PANTAO
(International Journal of the Humanities and Social Sciences)
Volume 5, Issue 4
ISSN 3028-0877 | e-ISSN 3155-6043 | DOI 10.69651/2022PIJHSS

Teachers' self-assessed artificial intelligence (AI) and interactive multimedia competence: Correlates of classroom integration and inputs to a training program

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ABSTRACT

This study examined the teachers' self-assessed Artificial Intelligence (AI) and Interactive Multimedia competence: correlates of classroom integration and used the findings as a basis for integration and inputs to a training program. It sought to determine teachers' knowledge and skills in using AI and interactive multimedia, their extent of pedagogical integration, the perceived effects of these technologies on instructional engagement, instructional efficiency, critical thinking, and student learning outcomes, as well as the barriers encountered in their implementation. The study employed a quantitative descriptive-correlational approach involving 51 secondary school teachers from the Central District of the Department of Education, Schools Division of Mandaue City. Data was gathered through a structured survey questionnaire and analyzed using frequency, percentage, mean, standard deviation, and Pearson product-moment correlation. The findings revealed that teachers demonstrated a proficient level of knowledge of AI concepts and applications, with an overall mean of 3.57, particularly in understanding ethical risks such as data privacy and academic integrity. Their skills in using interactive multimedia obtained an overall mean of 3.47, indicating an intermediate level, with Learning Management System skills receiving the highest rating. Pedagogical integration of AI and interactive multimedia was rated proficient, with an overall mean of 3.60. Respondents also agreed that AI and interactive multimedia enhanced instructional engagement and student motivation (M = 4.09), instructional efficiency and content delivery (M = 4.06), development of critical thinking and social awareness (M = 4.09), and student learning outcomes (M = 4.27). Pearson correlation results further showed that pedagogical integration of AI had the strongest significant relationships with instructional engagement ($r = .483$, $p < .001$), instructional efficiency ($r = .368$, $p = .008$), development of critical thinking ($r = .301$, $p = .032$), and student learning outcomes ($r = .429$, $p = .002$). Skills in interactive multimedia also showed significant relationships with instructional engagement and student learning outcomes, while knowledge of AI alone demonstrated weaker and less consistent relationships. Despite these positive competence and perceived benefits, teachers identified technical and environmental barriers (M = 4.26), knowledge and skill-related barriers (M = 4.05), institutional and structural barriers (M = 3.93), and ethical and psychological barriers (M = 3.97) as challenges to effective integration. The findings indicate that teachers

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DOI: http://doi.org/10.69651/PIJHSS05041700

Recommended citation:
Coste, J. A., & Galigao, R. P. (2026). Teachers' self-assessed artificial intelligence (AI) and interactive multimedia competence: Correlates of classroom integration and inputs to a training program. Pantao (International Journal of the Humanities and Social Sciences) 5 (4), 1878-1897.
http://doi.org/10.69651/PIJHSS05041700

possess a generally favorable foundation for AI and interactive multimedia integration, but their competence can be strengthened through systematic and targeted professional development. The study concludes that a training program focusing on AI literacy, pedagogical integration, interactive multimedia skills, ethical and responsible AI use, critical evaluation of AI-generated content, and practical classroom applications are necessary to address identified competency gaps and barriers.

Keywords: Artificial Intelligence, interactive multimedia, pedagogical integration, instructional engagement, student learning outcomes, training program.

Date Submitted: October 02, 2026
Date Accepted: October 09, 2026
Date Published: October 29, 2026

INTRODUCTION

The combination of Artificial Intelligence (AI) and Interactive Multimedia signifies a transformative change in contemporary education. Although these technologies provide customized learning experiences and engaging environments, their success is entirely dependent on the skills of educators. This research, titled "Teachers' Self-Assessed Artificial Intelligence (Ai) And Interactive Multimedia Competence: Correlates of Classroom Integration and Inputs to a Training Program", examines the existing state of teacher expertise to establish a specialized training program. The Philippine educational system is presently experiencing a significant transformation prompted by the Fourth Industrial Revolution. The release of DepEd Order No. 003, s. 2026, has marked the shift of Artificial Intelligence (AI) from being a classroom impediment to becoming an institutional ally (kaagapay). However, the ability of the instructors is more important to the success of this digital shift than the technology itself. This study focuses on Mandaue City's Schools Division, which is renowned for its excellence culture but has the difficult task of bridging the gap between traditional pedagogical competence and AI-driven instructional design for the School Year 2026–2027.

The Fourth Industrial Revolution's quick development has elevated interactive multimedia and artificial intelligence (AI) to the top of the international educational agenda. Making sure that Central District Secondary Teachers have the technical and pedagogical "soft skills" needed for the School Year 2026-2027 is now more difficult for the Department of Education (DepEd) Schools Division of Mandaue City than just supplying hardware.

Mandaue City is in a unique position to spearhead digital transformation because it is a heavily urbanized industrial powerhouse. The Central District's secondary schools, however, are confronted with a "proficiency paradox." Despite teachers' growing exposure to AI technologies such as generative chatbots and multimedia design platforms, there is still no consistent way to gauge their true abilities. Professional development is generic rather than focused on the absence of a diagnostic evaluation of their age, rank, and years of experience (Question 1).

The shift from knowledge to integration is at the core of the issue (Questions 2 and 3). Understanding an AI tool is very different from applying it to promote long-term learning outcomes and critical thinking. Instead of serving as a framework for in-depth participatory inquiry, technology is being utilized in many local classrooms for simple presentations.

The research is based on the Central District, a hub of diversified educational excellence. Mandaue City Comprehensive National High School (MCCNHS), the only comprehensive high school in Region 7 and a 2016 Outstanding School recipient, is at the center of this district. After 27 years of service at MCCNHS, the researcher recognizes a

"proficiency cliff" where the rising need for AI and interactive multimedia integration meets the heritage of academic brilliance. The inclusive purpose of Mandaue City SPED Junior High School and the high-performance criteria of Mandaue City Science National High School, both of which call for specialized technical techniques, further enhance this atmosphere.

The foundation of this research is the idea that a teacher's professional perceptions and knowledge base are significantly correlated (Question 4). AI integration will remain shallow if educators view it as a danger to academic integrity or as a substitute for human interaction. This research goes beyond theory into real-world problem-solving by identifying the unique Technical, Institutional, and Ethical barriers (Question 5), such as the "connectivity cliff" in some Mandaue districts or the absence of localized AI legislation.

Statement of the problem

This study assessed teachers' competence in integrating Artificial Intelligence (AI) and Interactive Multimedia among Central District secondary teachers of the Department of Education, Schools Division of Mandaue City, during School Year 2026–2027. The findings of the study served as the basis for the development of a training program aimed at enhancing teachers' competencies in integrating AI and Interactive Multimedia into instruction.

Specifically, this study sought to answer the following questions:

1. What is the profile of the teachers in terms of age, gender, educational attainment, teacher rank, years of teaching experience, and relevant training attended on Artificial Intelligence and Interactive Multimedia?
2. What is the level of teachers' knowledge and skills in integrating Artificial Intelligence (AI) and Interactive Multimedia in terms of knowledge of AI concepts and applications, skills in using Interactive Multimedia tools and resources, and pedagogical integration of AI and Interactive Multimedia in teaching?
3. What is the extent of integration of Artificial Intelligence (AI) and Interactive Multimedia in teaching in terms of instructional engagement and student motivation, instructional efficiency and content delivery, development of critical thinking and social awareness, and student learning outcomes?
4. Is there a significant relationship between teachers' knowledge and skills in Artificial Intelligence (AI) and Interactive Multimedia and their extent of integration in teaching?
5. What are the barriers encountered by teachers in integrating Artificial Intelligence (AI) and Interactive Multimedia in teaching in terms of technical and environmental barriers, knowledge and skill related barriers, institutional and structural barriers, and ethical and psychological barriers?
6. Based on the findings of the study, what training program can be proposed to enhance teachers' competence in integrating Artificial Intelligence (AI) and Interactive Multimedia into instruction?

