

Exploring the Knowledge, Willingness, and Concerns of Generative AI Adoption: A Quantitative Study Among MAPEH Teachers

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ABSTRACT: The rapid advance of artificial intelligence (AI) technology has changed the landscape of education, providing innovative tools to improve teaching and learning. As new technologies, particularly Generative AI (GenAI), become more widely available, understanding educators' willingness to use them is critical for successful integration. This study examined the knowledge, willingness, and concerns of 60 MAPEH educators (30 from public and 30 from private schools) regarding the integration of GenAI into their teaching methods. A descriptive-quantitative cross-sectional study approach was used, with an 18-item survey questionnaire distributed via convenience sampling. The acquired data were analyzed using descriptive and inferential statistics. The findings show that MAPEH teachers have a strong awareness of GenAI technologies and their limits. Private school teachers demonstrated slightly greater levels of knowledge and willingness than those working in public schools, but no significant differences were found across institutional sectors. Furthermore, the findings raise substantial concerns about ethical issues and potential overreliance on GenAI. Weak but significant correlations were discovered between the variables, with knowledge positively correlated with concerns and inversely related to desire. These findings highlight the importance of targeted solutions, such as professional development programs and clear policy guidelines, to alleviate teachers' concerns and increase their readiness to accept GenAI. This study's findings can help stakeholders establish successful approaches to incorporating AI technologies into MAPEH education, hence improving teaching practices and learning results.

KEYWORDS : *Artificial Intelligence, Generative AI, MAPEH Teachers, Professional Development*

I. INTRODUCTION

Generative Artificial Intelligence (Gen-AI) is a leading-edge branch of AI that creates original content by finding and utilizing patterns in existing data such as text, photos, audio, and video. Gen-AI, which employs powerful machine learning methods and vast neural network designs, has received worldwide attention for models such as GPT-3 and ChatGPT. These models can generate human-like prose, create artistic works, and enable complicated interactions. This technical innovation has had a tremendous impact on a variety of professions, including creative industries and customer service, proving AI's ability to mimic human ingenuity and communication [1]. Classrooms have begun utilizing ChatGPT and similar equipment to help plan lessons, support individualized learning, and provide content that fits curriculum objectives [2] [3]. Generative AI can offer special chances to improve teaching methods in fields like Music, Arts, Physical Education, and Health (MAPEH), where creativity and hands-on learning are essential components of instruction [4]. However, further research is needed to determine how much knowledge MAPEH instructors have regarding these technologies, how willing they are to use them, and whether they are concerned about employing AI tools, especially when comparing public and private school settings.

While most of the literature on AI in education focuses on its overall benefits and challenges [2], other studies explored how AI, through educational data mining and learning analytics, might improve learning experiences while simultaneously raising issues of algorithmic bias and data security [5]. Similarly, [6] address the potential of AI in education, such as enhancing learning outcomes and optimizing teaching techniques, while also acknowledging ethical and access concerns. Despite this, research on AI in specific subjects like MAPEH (Music, Arts, Physical Education, and Health) remains limited, particularly in understanding how subject-specific educators perceive the technology. Determining how to integrate these technologies in their teaching environments successfully requires understanding MAPEH instructors' perceptions of GenAI, including their knowledge, adoption willingness, and challenges over its use [3]. Moreover, research frequently fails to

distinguish between instructors in public and private schools or consider how their years of experience may affect their opinions on implementing AI tools [4]. These disparities highlight the necessity of conducting a targeted study on the integration of generative AI in MAPEH instruction.

This study seeks to fill gaps in the existing literature by investigating MAPEH teachers' knowledge, willingness, and concerns about the use of generative AI. Using a quantitative study methodology, it tries to assess how educators perceive the benefits of generative AI in classroom settings while also identifying impediments to its application. By bridging this gap, the study hopes to identify solutions for aligning generative AI tools with the instructional goals of MAPEH educators.

By examining MAPEH teachers' levels of knowledge, willingness, and concerns about incorporating generative AI into their teaching methods, this study seeks to close these gaps. It will specifically investigate whether public and private MAPEH teachers differ significantly in their understanding, readiness, and concerns regarding the deployment of GenAI. The study will also investigate whether these parameters are related to one another and how they change with years of service. This study will take a quantitative approach to provide significant insights into the elements that influence the adoption of generative AI in MAPEH education. The findings will guide teacher training programs, policy development, and the development of AI tools tailored to MAPEH educators' specific needs.

1. Research Questions

This study aims to better understand MAPEH teachers' preparedness for integrating GenAI by examining these important areas, emphasizing their present knowledge, adoption readiness, and special concerns. Insights that can direct specialized professional development and policy activities can be obtained by identifying perception gaps between teachers in public and private schools and by analyzing the impact of years of employment. The investigation was guided by the following questions:

1. What is the extent of Knowledge, Willingness, and Concerns of MAPEH teachers to adapt GenAI in teaching and learning MAPEH
2. Do the public MAPEH teachers' knowledge, willingness, and concerns in adopting GenAI in MAPEH teaching significantly differ from the private MAPEH teachers?
3. Is there a significant difference in the MAPEH teachers' extent of knowledge, willingness, and concerns towards adopting GenAI in teaching MAPEH when data is grouped according to years in service?
4. Is there a significant relationship between the knowledge, willingness, and concerns of the MAPEH teachers in adopting GenAI in MAPEH teaching?

II. RELATED LITERATURE

1. Generative AI in Education

Artificial intelligence tools are revolutionizing classrooms and schools while significantly streamlining educators' tasks [7] [8]. Over the years, education has experienced a steady but impactful shift, with most educational institutions now adopting projection displays in addition to the whiteboard and chalkboard. While advances in the use of AI in education were modest throughout the 20th century [9], studies have shown that the consistent integration of various AI assistant applications has significantly contributed to the field's development [10].

