean of 3.45 (SD = 0.5104, Highly Effective), providing real-time data and feedback through tools like fitness trackers and video analysis obtained a mean of 3.50 (SD = 0.5130, Highly Effective), and moving beyond one-size-fits-all instruction obtained a mean of 3.25 (SD = 0.4443, Effective), yielding an average weighted mean of 3.41, described as Highly Effective. This reveals a strong ability among teachers to adapt technology to meet varied student needs, with frequent use of adaptive digital tools, fitness monitors, and performance analysis software indicating deeper integration of technology to refine skill practice and performance feedback, empowering learners with more autonomy in using digital resources and enabling tailored digital tasks such as customized dance routines, personalized workout plans, music tempo practice, or visual arts tutorials, though the comparatively lower rating on moving beyond one-size-fits-all instruction suggests room to intensify differentiated teaching strategies and learner-choice digital pathways.

At the infusion level, involving consistent use of technology tools obtained a mean of 3.20 (SD = 0.4104, Effective), deepening and transforming learning tasks beyond simple delivery obtained a mean of 3.30 (SD = 0.4702, Highly Effective), allowing students to apply, analyze, and evaluate content through a variety of technologies obtained a mean of 3.50 (SD = 0.5130, Highly Effective), blending technology with a deep understanding of MAPEH concepts obtained a mean of 3.50 (SD = 0.5130, Highly Effective), and having a range of different technology tools integrated flexibly and seamlessly into teaching and learning obtained a mean of 3.40 (SD = 0.5026, Highly Effective), yielding an average weighted mean of 3.38, described as Highly Effective. This indicates that technology infusion in MAPEH instruction is highly effective, with teachers using technology not merely to supplement learning but as a platform for students to analyze performances, create reflective outputs, and explore deeper artistic and fitness concepts, reflecting an evolved level of instructional practice in which digital platforms blend seamlessly with curriculum objectives and engage students in tasks requiring creativity, interpretation, and higher-order thinking.

At the transformation level, innovative teaching and learning experiences that enhance engagement, assessment, and skill development obtained a mean of 3.45 (SD = 0.5104, Highly Effective), using digital tools like fitness trackers for objective performance data obtained a mean of 3.50 (SD = 0.5130, Highly Effective), virtual tours for art and music exploration and online platforms for dynamic assessments obtained a mean of 3.55 (SD = 0.5104, Highly Effective), creating more inclusive, personalized, and effective learning environments obtained a mean of 3.40 (SD = 0.5026, Highly Effective), and enabling activities that would not be possible otherwise obtained a mean of 3.00 (SD = 0.0000, Effective), yielding an average weighted mean of 3.38, described as Highly Effective. This demonstrates strong movement toward transformative educational practices, with teachers using technology to offer immersive learning opportunities such as virtual art museum tours, digital studio platforms, fitness-tracking devices, and application-based performance assessments, activities traditionally inaccessible in a regular classroom, implying that technology is not only enhancing instruction but also unlocking new learning possibilities, although the comparatively lower mean on enabling activities exclusive to technology suggests a need to further maximize advanced digital innovations such as augmented reality for anatomy, artificial intelligence based music composition tools, or virtual sports simulations.

With respect to the level of student engagement in the learning process and outcomes, in terms of academic success, improving comprehension and motivation though challenges like distractions and access can lower participation obtained a mean of 3.48 (SD = 0.5025, Outstanding), boosting enthusiasm for complex concepts and active participation obtained a mean of 3.31 (SD = 0.4664, Outstanding), focusing on using technology to support learning rather than replace it obtained a mean of 3.36 (SD = 0.4838, Outstanding), successful integration depending on effective teacher training and infrastructure obtained a mean of 3.38 (SD = 0.4872, Outstanding), and offering interactive and personalized learning experiences that boost motivation, participation, and comprehension obtained a mean of 1.90 (SD = 1.4195, Satisfactory), yielding an average weighted mean of 3.09, described as Very Satisfactory. This indicates that technology-integrated MAPEH instruction generally promotes academic success, with most indicators falling under the Outstanding level, showing that digital tools significantly enhance comprehension, motivation, and active participation, and that students perceive technology as a supportive learning partner that enhances lessons without overshadowing traditional instruction. However, the comparatively low mean of 1.90 for one indicator suggests that not all learners consistently experience strong motivation or comprehension benefits, possibly influenced by accessibility issues, distractions, or uneven digital scaffolding, highlighting that while technology fosters engagement and clarity for many students, certain learners may struggle due to home internet limitations, varying digital literacy levels, or difficulty focusing in multimedia environments, emphasizing the importance of teacher competence, well-developed digital systems, and equitable access to devices and stable connectivity.