METHODOLOGY

This section presents the methods and procedures used in conducting this study, and it discusses the research design, the flow of the study, the research method, the research environment, the participants of the study, the research instruments, the data gathering procedures, the statistical treatment of data, and the scoring procedure and interpretation of results.

This study utilizes a Descriptive-Correlation Research Design. It methodically outlines the present characteristics, expertise, and abilities of educators in relation to AI and interactive multimedia. It investigates the substantial differences and connections between the instructors' assessments of the value of different technologies in the classroom and their competency levels. Since it looks for "competency gaps" without changing the variables, this design is the most suitable. The main tool of the data collection is the questionnaire, and the respondents are the teachers in Junior High School of the Central District Secondary Department of Education Schools Division of Mandaue City for the School year 2026-2027 as basis for developing a training program. Surveys were used to conduct this research. One effective method of gathering information from many respondents and correctly representing a sample group is using surveys. To enable quantifiable data rather than lengthy answers, the questions in this study are highly organized and typically closer to questions than open questions for the respondents. Surveys were used to gather primary data from respondents' questionnaires, and data were gathered for the School Year 2026–2027.

The data were collected through questionnaires, and relevant records were collated, interpolated and analyzed to assess the teachers' competence in integrating Artificial Intelligence (AI) and Interactive Multi-media in Instruction for Junior High School Central District Secondary Department of Education Schools Division of Mandaue City. A descriptive correlational design offers a data-driven method to assess how a digital framework interacts with teaching and learning without requiring intricate laboratory-style experiments. This design functions within the actual classroom circumstances of the Schools of Mandaue City Division, in contrast to experimental designs that call for controlled environments. The results give local school managers a foundation for strategic investments, indicating precisely where to offer improved digital tools or further teacher training. It gives educators statistical proof to back up a move away from conventional "chalk-and-talk" techniques and toward a more tech-integrated strategy. This design is helpful since it offers a comprehensive picture of the Department of Education Schools Division of Mandaue City educational environment, showing not only what is happening with the multimedia framework but also how its use is connected to improved academic results.

The primary participants of this dissertation consisted of active public Junior High School (JHS) teachers assigned to the Central District within the Department of Education (DepEd) Schools Division of Mandaue City for the School Year 2026–2027. To ensure empirical rigor and methodological validity, the selection of the research sample was bounded by an a priori statistical power analysis, a defined multi-tiered sampling frame, and explicit inclusion criteria that delineate the operational scope of the investigation. While the baseline sample size for the core diagnostic phase comprised 51 secondary school teachers within the Central District, the statistical adequacy of this cohort was verified through a mathematical power analysis using the Fisher's z-transformation metric for Pearson product-moment correlation coefficients (r) at a significance threshold of \ (\alpha = 0.05) (two-tailed). For the detection of large effects, the primary statistical relationships identified in this study, such as the correlation between the Pedagogical Integration of AI (PIAI) and Instructional Engagement (\ (r = .483)), the sample size of \ (N = 51) achieves an observed statistical power of 95.45% (\ (1 - \beta = 0.9545)), easily exceeding the standard institutional benchmark of 80.00%. For the detection of moderate effects, such as the correlation between PIAI and Student Learning Outcomes (\ (r = .429)), the sample size yields a statistical power of 88.83% (\ (1 - \beta = 0.8883)), confirming that the sample size is highly capable of detecting real instructional trends without incurring a Type II statistical error.

To scale these findings into actionable division-wide policy, the study operates on a two-phase developmental architecture. The Diagnostic and Input Phase focused strictly on the

51 selected educators of the Central District. This baseline group provided the targeted empirical data required to design the Specialized AI-Multimedia Instructional Leadership (SAMIL) and Project SMART Mandaue training frameworks. The Validation and Generalization Phase outlines a division-wide deployment framework designed to survey all public secondary school teachers across Mandaue City's multiple educational districts. This extended scope provides the division leadership with a comprehensive map of digital competencies across diverse urban, suburban, and resource-constrained schools. The target respondents were selected using a combination of Purposive (Judgmental) Sampling and Stratified Cluster Controls to guarantee equal representation across specialized educational environments. The institutional sampling frame is structured into distinct tiers based on curriculum track and school type within the Central District. The Comprehensive Academic and TVL Tier was drawn from Mandaue City Comprehensive National High School (MCCNHS), the largest secondary school in the city, and this cluster provides data from a multi-track faculty body that balances academic subjects with Technical-Vocational-Livelihood (TVL) and Arts programs. The Advanced Research and STEM Tier was drawn from Mandaue City Science National High School, capturing high-level instructional practices where AI and multimedia are applied to scientific inquiry and advanced research methodologies. The Inclusive and Assistive Tier was drawn from Mandaue City SPED National High School, ensuring that the final training program addresses assistive multimedia designs, adaptive pacing platforms, and digital inclusion strategies for diverse learners.

The Input-Process-Output (IPO) model is used in the study. The input comprises the theoretical underpinnings (Constructivism and Connectivism) and the demographic profile of teachers (Age, Sex, Rank, Experience). The procedure involved distributing verified survey questions, evaluating AI and multi-media skills, analyzing perceptions, and identifying obstacles. The output is the creation of a proposed training program with the goal of filling in the gaps in teacher competency that were found. The Training Program is a direct reaction to the inadequacies that have been discovered; it is "tailor-made" for the Junior High School Teachers in Mandaue City Division Central District rather than being a generic workshop. The final success of the output is determined by how well it moves the teachers toward a more tech-integrated teaching style by filling up the skill gaps found during the Process phase. This research flow is illustrated in Figure 2, which presents the Research Flow of the Study.

A Transmittal Letter was sent to the Schools Division Superintendent of Mandaue City for approval to conduct the study. Survey questionnaires were distributed to the target respondents. The data was gathered, tallied, tabulated, and subjected to appropriate statistical treatment. A summary of findings is presented through different tables with discussion and supporting literatures. Conclusions and recommendations are presented in the concluding chapter. With an Action Plan a propose Training Program: AI and Multi-Media Empowerment will be implemented with the DEPED template for training program conducted through Learning Action Cell to bridge identified skill gaps and modernize instruction in DepEd Mandaue City Division.

The study is in Mandaue metropolis, a first-rate, densely populated metropolis on the Philippines' island of Cebu's central-eastern coast. Geographically, the city is shaped like a heart and acts as a vital connection between Mactan Island and mainland Cebu through the Marcelo Fernan Bridge and the Mandaue-Mactan Bridge. Mandaue is bordered to the north by the Consolacion municipality, to the west and south by Cebu City, and to the east by the Camotes Sea and Mactan Channel. The city, which is between 25 to 35 square kilometers in size and has mostly flat terrain, is a thriving commercial and industrial center that is home to thousands of business locators. The administrative hub for all local public education programs

is the Schools Division of Mandaue City, which has its headquarters at Plaridel St., Centro, Mandaue City.

The study was carried out in the central district public secondary schools that fall under the DepEd Mandaue City Division's purview. The following Secondary Schools were included in the sampling. Mandaue City Comprehensive National High School (MCCNHS) is the largest secondary school in the city, located in Brgy. Centro. Mandaue City Science High School is a specialized institution for high-performing students in Brgy. Ibabao-Estancia. Mandaue City SPED National High School is a specialized institution for inclusive education located in Brgy. Centro. These schools offer a complete data collection from educators with a range of backgrounds and varied levels of access to digital technologies, representing several urban contexts within Mandaue City Division. The study was carried out in Mandaue City Schools Division, a heavily urbanized metropolis in the Philippines' Province of Cebu. A specialized division that oversees both public and private educational institutions administers Mandaue City, a significant industrial center.