The introduction of AI in education has prompted researchers to look at its potential to improve teaching approaches, increase student engagement and collaboration, and ultimately empower both educators and learners. A review by [11] suggests that AI-based chatbots can increase academic achievement, student engagement, and self-efficacy in higher education settings. The study demonstrated how these technologies benefit students by offering individualized, real-time learning support, especially in the contexts of business and language education. AI also has the potential to be a useful teaching tool that improves student learning while reducing the work required for both teachers and students [12]. The capacity of chatbots to provide immediate feedback and direction has proved essential in creating a more dynamic learning environment [11]. Similarly, [13] claim that certain AI systems, such as teacher bots, can collect substantial student data, evaluate it, discover and diagnose difficulties, notify instructors, and make targeted solutions. Additionally, [14] found that AI has the potential to bring together students from various academic backgrounds and promote teamwork on projects that tackle practical sustainability problems. This method prepares students for the collaborative nature of work in Industry 4.0 by giving them essential communication, problem-solving, and cooperation skills.

Several studies have explored the use of AI in different fields of education, highlighting its transformative potential in enhancing teaching methods, student learning, and interdisciplinary collaboration. The AI KAKU chatbot, which was used in English language acquisition, is one example of an AI tool that [15] examined. According to their findings, students found these resources to be user-friendly and helpful for enhancing their communication abilities. The study also highlighted how generative AI might improve language learning by

supporting grammar and assisting students in coming up with ideas more efficiently. In the field of Mathematics, [16] highlighted that AI primarily serves as an "intelligent tutoring system" to assess learning performance and provide instant support, improving student outcomes. Similarly, according to [17], integrating AI tools into science education has been shown to significantly enhance students' academic performance. It boosts students' motivation, enriches their grasp of the material, and promotes active engagement in the learning process.

Thus, there has been considerable focus on the strategic importance of artificial intelligence (AI) in education [18]. This includes valuable applications such as the development of modular prototypes in learning analytics, data visualization, and statistical reasoning, the integration of AI seeks to revolutionize teaching methodologies [19]. These insights point to the importance of expanding research into AI's role in specialized fields like MAPEH, where the intersection of creativity, physical engagement, and holistic learning may offer new opportunities for AI-driven pedagogical innovations.

2. Teachers' Knowledge and Willingness to Adopt GenAI

The successful integration of AI technology in education is heavily reliant on teacher involvement, which is critical in improving students' learning experiences. However, there is a considerable difference in how prepared teachers are to use AI in the classroom. Some instructors may be cautious or unsure about its application, whilst others are skilled and eager to use it [20]. This difficulty is exacerbated by the lack of comprehensive AI-focused education and training, emphasizing the critical need for enough resources and specialized assistance to enable teachers to effortlessly integrate AI into their teaching techniques [21].

Teachers' readiness to embrace and use AI in their teaching practices is greatly influenced by their opinions about how beneficial these tools are in the classroom. Students are more likely to be encouraged to use AI in their science lectures if teachers see how it might improve learning outcomes [22]. Their opinions on AI are further influenced by their individual experiences with AI tools and how they affect students' learning [23]. How teachers feel about technology also affects their readiness to integrate AI into their lessons [24]. A study conducted by [25] showed that a lack of knowledge or awareness of AI's potential advantages may be impeding its inclusion in science education.

As a result, maintaining a positive mindset and generating curiosity about the potential of AI is crucial. Teacher education programs should prioritize growing awareness of AI and equipping educators with the tools they need to properly integrate it. It is also necessary to overcome obstacles and inconsistencies, since concerns about AI's impact on teaching responsibilities and ethical difficulties in the classroom may limit its introduction [26].

3. Concerns About AI Adoption in Education

Artificial intelligence is rapidly expanding and spreading around the globe, bringing both benefits and problems. While AI has provided numerous benefits in education, there are considerable worries regarding the limitations of Generative AI (GenAI), as well as academic integrity, ethics, and plagiarism. Although AI-generated literature is frequently creative and relevant to the topic matter, [27] assessment of AI-generated responses to academic writing assignments indicated a lack of subjective opinions and nuanced references, which are areas where AI typically struggles. Creating effective prompts for second language learners can be especially difficult due to the required level of language proficiency. Furthermore, overreliance on GenAI tools may impede students' ability to truly develop their writing skills [28].

Concerns regarding generative AI's possible impact on higher education are seen in students' opinions of the technology in the classroom. Although students acknowledged the advantages of GenAI, [29] discovered that they had serious reservations about the over-reliance on these technologies and how they would affect the value of university education. In a similar study, [30] investigated Kenyan teachers' opinions regarding the use of chatbots in normal instruction and discovered that most of them had a favorable opinion of chatbots as an educational tool. They did, however, voice concerns over the accuracy of the data that chatbots give as well as the possibility that these tools will eventually take the role of teachers in the classroom.

The years of teaching experience also have a big impact on how teachers feel about AI. In contrast to younger educators who are more used to utilizing technology in their work lives, veteran educators who may have had less exposure to digital technologies tend to be more resistant to integrating AI [31]. Customized approaches highlighting AI's supplementary function in education rather than casting it as an alternative teaching method are required to address these concerns.

Lastly, the problem is made more difficult by the shortage of subject-specific studies on AI adoption in fields like MAPEH. Although generic research on AI in education offers insightful information, it frequently ignores the special opportunities and difficulties that creative and multidisciplinary disciplines afford. By investigating the knowledge, willingness, and concerns of the MAPEH teachers and determining methods to lessen obstacles to the implementation of GenAI, this study seeks to close this gap.

Theoretical Framework

This study is based on three fundamental hypotheses, which provide a complete framework for investigating MAPEH instructors' perceptions of Generative Artificial Intelligence (GenAI). The Technology Acceptance Model (TAM) by [32] highlights how teachers' willingness to adopt GenAI is influenced by their perceptions of its usefulness and ease of use. Complementing this, the Diffusion of Innovations (DOI) theory by [33] explains how readiness to adopt GenAI varies based on teachers' years in service and their position in the adoption lifecycle, ranging from early adopters to laggards. Additionally, the Concerns-Based Adoption Model (CBAM) by [34] addresses the barriers that may hinder adoption, such as apprehensions about technology's impact on teaching practices or resource availability. Together, these theories guide the investigation into the levels of knowledge, willingness, and concerns among MAPEH teachers, while also accounting for differences across institutional settings and teaching experience.