In terms of increased knowledge retention, making learning more interactive, personalized, and relevant through tools like educational applications, videos, and gamified platforms obtained a mean of 3.38 (SD = 0.4872, Outstanding), promoting active participation linked to better performance and deeper understanding obtained a mean of 3.41 (SD = 0.4954, Outstanding), absorbing information more effectively and thinking critically to perform better academically obtained a mean of 3.50 (SD = 0.5032, Outstanding), collaborating on projects and taking advantage of academic resources to achieve higher grade point averages and retention rates than disengaged peers obtained a mean of 3.50 (SD = 0.5032, Outstanding), and learning more and performing better obtained a mean of 3.19 (SD = 0.3928, Very Satisfactory), yielding an average weighted mean of 3.40, described as Outstanding. This finding indicates that students perceive technology as a strong contributor to knowledge retention, associating

digital tools such as applications, videos, virtual sports drills, and music or art platforms with deeper understanding and improved academic performance, particularly in MAPEH where performance-based learning benefits from visual demonstrations, rhythm practice applications, animated health modules, and interactive dance or fitness videos, with collaboration through digital tools further strengthening retention through shared tasks and feedback loops that promote active engagement and peer-supported learning; the comparatively lower rating of 3.19, though still Very Satisfactory, indicates that consistency in learning quality may vary depending on device availability, student motivation, or internet stability.

In terms of critical thinking skills, increasing student engagement by using interactive tools like digital games and videos obtained a mean of 3.44 (SD = 0.4992, Outstanding), fostering critical thinking skills obtained a mean of 3.25 (SD = 0.5625, Very Satisfactory), empowering students to create projects they could not otherwise obtained a mean of 3.44 (SD = 0.4992, Outstanding), helping students develop digital literacy obtained a mean of 3.48 (SD = 0.5025, Outstanding), and teaching them to navigate platforms, use productivity tools, collaborate online, and communicate effectively in digital environments obtained a mean of 3.50 (SD = 0.5032, Outstanding), yielding an average weighted mean of 3.42, described as Outstanding. This finding shows that technology-enhanced MAPEH learning strongly develops critical thinking, with students acknowledging that digital tools foster analytical thinking, creativity, and problem-solving, skills essential in navigating complex tasks such as composing music digitally, analyzing health data, evaluating choreography, or creating visual artworks using design software, with the highest ratings emphasizing technology's role in shaping digital literacy, online collaboration, and communication competence; although one indicator at 3.25 sits at the Very Satisfactory boundary, this reflects a continued need to scaffold critical thinking prompts so that students use technology as a tool for deeper conceptual exploration rather than relying solely on it for content.