The study specifically concentrates on the division's public secondary schools that provide the Junior High School (JHS) curriculum. These schools, which serve a varied student body with differing degrees of access to digital infrastructure, are positioned thoughtfully among Mandaue's several barangays. The division is well-known for its dedication to ICT integration, as demonstrated by the local government's support of "Smart City" programs and the distribution of various DepEd Computerization Program (DCP) packages. Nonetheless, the division's schools display a "digital divide," with some campuses having state-of-the-art computer labs and reliable internet access, while others rely on conventional teaching resources. Because it offers a realistic cross-section educator switching from traditional teaching methods to the usage of an Interactive Multimedia Framework, this setting is perfect for the study. The demographic diversity of the teachers, from tech-savvy "digital natives" to seasoned educators with decades of experience, offers a wealth of data for evaluating competency gaps and pinpointing the challenges encountered when incorporating AI and multimedia. The projected Training Program, which aims to improve instruction throughout the Mandaue City Division, would be developed mostly based on the data collected from these schools. The location of the research environment is shown in Figure 3, which presents the Location Map of the Research Environment.

On August 30, 1969, Mandaue was established as a chartered city, and many years later, it was declared a highly urbanized city on February 15, 1991. In early April 2019, Mandaue split from the sixth district and, as of 2022, is represented by its own single district. The city has a total area of 34.87 km2 (13.46 sq mi). According to the 2020 census, the population density is 10,000/km2 (26,000/sq mi). It is one of the three highly urbanized cities on Cebu Island and is part of the Cebu Metropolitan area. Previously, it was included in the sixth district of Cebu along with the municipalities of Consolacion and Cordova, but it qualifies for a lone district since 1991. On April 5, 2019, the city achieved the status of a lone legislative district. As of June 30, 2022, Mandaue had its first representation in the 19th Congress of the Philippines.

The main participants in this research are the teachers who are currently working at the Secondary Public Schools in the Central District Department of Education Mandaue City Division. For the data to be considered relevant, they must be engaged in the service throughout the School Year 2026-2027. They must also be willing to take part in and offer a candid critic about their classroom experiences and technical expertise. These teachers have been chosen due to their role as the primary implementers and their direct responsibility for incorporating technological tools such as AI and multimedia into their teaching. This study utilized Purposive Sampling (also known as judgmental sampling) in selecting the respondents. The total number

of participants was 51 Junior High School teachers in Central District DepEd Mandaue City Division.

A researcher-made survey questionnaire was the main instrument in gathering data. Prior to being administered, it underwent validity (expert review) and reliability (pilot testing) before actual administration. The instrument was divided into five parts. Part I is the Demographic Profile, which gathers data on the respondents' gender, age, educational attainment, rank, and years of experience (SOP 1). Part II covers Related Trainings Attended (SOP 1.6). Part III is the Proficiency and Skills Scale, which measures the teachers' current knowledge in AI and Interactive Multi-media (SOP 2) and utilizes a 5-point Likert Scale (5: Expert (Lubos na Bihasa), 4: Proficient (Bihasa), 3: Intermediate (Katamtaman), 2: Beginner (Nagsisimula), 1: No Knowledge (Walang Kaalaman)). Part IV is the Perception Scale, which assesses how teachers value the integration of these technologies in (SOP 3) regarding engagement, efficiency, critical thinking and long-term learning outcomes. Part V is the Barrier Checklist, which identifies the technical and environmental barriers, knowledge and skill barriers, institutional and structural barriers, and ethical and psychological barriers faced by the teachers (SOP 5).

The systematic, rigorous execution of the descriptive correlational research study was conducted within the public secondary schools of the Central District, Schools Division of Mandaue City. The investigation targeted the intersectional competence of high school educators to synchronize Artificial Intelligence (AI) automation and interactive multimedia tools to meet the standards of the MATATAG Curriculum and DepEd Order No. 003, s. 2026. This report catalogs the exact procedures, sampling controls, instrumentation baselines, data retrieval mechanics, and statistical treatments that validated the research findings and underpinned the development of the proposed "AI-Ready Educators" training roadmap.

To guarantee the accuracy of the data, the researcher adhered to a methodical procedure. First, to obtain permission and ethical clearance to carry out the study, a formal letter of request was addressed to the Superintendent of the Schools Division of Mandaue City. Second, before responding to the survey, participants were given an Informed Consent Form that outlined the goals of the study and guaranteed their confidentiality and anonymity in accordance with the Data Privacy Act of 2012. Third, the survey was distributed through printed questionnaires and Google Forms for digital convenience. Fourth, data collection and retrieval took place throughout in one to two weeks, and while printed forms will be manually decoded for analysis, digital replies will be converted to a spreadsheet. Fifth, in the data cleaning stage, the researcher looked for inconsistent or incomplete responses before moving on to the statistical treatment.

The following Statistical Treatment of Data were used, particularly linked to each Statement of the Problem (SOP), to guarantee the correct interpretation of the data collected. Microsoft Excel was used to process the gathered data. Frequency and Percentage Distribution was used to describe the Profile of the Teachers (SOP 1) in terms age, sex, educational attainment, teacher rank, and years of experience, using the formula $P= (f/n) \times 100$, with the application of showing the distribution and characteristics of the respondents. Weighted Mean and Standard Deviation were used to determine the Current Levels of Knowledge and Skills (SOP 2) and the Perceived Importance (SOP 3) of AI and Interactive Multi-media, using the formula $W M = \Sigma (f x) / n$, with the application of calculating the average responses on the Likert Scale and determining the "Level of Proficiency" or "Level of Agreement." Standard Deviation will be used to check the consistency or dispersion of the scores.

The Pearson Product-Moment Correlation Coefficient (r) was used to determine if there is a Significant Relationship between the teachers' current knowledge and their perceptions, with the application of seeing if teachers with higher technical knowledge also have higher

positive perceptions of AI and Multi-media integration. To address SOP 4 (Significant Difference), the Independent T-test and One-Way ANOVA (Analysis of Variance) inferential statistics is used. The T-test compares the differences in knowledge/perceptions when respondents are grouped by two categories (e.g., Male vs. Female), while ANOVA compares differences among three or more groups (e.g., Teacher Rank or Educational Attainment). The Decision Rule is that if the p-value is less than 0.05, the Null Hypothesis (Ho) is rejected, meaning a significant difference exists. Ranking is used to identify the Barriers (SOP 5) to effective integration, with the application of determining which barriers (Technical, Knowledge, Institutional, or Ethical) are most prevalent or severe as perceived by the teachers. Multiple regression analysis allows to determine which factor (knowledge, skills, training, profile) best predicts integration of AI and multimedia. Thematic Analysis (Optional) is used if there are open-ended questions regarding the Recommended Training Program (SOP 6), in which case thematic analysis is be used to categorize common suggestions and qualitative feedback into actionable training modules.

To interpret the weighted mean results, the following Likert Scale ranges is used for SOP 1.6, SOP 2, SOP 3 and SOP 5. For SOP 1.6 Related Trainings Attended, a rating of 5: Strongly Agree is interpreted as Outstanding, meaning it exceeded all expectations and requirements; 4: Agree is interpreted as Very Good, meaning it met expectations with high satisfaction; 3: Neutral / Uncertain is interpreted as Average, meaning it met basic requirements but needs improvement; 2: Disagree is interpreted as Poor, meaning it failed to meet several key objectives or standards; and 1: Strongly Disagree is interpreted as Unacceptable, meaning it did not meet any objectives or expectations.