Hypotheses

This study investigates the extent of MAPEH teachers' knowledge, willingness, and concerns regarding the adoption of Generative AI (GenAI) in teaching and learning. The following null (H_0) hypotheses have been formulated to guide the research:

1. H_{01} : MAPEH teachers do not exhibit a significant level of knowledge, willingness, and concerns regarding the adoption of Generative Artificial Intelligence (GenAI) in teaching and learning.
2. H_{02} : There is no significant difference in the knowledge, willingness, and concerns of public and private school MAPEH teachers regarding the adoption of GenAI in teaching and learning.
3. H_{03} : There is no significant difference in the knowledge, willingness, and concerns of MAPEH teachers toward adopting GenAI when grouped according to years in service.
4. H_{04a} : There is no significant relationship between MAPEH teachers' knowledge and willingness to adopt GenAI.
5. H_{04b} : There is no significant relationship between MAPEH teachers' knowledge and concerns to adopt GenAI.
6. H_{04c} : There is no significant relationship between MAPEH teachers' concerns and willingness to adopt GenAI.

III.METHODOLOGY

1. Research design

The current study employed a descriptive-quantitative cross-sectional design to explore the perceptions of MAPEH teachers regarding the adoption of Generative Artificial Intelligence (GenAI). This approach integrates the strengths of quantitative, descriptive, and cross-sectional methodologies to systematically gather and analyze data. A quantitative research design was utilized, which emphasizes numerical measurement and statistical analysis to test hypotheses and quantify variables [35]. This method is ideal for investigating relationships, differences, and patterns within the data. Using a quantitative framework, the study effectively measured variables such as MAPEH teachers' knowledge, willingness, and concerns about GenAI adoption, with standardized survey tools ensuring objectivity and reliability. The study is descriptive, as it entails the systematic collection, analysis, classification, and tabulation of data regarding existing phenomena [36]. Descriptive research focuses on providing a detailed account of the characteristics, behaviors, or perceptions of the population under study, which in this case, are the MAPEH teachers' perceptions of GenAI. This method allowed for the identification of patterns and trends in the teachers' knowledge, willingness, and concerns. According to [37], descriptive research is pivotal in understanding the "what is" of a phenomenon, making it suitable for exploring the current state of AI adoption in MAPEH instruction. Furthermore, the study is identified as cross-sectional, as data were collected at a single point in time from a sample of participants selected based on predefined inclusion and exclusion criteria. This approach is efficient, cost-effective, and well-suited for assessing the prevalence of perceptions or behaviors within a specific population [38]. Cross-sectional studies are particularly valuable in educational research for capturing a snapshot of the current attitudes or knowledge of educators.

By combining these methodologies, the study provided a comprehensive analysis of MAPEH teachers' readiness and concerns regarding the adoption of GenAI, offering valuable insights for educational stakeholders and policymakers.

2. Respondents of the Study

The respondents of this study were selected based on specific inclusion and exclusion criteria to ensure focus on licensed MAPEH teachers actively teaching at the secondary level across Zamboanga City. A total of 60 respondents participated in the study, consisting of 38 (63.3%) public school teachers and 22 (36.7%) private school teachers. The inclusion criteria required respondents to have at least two years of teaching experience and

be aged 25 to 60 years. The exclusion criteria ruled out pre-service teachers, retired MAPEH teachers, administrative staff, and those not actively teaching.

The participants' ages ranged from 24 to 53, with a mean of 29.567 and a standard deviation of 5.747. In terms of gender, 48.3% (29 respondents) were male MAPEH teachers, while 51.7% (31 respondents) were female which proves the gender disparities in online survey responses as mentioned in several studies [39]; [40]. The study also recorded the respondents' years of teaching experience, highlighting diverse levels of professional practice. The majority (18.3%) had four years of experience, followed by 13.3% with three years and 11.7% with two years. A small percentage (3.3%) had 15 or more years of service, showing the presence of both early-career and seasoned educators in the sample.

The use of Generative AI technologies among respondents revealed varying levels of familiarity and adoption. Nearly half (45%) reported using these technologies "sometimes," 26.7% used them "often," and 10% used them "always." On the other hand, 5% of respondents had never used Generative AI, while 13.3% used it "rarely." The result of respondents' frequency of generative AI use is presented in the table 1 below.

Table 1. *Respondents' frequency of GenAI use.*

Scale	Frequency	Percentage
Never	3	5.0%
Rarely	8	13.3%
Sometimes	27	45%
Often	16	26.7%
Always	6	10%

In terms of other AI tools utilized, aside from ChatGPT, 33.3% of respondents reported not using any additional AI tools. However, 18.3% utilized Gemini and Meta AI, respectively, while 11.7% used Quillbot. Other tools like Perplexity (6.7%), Cici (3.3%), Crossword AI (1.7%), and Canva (1.7%) were also noted, although their adoption rates were relatively low. The comprehensive results are displayed in the table below.

Table 2. *Other GenAI tools used by respondents aside from ChatGPT.*

GenAi Tools	Frequency	Percentage
None	20	33.3%
Gemini	14	18.3%
Meta AI	11	18.3%
Cici	2	3.3%
Crossword AI	1	1.7%
Quillbot	7	11.7%
Canva	1	1.7%
Perplexity	4	6.7%

3. Research Sampling

A purposive sampling technique was employed to select 60 MAPEH teachers both from various public and private high schools in Zamboanga City. The respondents were selected based on specific criteria: they must be licensed MAPEH teachers actively teaching at the secondary level. This technique was chosen due to the large number of schools in the city, making it impractical to include all teachers. By using purposive sampling, the study ensured that the sample was relevant to the research focus and representative of the teaching community in the city. This approach allowed for meaningful comparisons between the two groups, providing enough data to address the study's objectives effectively.