Concerning the significant relationship between the levels of utilization of technology-integrated MAPEH curriculum and the level of student engagement involving the learning process and outcomes, chi square analysis was employed, and results showed that at the entry level, the computed chi square values were 0.526 for academic success ($p = 0.4685$), 0.526 for increased knowledge retention ($p = 0.4685$), and 1.388 for critical thinking skills ($p = 0.4996$). At the adoption level, the computed chi square values were 0.096 for academic success ($p = 0.7573$), 0.096 for increased knowledge retention ($p = 0.7573$), and 0.681 for critical thinking skills ($p = 0.7115$). At the adaptation level, the computed chi square values were 0.011 for academic success ($p = 0.9184$), 0.011 for increased knowledge retention ($p = 0.9184$), and 0.313 for critical thinking skills ($p = 0.8550$). At the infusion level, the computed chi square values were 0.096 for academic success ($p = 0.7573$), 0.096 for increased knowledge retention ($p = 0.7573$), and 0.681 for critical thinking skills ($p = 0.7115$). At the transformation level, the computed chi square values were 0.096 for academic success ($p = 0.7573$), 0.096 for increased knowledge retention ($p = 0.7573$), and 0.681 for critical thinking skills ($p = 0.7115$). Since all computed p values exceed the 0.05 alpha level of significance, the null hypothesis of no significant relationship between the levels of technology utilization and student engagement outcomes was not rejected across all five levels and all three engagement dimensions. This indicates that despite mean scores in the preceding tables showing high to outstanding levels of student engagement and effective technology integration practices, the lack of significant correlation suggests that simply increasing or advancing technology use does not automatically guarantee higher academic success, stronger knowledge retention, or improved critical thinking skills among learners. This finding indicates that while digital platforms and tools enrich teaching strategies and provide interactive learning experiences, student engagement and

learning achievement are influenced by a broader range of factors such as teacher facilitation skills, student intrinsic motivation, digital literacy competencies, learning environment, access to stable internet and devices, and pedagogical alignment of technology with learning goals. For instance, at the entry level, students may benefit from videos and interactive media, but if these tools are not accompanied by guided practice, differentiated tasks, and reflective activities, engagement may remain surface level, and similarly, even sophisticated transformative technologies may not yield deeper cognitive gains if learners lack foundational discipline, self-regulation, or structured teacher guidance. The absence of significant relationships across all levels, from entry to transformation, underscores that technology serves as an enabler rather than a sole determinant of student success, with engagement and higher-order outcomes emerging when technology is thoughtfully integrated with pedagogy, when teachers effectively scaffold learning activities, and when students possess the readiness and motivation to take advantage of digital tools.

Taken together, the findings of this study, drawn from the responses of 100 participants comprising 20 teachers and 80 students from selected public junior high schools of the Cebu City Division, demonstrate that teachers exhibit a youthful, highly credentialed, well trained, and high performing profile, that students are predominantly older adolescents from lower-middle income households with limited parental educational attainment, and that technology utilization across the entry, adoption, adaptation, infusion, and transformation stages of the Technology Integration Matrix is consistently rated Highly Effective, with average weighted means of 3.33, 3.35, 3.41, 3.38, and 3.38 respectively. At the same time, student engagement in academic success, increased knowledge retention, and critical thinking skills was rated Very Satisfactory to Outstanding, with average weighted means of 3.09, 3.40, and 3.42 respectively, yet the chi square analysis revealed no statistically significant relationship between technology utilization at any level and any dimension of student engagement, as all p values exceeded the 0.05 alpha level, resulting in the non-rejection of the null hypothesis throughout. These findings collectively address the objectives of the study by characterizing the demographic profile of teacher and student respondents, establishing the highly effective level of technology integration in the MAPEH curriculum, documenting the very satisfactory to outstanding level of student engagement, and clarifying that technology utilization alone does not statistically determine engagement outcomes, thereby contributing to the literature on educational technology integration by emphasizing that pedagogical facilitation, learner readiness, and equitable access conditions are essential companions to technological advancement in the classroom. These findings, particularly the identified strengths in technology utilization and student engagement alongside the absence of significant statistical relationships between them, set the foundation for the subsequent section of this study, which addresses the challenges and barriers relative to technology utilization and student engagement and informs the development of contextualized practical learning activities responsive to the needs identified in this chapter.