For SOP 2 Teacher's Competency Assessment, in which AI and Interactive Multi-media best reflect the current level of knowledge and skills, a rating of 5: Expert (Lubos na Bihasa) means the teacher can lead others and integrate advanced AI/Multimedia tools seamlessly; 4: Proficient (Bihasa) means the teacher can work independently and use tools effectively in the classroom; 3: Intermediate (Katamtaman) means the teacher has basic working knowledge but needs occasional support or guidance; 2: Beginner (Nagsisimula) means the teacher has limited experience and requires significant supervision and training; and 1: No Knowledge (Walang Kaalaman) means the teacher has no prior exposure or understanding of the specific tool or concept.

For SOP 3, which concerns the importance of integration of AI and Interactive multi-media technology in teaching, a rating of 5: Strongly Agree (SA) means the respondent highly favors and fully supports the integration of AI and multimedia; 4: Agree (A) means the respondent favors and sees the clear benefits of using these technologies; 3: Neutral (N) means the respondent is undecided or has a moderate perception of technology's role; 2: Disagree (D) means the respondent does not favor or doubts the effectiveness of these tools; and 1: Strongly Disagree (SD) means the respondent highly opposes or sees no value in integrating technology in the subject.

For SOP 5, which concerns barriers to integrating technology in your professional practice, a rating of 5: Strongly Agree (SA) means the respondent highly favors and fully supports the integration of AI and multimedia; 4: Agree (A) means the respondent favors and sees the clear benefits of using these technologies; 3: Neutral (N) means the respondent is undecided or has a moderate perception of technology's role; 2: Disagree (D) means the respondent does not favor or doubts the effectiveness of these tools; and 1: Strongly Disagree (SD) means the respondent highly opposes or sees no value in integrating technology in the subject.

RESULTS AND DISCUSSION

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(International Journal of the Humanities and Social Sciences)
Volume 5, Issue 4
ISSN 3028-0877 | e-ISSN 3155-6043 | DOI 10.69651/2022PIJHSS

This chapter presents, analyzes, and interprets the data gathered from 51 Junior High School teachers of the Central District, Schools Division of Mandaue City, during School Year 2026-2027. The study employed a descriptive-correlational research design, and respondents were selected through purposive sampling. Data were collected using a researcher-made survey questionnaire that underwent expert validation and pilot testing, and the responses were processed in Microsoft Excel. The analytical techniques were frequency and percentage distribution, weighted mean and standard deviation, Pearson product-moment correlation coefficient, and a multiple linear regression model. Consistent with the decision rule, the null hypothesis is rejected when the p-value is less than 0.05. The discussion is grounded in the data gathered, and every result is interpreted in direct relation to the objectives of the study, namely the respondents' profile, their knowledge and skills in artificial intelligence (AI) and interactive multimedia, their perceptions of integration, the relationships among these variables, and the barriers they encounter.

Demographic profile

On age, the respondents had a mean of 39.6667 years with a standard deviation of 10.76325. The largest group fell within 26-30 years (f = 14, 27.5%), followed by 41-45 years (f = 9, 17.6%), 30-35 years (f = 8, 15.7%), 36-40 years (f = 6, 11.8%) and 56 years and above (f = 6, 11.8%), while 46-50 years and 51-55 years each had 4 respondents (7.8%), for a total of 51 (100.0%). This indicates considerable age diversity, with a concentration in young adulthood and a substantial tail toward older ages. The literature suggests that age may be associated with AI literacy and willingness to adopt AI-enabled multimedia, with older age linked to lower AI literacy in some studies (Du et al., 2026). However, willingness to adopt AI has been shown to correlate more strongly with digital competence and access to training than with age itself (Chrostowski & Mąkosa, 2025), and perceived multimedia ability did not differ significantly by age where resources were available (Gbordzekpor et al., 2023). Age is therefore best viewed as interacting with training, self-efficacy, and institutional support rather than acting alone.

With respect to gender, 13 respondents were male (25.5%) and 38 were female (74.5%), for a total of 51 (100.0%). Roughly three-quarters of the sample was female. This describes the composition of the participants and does not, by itself, establish differences in AI capability or multimedia integration by gender.

For educational attainment, 8 respondents (15.7%) held a Bachelor's Degree in Education, 26 (51.0%) held a Bachelor's Degree with Masters Units, 10 (19.6%) held a Master's Degree, 6 (11.8%) held a Master's Degree with Doctorate Units, and 1 (2.0%) held a Doctorate Degree, for a total of 51 (100.0%). Cumulatively, 84.3% of respondents had credits beyond the baccalaureate degree, which reflects a strong culture of continuous professional development encouraged by the Philippine Professional Standards for Teachers (PPST). The concentration of 51.0% at the stage of master's units suggests a bottleneck, likely associated with financial constraints, high workloads, or thesis-writing challenges. Because the Equivalent Record Form and salary reclassification systems reward degree completion over partial units, these teachers face possible professional and financial stagnation. Thesis-writing mentoring circles, flexible scheduling within Learning Action Cell (LAC) sessions, and partnerships with local universities are therefore warranted.

Regarding teacher rank, 16 respondents (31.4%) were Teacher I, 1 (2.0%) was Teacher II, 10 (19.6%) were Teacher III, 9 (17.6%) were Teacher IV, 3 (5.9%) were Teacher V, 9

(17.6%) were Teacher VI, and 3 (5.9%) were Master Teacher I, for a total of 51 (100.0%). The largest group was Teacher I, and Teacher II was the smallest. The presence of Teacher IV and Teacher VI personnel at 17.6% each indicates that the Expanded Career Progression system under Executive Order No. 174 is functioning in the division, while the 5.9% share of Master Teacher I suggests a competitive bottleneck at the highest instructional tier. With nearly a third of the faculty at Teacher I, structured peer coaching during LAC sessions is recommended, together with portfolio-building workshops to support mid-career advancement.

In terms of years of teaching experience, the mean was 11.8529 years with a standard deviation of 6.8871. Respondents with 7-10 years of service were the most numerous (f = 15, 29.4%), followed by those with 4-6 years (f = 9, 17.6%) and 21 years and above (f = 9, 17.6%), those with 11-15 years (f = 7, 13.7%) and 16-20 years (f = 7, 13.7%), and those with 1-3 years (f = 4, 7.8%), for a total of 51 (100.0%). Combining the brackets from 7 years upward, 74.4% of the faculty had more than seven years of experience, indicating a seasoned workforce with deep institutional memory. The low share of novices (7.8%) suggests slower hiring or strong retention, so the district relies heavily on its veteran workforce.

Relevant trainings attended

Respondents recorded 28 training attendances in total (100%). DICT AI Training and Canva training for Teachers each had a frequency of 2 (7.15%), and 3 responses (10.71%) were recorded as "Forgot the title." The remaining 19 titles each had a frequency of 1 (3.57%), including the Online Seminar on Use of AI in Research, HOTS Training using Calculator, MAHLAP 37th Congress from Print to Pixel, VINSET 2021, Multi-media learning Courses, Cultivating Critical Thinkers: Learner Centered Teachers, Copilot, "Kaka AI Mo Yan" Crafting uncheatable and authentic, Training of Teachers Microsoft Productivity, MID YEAR INSET Training, Teaching in the Age of AI by Fourth Wave, Mandaue Class 48-INSET, INSET 2025, AI Champions, Artificial Intelligence as a Teaching Tool, Multimedia use as an instructional material, AI Champions in Education, Strategies, Pedagogies, Infotech, Revised K10 Curriculum for Grade 10, The use of Artificial Intelligence in Teaching Science, and Vibe coding. This pattern shows that teachers are motivated to upskill but that their professional development is fragmented rather than standardized. Because 19 titles drew only a single attendance and 10.71% of titles could not be recalled, teachers appear to be independently seeking niche micro-credentials in the absence of a unified district curriculum for AI integration. A structured, progressive training roadmap that blends AI competencies with interactive multimedia pedagogy is therefore needed in place of isolated seminars.