4. Research Instrument

The study adopted the research questionnaire developed by [29] in their study titled, Students' Voices on Generative AI: Perceptions, Benefits, and Challenges in Higher Education. The questionnaire consists of 18 questions designed to explore the respondents' knowledge of generative AI technologies, their willingness to use generative AI, and their concerns about the adoption of such technologies.

The survey questionnaire consisted of (4) four main sections: firstly, the Demographic Information which gathers information about participants' age, gender, years of teaching experience, and school type. Second, Knowledge scale- to assess the participants' understanding of generative AI, its potential applications and constraints. Third, the Willingness scale is used to identify the participants' level of willingness to adopt generative AI such as perceived benefits, concerns, and perceived ease of usage. Last, Concerns scale- to investigate the specific concerns raised in the instruments, such as the possibility of over-reliance, decreased creativity, and ethical issues. Addedly, the totaled (18) eighteen questions are on a five-point likert scale ("1-strongly disagree", "2- disagree", "3- Neutral", "4-Agree", "5-Strongly Agree").

Prior to official data collection, pilot testing was conducted to ensure the clarity and relevance of the questionnaire. Although no changes were made to the instrument based on the pilot study, this step was crucial due to the significant difference in the academic standing of the Philippines and Hong Kong and the absence of reliability data from the original study. As such, the instrument was validated for the study's context and reliability test was conducted. The instrument garnered a Cronbach's alpha of $\alpha=0.798$ which is considered to be acceptable according to [41] with an internal consistency of $\alpha=0.843$, $\alpha=0.940$ and $\alpha=0.672$ for knowledge scale, willingness and concern scale, respectively.

5. Coding Procedure

The research coding procedure involves organizing and analyzing the responses to both the demographic profile and survey questions. For the demographic profile, participants' information, such as gender, was coded as 1 for male and 2 for female. The same coding system was applied to indicate the institutional sector, where code 1 was used for public school teachers and code 2 for private school teachers. The survey questions, based on a Likert scale, code 1 was used for (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), 5 (Strongly Agree). These codes were used to assess participants' knowledge, willingness to use, and concerns about generative AI technologies. Each response was recorded according to the scale, and the data were entered into a spreadsheet for analysis. Descriptive statistics were used to summarize the demographic data, while mean scores were calculated for each survey question to evaluate overall attitudes toward AI. Inferential statistics and correlation analysis was conducted to identify significant differences and relationships between demographic factors and survey responses. Ethical guidelines, including maintaining participant anonymity and confidentiality, were strictly followed throughout the research.

6. Data Gathering

The adopted questionnaires were digitized through the use of Google Forms to support online data gathering. This was noted to be a practical and pragmatic option since it made the survey easily accessible and distributable. The link of the online form was disseminated to people identified by the researchers and contacted persons who ascertain the target respondents for this study. The form was closed once the goal respondents had reached. The spreadsheet containing the data responses necessary for the analysis is then downloaded.

7. Data Analysis Procedure

To determine the respondents' perceptions, advantages, and challenges of generative AI adoption, descriptive statistics were used particularly, frequency, percentages, mean and standard deviation. Descriptive statistics were used to analyze the demographic profile of the respondents as well as the extent of their knowledge, willingness and concerns towards GenAI adoption in teaching MAPEH. To find out the significant difference of MAPEH teachers' perceptions towards GenAI, inferential statistics were used such as independent sample t-test and the one-way analysis of variance (One-way ANOVA). Pearson's correlation was also used to evaluate the relationships between the variables. The statistical analysis will be done using statistical software, namely SPSS. The results of the analysis will be presented in a clear and concise manner using tables, figures and text for ease of interpretation.

8. Ethical Considerations

To ensure ethical conduct and adherence to the Data Privacy Act of the Philippines throughout the research process, several ethical considerations will be followed. Before participating, participants will be thoroughly informed about the purpose, procedures, and benefits of the study, and written informed consent will be obtained before their participation. Second, confidentiality and anonymity will be maintained by keeping participants' identities confidential and anonymizing the collected data to protect their privacy. Third, participation in the study will be entirely voluntary, with participants having the right to withdraw at any time without any negative consequences. Fourth, only the necessary personal data will be collected, adhering to the principle of data minimization. Lastly, data will be retained only for as long as necessary for the research, and all data will be securely destroyed upon the completion of the study.

Additionally, to ensure transparency, the researchers disclose that no conflicts of interest exist that could bias the research process or outcomes. This commitment reinforces the integrity of the study and safeguards its adherence to ethical standards. Any potential conflicts that may arise will be addressed promptly and disclosed in accordance with ethical guidelines.

IV. RESULTS AND DISCUSSION

1. The level of knowledge, willingness and concerns of the MAPEH teachers towards the adoption of GenAI in teaching MAPEH

To be able to determine the level of knowledge, willingness and concerns of the MAPEH teachers towards the adoption of GenAI in teaching MAPEH, an 18-item survey questionnaire was administered. The responses were coded and were analyzed through descriptive statistics to determine the frequency, percentages, mean and standard

deviation per item and per category. The results are shown in the Tables below numbered Table 3, 4 and 5 for knowledge, willingness and concerns respectively.