## CONCLUSION

This study examined the integration level of technology utilization in MAPEH instruction within the Cebu City Division of DepEd Region VII, Central Visayas during the School Year 2024 to 2025, involving twenty teachers and eighty students selected through simple random sampling, in order to establish a sound basis for a Technology Integrated Instruction Program. The findings drawn from this investigation lead to the conclusion that while digital platforms and tools meaningfully enrich teaching strategies and provide learners with interactive educational experiences, student engagement and learning achievement cannot be attributed to technology alone. Rather, these outcomes are shaped by a broader constellation of factors, including teacher facilitation skills, student intrinsic motivation, digital literacy

competencies, the overall learning environment, access to stable internet connectivity and devices, and the degree to which technology is pedagogically aligned with clearly defined learning goals.

Building on this understanding, the study further concludes that even the most sophisticated and transformative technologies do not automatically translate into deeper cognitive gains if learners lack foundational discipline, self-regulation, and structured guidance from their teachers. This finding underscores that technology, regardless of its level of sophistication, functions as a tool whose effectiveness is contingent upon the human and contextual factors surrounding its use. Consequently, the results of this research emphasize that meaningful technology integration in MAPEH instruction requires attention not only to what technologies are employed, but more importantly to how they are used, the instructional purposes they serve, and the specific learning conditions under which they are deployed. This insight is particularly relevant given that MAPEH instruction inherently demands creativity, movement-based tasks, and multimedia supported activities, all of which require thoughtful pedagogical design rather than the mere presence of digital tools.

In light of these findings and conclusions, it is recommended that the output of this study, the Technology Integrated Instruction Program, be formally structured and given due consideration for submission to the appropriate higher authorities for approval and implementation. This program is envisioned to enhance student learning by equipping learners with essential 21st century skills, increasing their engagement in classroom activities, and providing more personalized and accessible educational experiences. Through this initiative, the role of the teacher shifts toward that of a facilitator, encouraging students to assume greater responsibility for their own learning while benefiting from interactive experiences, real world connections, and timely feedback made possible through technology. Such an approach is intended to promote active learning, foster collaboration among students, and move instruction beyond traditional passive methods, while also providing personalized and adaptive learning experiences, including accessibility tools for students with disabilities.

The proposed program further aims to develop students' digital literacy and 21st century competencies, particularly critical thinking, problem solving, collaboration, and creativity, while ensuring that the use of technology remains purposeful and closely aligned with defined learning objectives. To this end, it is recommended that teachers be provided with adequate training and resources to effectively model and facilitate technology integration within their instructional practices. The implementation scheme adopts a cyclical process of planning, participation, action, monitoring, and regular review, recognizing that no single blueprint can adequately address the diverse political, historical, cultural, and ecological circumstances that influence local implementation. This process involves identifying areas of concern, articulating clear objectives, designing appropriate strategies and activities, and specifying the persons involved, budgetary requirements, funding sources, timeframes, expected outcomes, and corresponding accomplishments.

Central to this implementation is the continued support of initiatives such as the DepEd Computerization Program, which distributes computer laboratories to secondary schools and e-classrooms to elementary schools while developing students' digital literacy through subjects such as programming and multimedia, alongside professional development opportunities for teachers. It is further recommended that both teachers and learners be provided with adequate technological resources and platforms, such as the DepEd Learning Management System, to ensure accessibility and adaptability in instruction. The proposed training design likewise emphasizes the importance of presenting the study's findings to higher authorities, orienting school administrators and teacher implementers, and conducting monthly coaching and

monitoring and evaluation activities to strengthen instructional supervision. Equally important is the cultivation of collaboration among stakeholders, including school administrators, teachers, learners, parents, and community partners, through regular stakeholder meetings and continuous evaluation processes aimed at refining the implementation of strategic learning activities.

Taken as a whole, this study affirms that the effective integration of technology in MAPEH instruction is a multifaceted endeavor that extends beyond the mere provision of digital tools. It requires a holistic and collaborative approach involving well trained teachers, motivated and self-regulated learners, supportive learning environments, and the active engagement of the broader school community. Through the structured implementation of the Technology Integrated Instruction Program, it is hoped that the Cebu City Division of DepEd Region VII can move toward a more purposeful, sustainable, and pedagogically sound integration of technology, ultimately enhancing the quality of MAPEH instruction and the overall learning outcomes of students.

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