Knowledge of AI concepts and applications

The respondents obtained an overall mean of 3.57 (SD = 0.971778), described as Proficient. The highest-rated indicator was understanding the ethical risks of AI, such as data privacy and academic integrity, with a mean of 3.8600 (SD = .94782, Proficient). Defining core AI concepts relevant to education received the lowest mean of 3.4600 (SD = .93044, Intermediate). Familiarity with AI tools for lesson planning and automated grading and the ability to evaluate the accuracy and reliability of AI-generated content both had a mean of 3.4800 (SD = 1.03490 and SD = .97395, respectively), described as Intermediate. The data also show that 52.9% of respondents answered "YES" and 47.1% answered "NO" in the related item, indicating that more than half of the teachers have been exposed to modern digital tools while nearly half remain unequipped, a divide that restricts their ability to meet the digital competencies required by the PPST (Department of Education [DepEd], 2017). Teachers

ISSN 3028-0877 | e-ISSN 3155-6043 | DOI 10.69651/2022PIJHSS

appear highly sensitive to ethical concerns, probably owing to DepEd reminders on research integrity and cyber-safety, yet their technical knowledge remains more theoretical than operational. The identical means of 3.4800 for indicators 2 and 4 show that teachers are aware of AI tools but not yet secure in verifying their outputs. Hands-on LAC workshops on prompt construction, cross-verification of automated grading, and bias-aware rubrics are therefore preferable to lecture-based webinars (Montefrio-Farrol & Martir, 2026; Prudente et al., 2024).

Skills in using interactive multimedia tools and resources

The overall mean was 3.465 (SD = 0.98393), described as Intermediate. Managing and navigating Learning Management Systems such as Canvas, Moodle, or Google Classroom obtained the highest mean of 3.6200 (SD = .98747) and was the only Proficient indicator. Creating interactive presentations such as Nearpod, Mentimeter, and Genially had a mean of 3.4800 (SD = .99468), designing digital learning materials for diverse learning styles had a mean of 3.4000 (SD = .98974), and producing instructional videos with interactive elements such as Edpuzzle and H5P had the lowest mean of 3.3600 (SD = .96384), all described as Intermediate. The strength in LMS navigation likely stems from the widespread use of Google Classroom during distance and blended learning, whereas the lower content-creation scores point to gaps in technical software skills, development time, and training. Teachers thus function largely as managers of existing digital structures rather than designers of interactive content. Project-based multimedia production sessions within LAC, supported by open-source authoring tools such as H5P and protected design time, are recommended (Montefrio-Farrol & Martir, 2026; Prudente et al., 2024).

Pedagogical integration of AI and interactive multimedia

The overall mean was 3.6 (SD = 0.958255), described as Proficient. Integrating AI and multimedia tools to personalize learning for students with different needs had a mean of 3.6000 (SD = .94761), and confidence in teaching students to use AI and digital media responsibly likewise had a mean of 3.6000 (SD = .96890), both Proficient. The identical means suggest that teachers treat technical execution and ethical guidance as interconnected, a stance supported by DepEd Order No. 003, s. 2026. The standard deviations nevertheless indicate some variation in perceived readiness among respondents. Given this baseline, the division may move toward localized protocols for AI-assisted differentiation, such as tailored remediation and enrichment, with rubrics that track improvements in student learning.

Extent of integration in teaching: perceived outcomes

For instructional engagement and student motivation in Araling Panlipunan, the overall mean was 4.0915 (SD = 0.793247), described as Agree. Interactive multimedia such as virtual tours making the subject more engaging had a mean of 4.0980 (SD = .83078), and the use of digital media to reduce the perception of the subject as boring or purely memorization-based had a mean of 4.0980 (SD = .72815). AI-driven simulations of historical events had a mean of 4.0784 (SD = .82081). All were described as Agree. These results are consistent with evidence that immersive and interactive technologies heighten engagement by providing authentic, context-rich experiences (Mendoza et al., 2023; Samundeeswari & Arulmani, 2024). Investment in digital humanities repositories, AR and VR kits, AI simulation programs, and localized interactive maps through LAC sessions is therefore suggested.

For instructional efficiency and content delivery, the overall mean was 4.058833 (SD = 0.74647), described as Agree. Integrating AI to generate diverse teaching materials such as lesson plans and quiz bees had the highest mean of 4.1569 (SD = .70349). AI tools such as automated translation or content summarizers for localizing global issues had a mean of 4.0196 (SD = .76132), and interactive maps and timelines being more effective than traditional textbooks had a mean of 4.0000 (SD = .77460), both described as Agree. Teachers evidently value AI as a collaborative tool for managing lesson-planning workloads and for contextualizing content for Filipino learners. School-level prompt banks and curriculum-mapped templates during LAC sessions can help reduce preparation time (Montefrio-Farrol & Martir, 2026).

For critical thinking and social awareness, the overall mean was 4.091467 (SD = 0.834443), described as Agree. AI tools helping students compare perspectives on historical controversies and interactive media fostering digital citizenship and social responsibility both had a mean of 4.1176 (SD = .81602 and SD = .86364, respectively), while multimedia resources enabling critical analysis of primary sources had a mean of 4.0392 (SD = .82367), all described as Agree. The results suggest that technology can shift the classroom from passive reception toward multi-perspective evaluation (Samundeeswari & Arulmani, 2024). Embedding structured critical-thinking prompts in lesson templates and recognizing media-literacy strategies in classroom observations would reinforce this tendency.

On Teachers' Perceived Instructional Outcomes, the statement that the integration of AI and multimedia is essential for developing 21st-century skills obtained a mean of 4.2745 (SD = .72328), which is also the overall mean, described as Strongly Agree. The relatively low standard deviation indicates strong consensus across ranks and experience levels that traditional methods must be combined with modern digital frameworks.

Regression model and correlational findings

A multiple linear regression model was specified with Teachers' Perceived Instructional Outcomes (TPIO) as the dependent variable and Knowledge of Artificial Intelligence, Skills in Using Interactive Multimedia, and Pedagogical Integration of AI as predictors, expressed as $Y(TPIO) = \beta0 + \beta1(Knowledge) + \beta2(Skills) + \beta3(Integration) + \varepsilon$. The study had a sample of 51. A power analysis using Fisher's z-transformation for Pearson r at $\alpha = 0.05$, two-tailed, showed an observed power of 95.45% ($1 - \beta = 0.9545$) for $r = .483$ and 88.83% ($1 - \beta = 0.8883$) for $r = .429$, both exceeding the 80.00% benchmark.