Table 3. Knowledge of the MAPEH teachers towards Generative AI technologies

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	M SD
1. "I understand generative AI technologies like ChatGPT have limitations in their ability to handle complex tasks."	0 (0%)	1 (1.7%)	2 (3.3%)	25 (41.7%)	32 (53.3%)	4.467 (0.650)
2. "I understand generative AI technologies like ChatGPT can generate output that is factually inaccurate."	0 (0%)	9 (15.0%)	14 (23.3%)	17 (28.3%)	20 (33.3%)	3.800 (1.070)
3. "I understand generative AI technologies like ChatGPT can generate output that is out of context or inappropriate."	2 (3.3%)	10 (16.7%)	13 (21.7%)	19 (31.7%)	16 (26.7%)	3.617 (1.157)
4. "I understand generative AI technologies like ChatGPT can exhibit biases and unfairness in their output."	0 (0%)	3 (5.0%)	18 (30.0%)	24 (40.0%)	15 (25.0%)	3.850 (0.860)
5. "I understand generative AI technologies like ChatGPT may rely too heavily on statistics, which can limit their usefulness in certain contexts."	0 (0%)	3 (5.0%)	11 (18.3%)	29 (48.3%)	17 (28.3%)	4.000 (0.823)
6. "I understand generative AI technologies like ChatGPT have limited emotional intelligence and empathy, which can lead to output that is insensitive or inappropriate."	1 (1.7%)	3 (5.0%)	6 (10.0%)	23 (38.3%)	27 (45.0%)	4.200 (0.935)
Knowledge on GenAI						3.989 (0.696)

The results in Table 3 show that most of the respondents strongly agree with the statement "*I understand generative AI technologies like ChatGPT have limitations in their ability to handle complex tasks*" garnering the highest mean score of 4.467, having the lowest standard deviation among the results (0.650). This SD suggests that the result is closer to the mean and the data has less variability which makes the results more predictable and consistent [42]. Hence, this result for statement number 1 is acceptable since the mean is high and the standard deviation is low which further indicates that MAPEH teachers highly understand the limitation of artificial intelligence in handling complex tasks. Among the responses, statement number 3 is less agreed upon (M=3.617; SD=1.157) which indicates that the MAPEH teachers are not aware of the inappropriate or out of context outputs from GenAI technologies. This aspect of GenAI remains to be an issue in many studies as they have reported potential inaccuracies, outdated information, data privacy issues and biases among others [43]; [44]; [45]; [46]. This statement also garnered the highest SD which means that the responses deviate from the mean suggesting inconsistency in the responses because of high variability [47]. Generally, the MAPEH teachers have a sufficient understanding regarding the capabilities of Generative AI technologies, but may be less knowledgeable about the output it generates which may be out of context or inappropriate. However, the respondents still agreed with most of the statements (M=3.989; SD=0.696) suggesting a good level of understanding towards generative AI technologies. This is supported by the study of [48], which found that university instructors are becoming more aware of and favorable about AI language models, recognizing their potential in educational contexts. However, some studies negate this notion stating that even if teachers are aware of the benefits of AI in education, they may not necessarily understand the limitations of AI technologies [49]; [50]. Additionally, concerns persist regarding the accuracy and appropriateness of AI-generated content as [51], states that teachers have little to no awareness of artificial intelligence in general or its application in teaching and learning.

Overall, the results suggest that while MAPEH teachers are still cautious about adopting GenAI, there is a clear need for more training and resources to help them critically evaluate AI-generated content and use it responsibly. Despite these challenges, it's encouraging to see an increasing awareness of AI's potential in the classroom. As teachers develop a deeper understanding of both the strengths and limitations of generative AI, they will be better equipped to integrate these tools into their teaching effectively, avoiding common pitfalls and ensuring they are used in a way that benefits their students.

Table 4. The extent of willingness of the MAPEH teachers towards the adoption of Generative AI technologies

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	M SD
1. "I envision integrating generative AI technologies like ChatGPT into my teaching and learning practices in the future."	12 (20.0%)	7 (11.7%)	18 (30.0%)	16 (26.7%)	7 (11.7%)	2.983 (1.295)
2. "Students must learn how to use generative AI technologies well for their careers."	6 (10.0%)	14 (23.3%)	20 (33.3%)	12 (20.0%)	8 (13.3%)	3.033 (1.178)
3. "I believe generative AI technologies such as ChatGPT can improve my digital competence."	8 (13.3%)	7 (11.7%)	13 (21.7%)	26 (43.3%)	6 (10.0%)	3.250 (1.202)
4. "I believe generative AI technologies such as ChatGPT can help me save time."	3 (5.0%)	9 (15.0%)	8 (13.3%)	24 (40.0%)	16 (26.7%)	3.683 (1.172)
5. "I believe AI technologies such as ChatGPT can provide me with unique insights and perspectives that I may not have thought of myself."	2 (3.3%)	4 (6.7%)	15 (25.0%)	28 (46.7%)	11 (18.3%)	3.700 (0.962)
6. "I think AI technologies such as ChatGPT can provide me with personalized and immediate feedback and suggestions for my assignments."	4 (6.7%)	12 (20.0%)	12 (20.0%)	23 (38.3%)	9 (15.0%)	3.350 (1.162)
7. "I think AI technologies such as ChatGPT is a great tool as it is available 24/7."	2 (3.3%)	13 (21.7%)	14 (23.3%)	20 (33.3%)	11 (18.3%)	3.417 (1.124)
8. "I think AI technologies such as ChatGPT is a great tool for student support services due to anonymity."	15 (25.0%)	10 (16.7%)	18 (30.0%)	13 (21.7%)	4 (6.7%)	2.683 (1.255)
Willingness to adopt GenAI in higher education						3.263 (0.934)

Table 4 provides the results for the MAPEH teachers' extent of willingness in adopting GenAI in their teaching practices. The respondents agreed most to statement number five which says "I believe AI technologies such as ChatGPT can provide me with unique insights and perspectives that I may not have thought of myself" (M=3.700; SD=0.962). This suggests that the MAPEH teachers are willing to adopt GenAI in their teaching and learning practices because of its ability to provide unique insights and perspectives that they may not have thought for themselves. For instance, [48] found a strong positive correlation between the perceived usefulness of GenAI tools and their acceptance among educators, emphasizing the importance of demonstrating tangible benefits to facilitate adoption. Similarly, [52] reported that over half of the surveyed university teachers have incorporated GenAI into their teaching activities, particularly for preparation tasks, indicating a growing trend toward embracing AI technologies in education. The least agreed statement is statement eight with a mean of 2.683 and a standard deviation of 1.255 which indicates that the MAPEH teachers do not confide in Generative AI technologies as a tool for student support services due to anonymity. One possible reason for this is because of the rising ethical issues on AI technologies in relation to data privacy. The next least agreed statement is statement number one which says "I envision integrating generative AI technologies like ChatGPT into my teaching and learning practices in the future" (M=2.983; SD=1.295). Most of the respondents are neutral about adopting GenAI in their teaching and learning practices (30%) while 38.4% disagreed and only 31.7% agreed. In this statement, it could be drawn that the MAPEH teachers do not envision using GenAI in their teaching and learning practices and most are still skeptical about using the tool. For instance, a survey conducted by [52] found that while 35 out of 67 university teachers used GenAI, more than half expressed concerns about its impact on teaching, particularly regarding inaccuracies and cheating. This indicates a cautious approach to adopting GenAI tools in educational settings. Similarly, [48] observed that while university instructors are becoming more aware of AI language models and generally view them positively, there is a notable apprehension about their application in the classroom. This apprehension stems from concerns about the potential for AI-generated content to undermine academic integrity and the need for clear guidelines on AI usage in education.