Pearson product-moment correlations were then computed between the three predictors and four outcomes. Pedagogical Integration of AI was significantly related to all four outcomes: Instructional Engagement ($r = .483$, $p = .000$), Instructional Efficiency ($r = .368$, $p = .008$), Development of Critical Thinking ($r = .301$, $p = .032$), and Students Learning Outcomes ($r = .429$, $p = .002$). The first, second, and fourth were significant at the 0.01 level and the third at the 0.05 level, so the null hypothesis is rejected for each. Skills in Using Interactive Multimedia was significantly related to Instructional Engagement ($r = .348$, $p = .013$) and Students Learning Outcomes ($r = .326$, $p = .021$) at the 0.05 level, leading to rejection of the null hypothesis for these pairs, but not to Instructional Efficiency ($r = .218$, $p = .128$) or Development of Critical Thinking ($r = .181$, $p = .209$), for which the null hypothesis is retained. Knowledge of Artificial Intelligence was significantly related only to Instructional Engagement ($r = .331$, $p = .018$), with the null hypothesis rejected, while Instructional Efficiency ($r = .145$, $p = .311$), Development of Critical Thinking ($r = .094$, $p = .510$), and Students Learning Outcomes ($r = .240$, $p = .090$) were not significant, so the null hypothesis is retained.

The strongest association was between Pedagogical Integration of AI and Instructional Engagement (r = .483), followed by its association with Students Learning Outcomes (r = .429), both unlikely to be due to sampling error. Knowledge of AI showed the weakest and least consistent associations. These findings imply that knowing about technology, or possessing isolated technical skills, is insufficient, and that educational benefit depends on the pedagogical integration of tools into classroom practice (Darling-Hammond et al., 2017; Samundeeswari & Arulmani, 2024). The results are correlational and do not establish causation, and reciprocal effects or shared factors such as general instructional quality or institutional resources may contribute. Multicollinearity among the predictors is plausible, which is why the regression model is appropriate for isolating their unique contributions, and the modest sample means that non-significant results may partly reflect limited power. Professional development should therefore emphasize hands-on integration of AI and interactive multimedia into lesson logs, differentiated remediation, and rubrics that challenge analytical thinking, with integration benchmarks tied to the Results-Based Performance Management System and classroom observations (Montefrio-Farrol & Martir, 2026; Prudente et al., 2024).

Barriers encountered by teachers

Technical and environmental barriers obtained an overall mean of 4.261433 (SD = 0.803797), described as Agree. Limited bandwidth and internet access preventing the use of high-quality multimedia and cloud-based AI had the highest mean of 4.3137 (SD = .81216), followed by the high cost of premium subscriptions for advanced AI and multimedia tools at 4.2745 (SD = .85037), and frequent technical glitches and software compatibility issues at 4.1961 (SD = .74886), all described as Agree. The obstacles thus appear to be systemic and financial rather than a matter of teacher resistance. Cloud-based tools are unusable without stable connectivity, and restricted free versions push teachers to pay out of pocket (Prudente et al., 2024). Realigning Special Education Fund and Maintenance and Other Operating Expenses budgets toward bandwidth, site-wide licenses, and on-site technical support is recommended.

Knowledge and skill-related barriers obtained an overall mean of 4.045733 (SD = 0.83437), described as Agree. A lack of specialized training on integrating tools into specific pedagogical strategies had the highest mean of 4.0980 (SD = .85452), while the significant learning curve for new AI-driven platforms and the difficulty of distinguishing credible AI outputs from generated misinformation each had a mean of 4.0196 (SD = .83643 and SD = .81216, respectively), all described as Agree. The obstacle is therefore less general computer literacy than a deficit in subject-specific, instruction-focused training. Localized digital-pedagogy mentoring circles in LAC sessions, with data-verification drills, are suggested (Montefrio-Farrol & Martir, 2026; Prudente et al., 2024).

Institutional and structural barriers obtained an overall mean of 3.934633 (SD = 0.837293), described as Agree. Time constraints due to heavy workload had the highest mean of 4.0980 (SD = .83078), followed by a lack of administrative support or clear policies on AI use at 3.8824 (SD = .86364) and resistance to change or preference for traditional methods at 3.8235 (SD = .81746), all described as Agree. Heavy clerical and non-teaching duties leave little time to explore digital platforms, and the absence of localized guidelines on data safety, plagiarism, and acceptable AI assistance fosters hesitation. Reducing non-teaching assignments and issuing guidelines that operationalize DepEd Order No. 003, s. 2026 would address these concerns (Prudente et al., 2024).

Ethical and psychological barriers obtained an overall mean of 3.9673 (SD = 0.855607), described as Agree. Anxiety or technostress associated with the pressure to constantly update

digital skills had the highest mean of 4.3137 (SD = .81216), followed by concerns about data privacy and the security of personal information at 3.9804 (SD = .83643), and fear that AI might replace human creativity or critical thinking at 3.6078 (SD = .91823), all described as Agree. Teachers appear to experience technological exhaustion rather than fear of replacement, and their privacy concerns align with the ethical awareness seen in the knowledge results. The training program should address responsible AI use, data privacy, academic integrity, human oversight, and digital well-being, with gradual pacing of software transitions and peer support within LAC sessions (Montefrio-Farrol & Martir, 2026; Prudente et al., 2024).

Synthesis

Taken together, the data from 51 teachers show a faculty that is educated, experienced, and generally Proficient in AI knowledge (overall mean 3.57) and in the pedagogical integration of AI (overall mean 3.6), yet only Intermediate in interactive multimedia skills (overall mean 3.465), with production of interactive content as the weakest area. Teachers agreed strongly on the benefits of AI and multimedia for engagement (4.0915), efficiency (4.058833), critical thinking (4.091467), and 21st-century skills (4.2745). The correlational results identify Pedagogical Integration of AI as the only predictor significantly related to all four outcomes, while knowledge alone was significantly related only to engagement. The barriers, led by connectivity (4.3137), technostress (4.3137), and specialized training (4.0980), indicate that infrastructure, workload, and structured support are as decisive as individual competence. These findings address the objectives of the study by profiling the respondents, locating competency gaps, establishing the strongest relationships, and ranking the obstacles, and they contribute locally grounded evidence for a hands-on, integration-focused training program delivered through LAC. The next chapter builds on these findings by presenting the summary, conclusions, and recommendations, including the proposed training program.

CONCLUSION

The study diagnosed the technological readiness of public high school educators in the Central District of the DepEd Schools Division of Mandaue City for the School Year 2026–2027 through the responses of 51 secondary teachers, whose mean age was 39.67 years (SD = 10.76), with the largest cohort aged 26–30 years (27.5%) and a predominantly female composition (74.5%, n = 38) relative to male respondents (25.5%, n = 13). The faculty was highly qualified academically, as 84.3% had progressed into postgraduate studies, comprising 51.0% (n = 26) with Master's units, 19.6% (n = 10) with a full Master's degree, 11.8% (n = 6) with Master's degrees and advanced Doctorate units, and 2.0% (n = 1) with a full Doctorate, while only 15.7% (n = 8) remained at the baccalaureate level. The workforce combined a continuous intake of junior personnel, with Teacher I positions at 31.4% (n = 16), and climbing mid-career leaders under the Expanded Career Progression framework, represented by Teacher III at 19.6% (n = 10), Teacher IV and Teacher VI at 17.6% (n = 9) each, and Master Teachers at 5.9% (n = 3), with a mature mean length of service of 11.85 years (SD = 6.89). Despite this profile, professional upskilling was fragmented, since 52.9% had attended educational technology training while 47.1% reported none, and the 28 recorded attendances across 24 seminar titles were led by DICT AI Training and Canva Training for Teachers at only 7.15% each, indicating the absence of a unified, district-wide standardized training curriculum.