This may be because MAPEH is a subject that relies heavily on performance and skills. It is a subject that banks on the skills and physical abilities of both teachers and students which GenAI may not fully be able to support and assist since GenAI is about generating outputs. With the results shown, the MAPEH teachers are neither willing nor unwilling to adopt GenAI technologies in their teaching and learning practices. The general response for this category is neutral with an overall mean of 3.263 and a standard deviation of 0.934. This means that the MAPEH teachers are still skeptical about using GenAI technologies in teaching MAPEH. The neutral stance of MAPEH teachers toward adopting Generative AI (GenAI) technologies in their teaching practices aligns with findings from various studies. For instance, a study by [53] examined university teachers' views on integrating GenAI tools for student assessment. The research highlighted that while educators recognize the potential benefits of GenAI, such as enhanced student engagement and reduced workload, they also express concerns about academic integrity and the impact on students' critical thinking skills. These mixed perceptions suggest a cautious approach to adopting GenAI in educational settings.

Similarly, a study by [52] investigated teachers' attitudes toward adopting GenAI in K-12 education. The findings revealed that while some teachers are open to integrating GenAI into their teaching practices, others remain skeptical due to concerns about the accuracy of AI-generated content and the potential for cheating. This indicates a need for targeted professional development to address these concerns and promote the responsible use of GenAI in education.

Table 4's results show that although MAPEH teachers acknowledge the potential of Generative AI (GenAI) to provide new perspectives, they are skeptical of how to incorporate it into their lessons. MAPEH teachers recognize that AI has the potential to improve educational content, but they are hesitant to use it for student support services due to ethical and data privacy issues. Since MAPEH instruction mostly depends on performance and physical abilities that AI cannot adequately support, the neutral attitude about future integration of GenAI into their teaching techniques shows hesitancy. All things considered, the instructors exhibit a cautious mindset, neither completely accepting nor opposing the usage of GenAI in the classroom.

Table 5. The concerns of the MAPEH teachers towards the adoption of Generative AI technologies

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	M SD
1. "Using generative AI technologies such as ChatGPT to complete assignments undermines the value of university education."	1 (1.7%)	3 (5.0%)	10 (16.7%)	19 (31.7%)	27 (45.0%)	4.133 (0.982)
2. "Generative AI technologies such as ChatGPT will limit my opportunities to interact with others and socialize while completing coursework."	2 (3.3%)	3 (5.0%)	11 (18.3%)	14 (23.3%)	30 (50.0%)	4.117 (1.091)
3. "Generative AI technologies such as ChatGPT will hinder my development of generic or transferable skills such as teamwork, problem-solving, and leadership skills."	2 (3.3%)	3 (5.0%)	9 (15.0%)	18 (30.0%)	28 (46.7%)	4.117 (1.059)
4. "I can become over-reliant on generative AI technologies."	3 (5.0%)	10 (16.7%)	7 (11.7%)	16 (26.7%)	24 (40.0%)	3.800 1.273
Concerns on GenAI						4.042 (0.785)

The results in Table 5 shows the concerns of the MAPEH teachers in the adoption of GenAI technologies. Among the four statements, the statement "Using generative AI technologies such as ChatGPT to complete assignments undermines the value of university education" is where most MAPEH teachers agreed (M=4.133; SD=0.982). This suggests how MAPEH teachers value true learning and emphasized that this tool will undermine the value of education. A study by [54] analyzed ChatGPT's performance in solving undergraduate computer science questions and found that while AI can generate human-like text, it often lacks the depth and accuracy required for academic rigor. This raises concerns about students relying on AI-generated content without fully understanding the material, potentially compromising the quality of education. Statement numbers 2 and 3 garnered the same mean of 4.117 but with different standard deviations with 1.091 and 1.059 respectively. This high mean indicates that the respondents strongly agree with GenAI possibly limiting their interaction with others and hinder the development of their skills. A systematic review by [55] examines the relationship between AI, competency development, and collaborative learning. The review suggests that while AI has great potential to improve education, it should be approached with caution to avoid diminishing critical thinking and problem-solving abilities if over-relied upon. With the fourth statement, the MAPEH teachers agree that they may become

over-reliant to generative AI technologies ($M=3.800$; $SD=1.273$). Overall, the results show a high level of concerns among the MAPEH teachers in adopting generative AI technologies in their teaching and learning practices ($M=4.042$; $SD=0.785$).

The result from table 5 shows that MAPEH teachers are quite apprehensive about implementing Generative AI (GenAI), especially because of the possibility that it may undermine the value of education, limit social interaction, and hinder the acquisition of new skills. While reservations about an excessive dependence on AI point to a fear of losing professional autonomy, their adamant opposition to utilizing AI for assignments demonstrates their conviction in the value of conventional learning methods. Since research indicates that perceived dangers, such as its impact on learning and professional progress, frequently inhibit technology adoption, these concerns may have an impact on their intention to use GenAI in the classroom [56]; [57]. By addressing these issues with focused instruction and unambiguous policies, skepticism may be reduced and a more constructive incorporation of GenAI in MAPEH classrooms may be encouraged.

The results in Table 5 highlight the concerns of MAPEH teachers about adopting GenAI technologies. They strongly agree that such tools may undermine the value of education, limit social interactions, and hinder skill development. These concerns suggest that teachers value traditional learning methods and are cautious about becoming over-reliant on AI, fearing it could compromise their professional autonomy. The high level of skepticism could potentially affect their intention to use GenAI in teaching. Addressing these concerns through targeted training and policies could help reduce resistance and encourage a more balanced integration of AI in the MAPEH curriculum.

2. The extent of knowledge, willingness and concerns of the MAPEH teachers towards the adoption of GenAI in teaching MAPEH according to the teachers' institutional sectors

In this section, the MAPEH teachers' extent of knowledge, willingness and concerns to adopt GenAI in teaching MAPEH was examined according to the institutional sector that they are in: public or private. To be able to do that, inferential statistics was used, particularly, the independent sample t-test. The results for research question number two are shown in Table 6 below.

Table 6. The mean, standard deviation and sig. 2-tailed results among public and private MAPEH teachers

Category	Institutional Sector	M	SD	Sig. (2-tailed)
I. Knowledge on GenAI	Public	3.921	0.700	0.324
	Private	4.106	0.687	
II. Willingness to adopt GenAI	Public	3.257	0.952	0.953
	Private	3.273	1.060	
III. Concerns in adopting GenAI	Public	3.928	0.848	0.113
	Private	4.239	0.634	

In terms of knowledge towards GenAI technologies, the results in Table 6 shows that the MAPEH teachers coming from private schools have greater knowledge compared to the MAPEH teachers from public schools ($M=4.106$; $SD=0.687$). The SD justifies that the responses are closer to the mean which indicates the consistency of the responses making this result acceptable. However, the sig. 2-tailed indicates no significant difference between the knowledge of the public and private MAPEH teachers towards GenAI technologies which means that regardless of the institutional sector a MAPEH teacher falls under they are most likely aware of the abilities and limitations of generative AI technologies.

In comparing their willingness, the MAPEH teachers from private schools are more willing compared to the MAPEH teachers from public schools ($M=3.273$; $SD=1.060$). This may be because private schools in developing countries tend to be more advanced in terms of facilities compared to public schools. The SD though, indicates more variability which means that the result may seem to be inconsistent. Overall, these results have no significant difference for garnering a sig. 2-tailed of 0.953. This means that the institutional sector a MAPEH teacher belongs to is not a factor in terms of their willingness to adopt GenAI in teaching MAPEH.

Lastly, for the concerns, the results show how private MAPEH teachers have more concerns compared to public MAPEH teachers with a mean of 4.239 and a standard deviation of 0.634. This standard deviation shows the consistency in the responses which makes the result acceptable. One possible reason as to why private MAPEH teachers have higher concern in adopting genAI technologies is because private schools in developing countries tend to uphold moral and ethical values which makes them distinct from public schools. With the rising moral and ethical issues brought about by AI, it may disrupt these values as well as the essence of the kind of education they uphold. Overall, the results still do not show any significant difference in terms of their concerns with a sig. 2-tailed of 0.113.

Generally, the results in Table 6 suggest how MAPEH teachers from private schools are more likely exposed and open to advanced technologies such as generative AI. Although the results show no significant difference, it implies that there is a need for public schools to also advance their facilities to welcome the new advent of technology in their classrooms. Research has shown that having access to technology in private schools frequently results in increased exposure to and adoption of new technologies [58], for example, discovered that instructors at schools with greater resources were more likely to embrace technology because they had access to the required resources and assistance. According to a study by [59], private schools tend to give teachers more opportunity to interact with technology because of their superior infrastructure and resources, which has a favorable effect on their desire to use it in the classroom. On the other hand, public schools can encounter obstacles including inadequate funding or conventional facilities, which could prevent them from implementing innovations in technology [60]. Therefore, it is imperative that public schools update their facilities to facilitate the incorporation of modern educational technologies. This will ensure that all teachers, regardless of the type of school, have equal opportunity to enhance their teaching methods.

3. The MAPEH teachers' level of knowledge, willingness and concerns towards GenAI adoption according to years in service

To determine the significant difference in the MAPEH teachers' extent of knowledge, willingness and concerns towards adopting GenAI in MAPEH teaching when data is grouped according to years in service, inferential statistics was used particularly the One-Way ANOVA. The ANOVA results shown below suggest further investigation through post-hoc analysis, however, due to the limitation of the data gathered, at least one group has fewer than two cases. Hence, the post-hoc analysis could not be performed to determine where the significant difference lies among the MAPEH teachers' years in service. The results of the One-Way ANOVA is shown in Table 7.

Table 7. The knowledge, willingness and concerns of the MAPEH teachers towards the adoption of AI in MAPEH teaching across years in service.

Category			Sum of Squares	df	Mean Square	F	Sig.
I.	Knowledge on GenAI	Between Groups	9.792	15	0.653	1.53	0.136
		Within Groups	18.756	44	0.426	1	
		Total	28.548	59			
II.	Willingness to adopt GenAI	Between Groups	29.484	15	1.966	3.00	0.002**
		Within Groups	27.632	44	0.628	13	
		Total	57.116	59		0	
III.	Concerns in adopting GenAI	Between Groups	14.601	15	0.973	1.96	0.042*
		Within Groups	21.794	44	0.495	96	
		Total	36.396	59		5	

*Significant at an alpha level of 0.05

**Significant at an alpha level of 0.01

The results in Table 7 indicate that in terms of knowledge towards GenAI, there is no significant difference between the MAPEH teachers when data is grouped according to years in service ($p=0.136$). However, for willingness and concerns, there is a significant difference between the MAPEH teachers depending on how long they have been teaching. For willingness, the significant difference is high with a p-value of 0.002, while for the concerns, it has a p-value of 0.042. It could be drawn from the results that the years of service of the MAPEH teachers affect how willing they are to adopt new technologies such as generative AI to their teaching and learning practices. Similarly, their years of service and experience in the field of education also affect their concerns about adopting these technologies.