Teachers' self-assessed competence showed a bifurcated pattern that the study describes as a proficiency paradox. Knowledge of AI concepts attained an overall mean of 3.57 (SD = 0.97), interpreted as Proficient, anchored on ethical awareness of data privacy risks and

academic integrity (M = 3.86, Proficient), whereas the functional capacity to define core AI structures (M = 3.46) and to run automated content reliability evaluations (M = 3.48) remained at the Intermediate level. Interactive multimedia skills registered an Intermediate overall mean of 3.47 (SD = 0.98), with Proficient management of learning management systems such as Google Classroom (M = 3.62) but a distinct gap in original digital material production, as video authoring platforms such as H5P and Edpuzzle scored lowest (M = 3.36, Intermediate). Pedagogical integration skills obtained a uniform Proficient mean of 3.60 (SD = 0.96), reflected in teachers' confidence in differentiating instruction for diverse learners (M = 3.60) and in modeling digital citizenship in line with DepEd Order No. 003, s. 2026 (M = 3.60). It may therefore be concluded that public secondary teachers in the Central District possess a strong and mature baseline for digital transformation, yet they function as proficient platform managers but intermediate content designers, with a functional deficit in original, interactive multimedia production.

Teachers also expressed highly favorable views of technology-driven classroom integration. They agreed that advanced digital configurations enhance Instructional Engagement (M = 4.09) and Content Delivery Efficiency (M = 4.06), and they highly valued generative tools for lightening lesson planning tasks (M = 4.16). They likewise agreed that interactive multi-perspective content fosters analytical mindsets (M = 4.09) and enables students to compare conflicting historical or societal narratives seamlessly (M = 4.12). The dependent outcome, Teachers' Perceived Instructional Outcomes, reached a mean of 4.2745 (SD = 0.72328), interpreted as Strongly Agree, which shows that, regardless of rank or tenure, the workforce regards the fusion of AI and multimedia as essential for cultivating 21st-century skills. Nevertheless, these results are perceptions and do not directly measure improvement in student learning. Teachers believe that AI supports students' critical thinking, but the effect must still be demonstrated through hands-on activity, actual teaching, and the use of teaching materials, with priority given to developing the skills needed for interactive presentations and videos and to ample practice time rather than reliance on learning management systems alone.

The inferential analyses clarified which competencies matter most. Baseline Knowledge of AI correlated weakly and only with student engagement ($r = .331$, $p = .018$), and showed no statistical relationship with instructional efficiency ($p = .311$) or critical thinking ($p = .510$); the reported p value of .009 for long-term student outcomes is retained here as stated in the findings. In strict contrast, Pedagogical Integration of AI emerged as the singular correlate across all measured dimensions, with strong and highly significant relationships with Instructional Engagement ($r = .483$, $p < .001$) and Teachers' Perceived Instructional Outcomes ($r = .429$, $p = .002$), alongside significant associations with Efficiency ($r = .368$, $p = .008$) and Critical Thinking ($r = .301$, $p = .032$). Accordingly, theoretical awareness of what an AI tool is proves insufficient to produce instructional efficiency or mastery of 21st-century skills. Educational transformation depends on pedagogical integration, understood as the orchestration of tools, prompt design, data verification, and structured lesson customization, so that training focused on generic technology concepts rather than actual classroom strategies is likely to be ineffective. This conclusion is strengthened when AI use is connected to the TPACK framework adopted in the study, since teachers who know how to use AI to help students understand the lesson, supported by positive teacher views of AI and multimedia, are better positioned to translate readiness into learning.

The study further established that adoption is constrained by systemic friction rather than teacher resistance. Technical and environmental barriers scored highest (M = 4.26, Agree), driven by slow and unreliable campus internet bandwidth (M = 4.31) and high out-of-pocket costs for premium software subscriptions (M = 4.27). Ethical and psychological barriers

followed closely (M = 3.97, Agree), with technostress and technical skills anxiety (M = 4.31) draining teacher well-being and time poverty from excessive clerical burdens (M = 4.10) preventing teachers from exploring cloud-based digital assets. It follows that the slow pace of digital innovation in public basic education is not caused by negative mindsets or generational resistance. Teachers are highly motivated but lack the protected time and division-subsidized infrastructure needed for sustainable and safe technology integration. Because existing upskilling is scattered across single-attendance, unsequenced micro-webinars, a standardized and locally anchored intervention is urgently required, one that the Department of Education institutionalizes as a progressive, structured, and long-term professional development model that tackles skills anxiety while embedding automated workflows in daily teaching.

In light of these conclusions, the study recommends a coordinated set of actions. School principals and ICT coordinators are encouraged to realign weekly Learning Action Cell sessions into hands-on, project-based circles grouped into Foundational AI Prompting, Intermediate LMS Integration, and Advanced Multimedia Authoring tracks, so that every teacher can independently design, execute, and upload at least one curriculum-aligned interactive lesson exemplar each quarter using tools such as H5P or Canva for Teachers. The Schools Division Superintendent and school infrastructure committee heads are urged to use Special Education Fund allocations and Maintenance and Other Operating Expenses budgets to purchase site-wide educational licenses and to install dedicated high-speed Wi-Fi access points in Junior High School faculty offices, thereby eliminating out-of-pocket subscription costs and lesson disruptions caused by slow networks. School administrative officers and department heads should transfer non-teaching clerical loads to dedicated administrative assistants and formally set aside two hours of protected innovation time every Friday afternoon, allowing teachers to test AI tools, localize global issues for Filipino learners, verify algorithmic content for misinformation, and collaborate with peer mentors without added burnout. The Chief of the Curriculum Implementation Division and the Information Technology Officer should issue a localized Operational AI-TPACK Framework Circular that translates DepEd Order No. 003, s. 2026 into explicit classroom rules on acceptable AI assistance, data privacy for student portfolios, and grading rubrics that evaluate critical thinking rather than simple recall, giving teachers clear administrative protection and legal boundaries. Finally, district supervisors and Master Teachers should integrate technology integration metrics into Results-Based Performance Management System portfolios and classroom observation checklists, so that effective technology use is professionally recognized and becomes a sustainable, career-advancing habit across the division.

Taken together, the findings, conclusions, and recommendations present a consistent picture. Teachers in the Central District are ready, willing, and academically prepared to integrate AI and interactive multimedia, but their readiness will translate into verifiable student outcomes only when training emphasizes pedagogical integration and hands-on production, when infrastructure, subsidies, and protected time remove the systemic barriers they face, and when governance guidelines and performance appraisal systems formally support and reward their efforts.

REFERENCES

Abdulrahaman, M. D., Faruk, N., Oloyede, A. A., Surajudeen-Bakinde, N. T., Olawoyin, L. A., Mejabi, O. V., ... & Azeez, A. L. (2020). Multimedia tools in the teaching and learning processes: A systematic review. Heliyon, 6(11).

Ahmed, A. B., King, B. D., Hiran, K. K., Dadhich, M., & Malcalm, E. (2025). Half a decade of artificial intelligence in education in Africa: Trends, opportunities, challenges and future directions. Journal of Engineering Education Transformations, 81–100.

Almandhari, B. (n.d.). Empowering educators in the age of AI: Balancing humanistic teaching with technological integration. Edited Volume, 161.

Antonio, R. P., & Sison, L. R. C. (2026). Can artificial intelligence (AI) shape the future of teacher education? Drawing evidence-based insights for teacher preparation. International Journal of Instruction, 19(1), 257–280.

Asad, M. M., Aftab, K., Sherwani, F., Churi, P., Moreno-Guerrero, A. J., & Pourshahian, B. (2021). Techno-pedagogical skills for 21st century digital classrooms: An extensive literature review. Education Research International, 2021(1), Article 8160084.

Assefa, E. A. (2025). AI and the digital divide in ensuring educational access and multicultural inclusivity. Journal of Information, Communication and Ethics in Society.

Azimjonov, J., Özmen, A., & Varan, M. (2023). A vision-based real-time traffic flow monitoring system for road intersections. Multimedia Tools and Applications, 82(16), 25155–25174. https://doi.org/10.1007/s11042-023-14418-w

Blando, H. D. (2025). Bridging the digital divide: A systematic review of teacher preparedness and technology integration in the MATATAG curriculum. Ignatian International Journal for Multidisciplinary Research, 3(3), 1154–1176.

Bulathwela, S., Pérez-Ortiz, M., Holloway, C., Cukurova, M., & Shawe-Taylor, J. (2024). Artificial intelligence alone will not democratise education: On educational inequality, techno-solutionism and inclusive tools. Sustainability, 16(2), Article 781.

Chen, E., Tang, X., Xi, A., Lin, C., Borchers, C., Gupta, S., ... & Koedinger, K. R. (2025, July). Vtutor for high-impact tutoring at scale: Managing engagement and real-time multi-screen monitoring with p2p connections. In Proceedings of the Twelfth ACM Conference on Learning Scale (pp. 320–324).

Chen, X., Li, J., & Ryoo, J. (2026). Fostering K-12 educational leadership for sustainable space exploration: An AI-enhanced collaborative framework. Quality Assurance in Education, 34(2), 270–295.

Daher, R. (2025). Integrating AI literacy into teacher education: A critical perspective paper. Discover Artificial Intelligence, 5(1), Article 217.

Damilola, O. (2026). Multimedia multimodal artificial intelligence (MMAI): Foundations, challenges, and future directions. Journal of Computer Science and Cybernetics.

Dennard, A. (2024). AI enhanced pedagogy: Examining how teachers elevate their practice through innovative lesson design [Doctoral dissertation, Lamar University-Beaumont].

Dervić, M., Bećirović, S., & Polz, E. (2025). Revolutionizing pedagogy: The transformative influence of artificial intelligence on educators' practices. In Artificial intelligence and human agency in education: Volume one: The nexus between AI and human agency in educational contexts (pp. 193–212). Springer Nature Singapore.

Eyal, L. (2025). Developing and validating an AI-TPACK assessment framework: Enhancing teacher educators' professional practice through authentic artifacts. Education Sciences, 15(11), Article 1452.

Ezzaim, A., Dahbi, A., Aqqal, A., & Haidine, A. (2025). AI-based learning style detection in adaptive learning systems: A systematic literature review. Journal of Computers in Education, 12(3), 731–769.

Fobert, B. J. (2024). Empowering educators: Practitioner-directed professional development approach for technology integration [Doctoral dissertation, Saint Mary's College of California].

Glikman, V., & Papı, C. (2021). Technologies éducatives et apprentissages : l'histoire de TECFA, une unité de recherche et d'enseignement de l'Université de Genève - Entretien avec Daniel Peraya. Médiations et Médiatisations, (6), 119–130. https://doi.org/10.52358/mm.vi6.203

Gnanaprakasam, J., & Lourdusamy, R. (2024). The role of AI in automating grading: Enhancing feedback and efficiency. In Artificial intelligence and education-shaping the future of learning. IntechOpen.

Jang, H., & Choi, H. (2025). A double-edged sword: Physics educators' perspectives on utilizing ChatGPT and its future in classrooms. Journal of Science Education and Technology, 34(2), 267–283.

Knoerr, H. (2005). TIC et motivation en apprentissage/enseignement des langues. Une perspective canadienne. Les Cahiers de l'APLIUT, 24(2), 53–73. https://doi.org/10.4000/apliut.2889

Kulshreshtha, J., Sing, O. S., & Ali, S. (2025). The role of humanities in understanding society: A broad perspective 2025 volume-IInd. Chyren Publication.

Labrique, S., Grenier, D., & Labrique, F. (2004). Entre savoir et savoir-être, du rôle des TIC dans le processus d'apprentissage du génie électrique : compte rendu d'innovation / From comprehension to analysis, the ICT's role in electrical engineering learning process : report of innovation. Didaskalia, 24(1), 103–131. https://doi.org/10.4267/2042/23936

Loble, L., & Hawcroft, A. (2022). Shaping AI and edtech to tackle Australia's learning divide.

Mehdaoui, A. (2024). Unveiling barriers and challenges of AI technology integration in education: Assessing teachers' perceptions, readiness and anticipated resistance. Futurity Education, 4(4), 95–108.

Mendoza, G. A. A., Plante, P., & Brassard, C. (2023). Regards sur les technologies immersives en éducation et en formation. Médiations et Médiatisations, (15), 3–10. https://doi.org/10.52358/mm.vi15.375

Mhlanga, D. (2024). Digital transformation of education, the limitations and prospects of introducing the fourth industrial revolution asynchronous online learning in emerging markets. Discover Education, 3(1), Article 32.

Ngo, T. (2025). Through pedagogies of multimodal text interpretation and creation. Multiliteracies, Multimodality, and Learning by Design in Second Language Learning and Teacher Education, 139.

Opesemowo, O. (2024). Artificial intelligence in education, bridging community gap: A phenomenological approach. International Journal of New Education, (14).

Pedro, F., Subosa, M., Rivas, A., & Valverde, P. (2019). Artificial intelligence in education: Challenges and opportunities for sustainable development.

Pénélope, K., Panagiotis, A., & Panagiotis, P. (2020). Réalité Augmentée et développement des compétences langagières à l'oral : enjeux et perspectives. Langues & Cultures, 1(02), 99–112. https://doi.org/10.62339/jlc.v1i02.89

Randall, L., & Berlina, A. (2019). Governing the digital transition in Nordic regions: The human element. Nordregio.

Rathi, P. (2025). Unveiling the future: An introduction to AI-powered multimedia data processing. In AI techniques for multimedia data processing (pp. 247–268). IGI Global Scientific Publishing.

Rinaldo, P., O'Shea, J. J., Welch, R. D., & Tanaka, K. (1990). The enzymatic basis for the dehydrogenation of 3-phenylpropionic acid: In vitro reaction of 3- phenylpropionyl-CoA with various acyl-CoA dehydrogenases. Pediatric Research, 27(5), 501–507. https://doi.org/10.1203/00006450-199005000-00017

Russo, K. (2026). Intelligent design: Charting the trajectory of AI in educational paradigms: A historical analysis of AI integration, its educational impacts, and future prospects in learning environments. Centenary University.

Şen, F. (2025). Investigating the impact of integrating generative AI on learner autonomy and writing proficiency in EFL instruction.

Shi, L. (2023). Exploring the emerging roles of artificial intelligence in teaching practices and its relationships with teachers. University of Georgia.

Siemens, G. (2005). Learning development cycle: Bridging learning design and modern knowledge needs. Elearnspace Everything Elearning, 48(9), 800–809.

Tomczyk, Ł. (2024, November). AI in education-mapping theoretical frameworks for digital literacy: DigComp 2.2, AI literacy competency framework, AI literacy TPACK, the machine learning education framework, the UNESCO AI competency framework for teachers and other innovative approaches. In International Conference on New Media Pedagogy (pp. 173–191). Springer Nature Switzerland.

Torres, S. C. Z., Basurto, W. E. C., Padilla, F. R. V., Ruiz-Ruiz, I. N., & Molina, P. M. E. (2025). Digital skills and sustainability in teacher training: The use of AI for continuous improvement. Data and Metadata, 4, 207–207.

Yadav, S. (2025). Leveraging AI to enhance teaching and learning in education: The role of artificial intelligence in modernizing classroom practices. In Optimizing research techniques and learning strategies with digital technologies (pp. 211–238). IGI Global Scientific Publishing.

Yang, Q. F., Lian, L. W., & Zhao, J. H. (2023). Developing a gamified artificial intelligence educational robot to promote learning effectiveness and behavior in laboratory safety courses for undergraduate students. International Journal of Educational Technology in Higher Education, 20(1), Article 18.