The findings from table 7 imply that MAPEH teachers' years of service have an impact on both their readiness to embrace GenAI technologies and their reservations about their application. Because of their established teaching methods, comfort level with traditional approaches, or perception of the technology's lack of relevance to their topic, more experienced teachers may be more hesitant to embrace new technologies like GenAI. On the other hand, younger educators may be more receptive to implementing GenAI since they are more used to incorporating technology into their lessons. Research has shown that seasoned educators typically employ traditional approaches and can be less inclined to adopt new technology because they don't see the need for them or are uncomfortable with change [59]. In addition, according to a study by [58], instructors with more years of experience tend to have more ingrained attitudes and views about teaching, which can make them reluctant to embrace new technologies unless directly related to their teaching methods. However, younger educators may be more open to integrating these tools into their lesson plans because they were trained with more contemporary technological developments [61]. As a result, the variations in willingness and concerns according to years of service can be linked to a mix of beliefs of the benefits of artificial intelligence in education, comfort with integrating technology, and experience with conventional teaching techniques.

4. Correlation: Knowledge of GenAI, willingness and concerns in adopting GenAI in MAPEH teaching

In examining the significant relationships between the variables, Pearson's correlation was used to determine the patterns and connections between the MAPEH teachers' extent of knowledge, willingness and concerns. Furthermore, the results are shown below in Table 8.

Table 8. Correlations between variables

Variables	R-value	P value	Interpretation
Knowledge on GenAI Willingness to adopt GenAI	0.092	0.484	Not significant
Knowledge on GenAI Concerns in GenAI adoption	0.311*	0.016	Significant
Willingness to adopt GenAI Concerns in GenAI adoption	-0.363**	0.004	Significant

*Significant at an alpha level of 0.05

**Significant at an alpha level of 0.01

It is evident that the findings in Table 8 demonstrate a positive but weak correlation ($r=0.092$) between MAPEH teachers' awareness of GenAI and their readiness to use it. This indicates that although the relationship is not particularly strong, teachers' desire to adopt GenAI grows as they understand it. This is consistent with research by [62], which found that although knowledge with a technology might affect an individual's readiness to embrace it, this relationship is frequently weak and influenced by other criteria including perceived value and usefulness. In the same way, [56] highlighted that while knowledge helps foster a favorable attitude toward the adoption of technology, it does not ensure a notable increase in willingness, particularly in the absence of additional restrictions like finances or assistance. Furthermore, [60] emphasized that contextual factors like institutional support and resource accessibility influence teachers' motivation to accept technology in addition to expertise.

The weak correlation observed between knowledge and willingness is further supported by [63], who noted that a correlation coefficient of this magnitude is considered negligible, suggesting little to no meaningful relationship. Additionally, the null hypothesis (H_{0a}) is supported by the p-value of 0.484, which shows no significant correlation between MAPEH teachers' expertise and their desire to use GenAI.

Between the knowledge of GenAI and the concerns about GenAI adoption, the relationship is positive ($r=0.311$), suggesting that as the knowledge on GenAI increases, the concerns towards its adoption also increases. This may be because the more knowledgeable an individual becomes towards GenAI technologies, they also get to know more of the ethical issues that surround it, thus, making them more concerned when it comes to its adoption. [64] reported similar results, emphasizing that teachers grow more cautious about AI's educational consequences as they gain a better understanding of its potential and constraints.

The relationship between the two variables is also weak given the r-value of 0.311. However, despite the weak relationship between the two, the p-value of 0.016 reports a significant relationship between the two variables suggesting that the high concerns of the MAPEH teachers towards the adoption of Generative AI technologies is because of their high level of awareness and understanding towards the abilities as well as limitations of GenAI. Therefore, H_{0b} is not supported by the findings of this study. This result correlates with [65] observation that educators who possess a comprehensive understanding of AI technology tend to be cautious and concerned about ethical issues.

For the willingness and the concerns towards the adoption of GenAI in MAPEH teaching, there is a negative and weak relationship ($r=-0.363$) which indicates that as the concerns of the MAPEH teachers increase, their willingness to adopt it in their teaching and learning practices decreases. Meaning, the relationship is inversely proportional. It is also weak according to the scale given by [63], but it is significant ($p=0.004$). The relationship between the MAPEH teachers' willingness and concerns towards the adoption of GenAI has a very high significance which means that the concerns that they have towards its adoption truly affects their willingness to adopt it. The higher the concern, the more unwilling the MAPEH teachers become in adopting it to their teaching and learning practices. This finding does not support H_{0c} , and therefore, the null hypothesis is rejected. This result, aligned with the findings of [66] who emphasized that despite the potential advantages of new technology, teacher reservations about them frequently serve as major obstacles to adoption. Similarly, [67] noted that encouraging teachers to try out new technology in the classroom requires addressing such concerns.

The findings show extensive relationships between knowledge, willingness, and concerns about implementing GenAI in MAPEH instruction. Although there is not a significant association between willingness and knowledge, concerns have an inverse effect on willingness, while knowledge has a positive influence. These results highlight how crucial it is to address the concerns of teachers and offer targeted support to close the gap between awareness and adoption. According to [68], future research and professional development initiatives should concentrate on giving educators the tools they need to address ethical and pedagogical issues in addition to technological competence.

V. CONCLUSION

Understanding teachers' knowledge, willingness, and concerns is crucial to integrating GenAI into MAPEH instruction and improving student outcomes. Artificial intelligence is becoming an advancement that is imminent as education moves beyond conventional teaching techniques. Comparing experiences at public and private institutions, this quantitative study looked at MAPEH teachers' knowledge of, readiness to use, and concerns regarding GenAI technology in teaching and learning.

The findings show that MAPEH teachers generally have a basic understanding of GenAI and its limitations. However, their readiness to incorporate it into teaching and learning techniques remains neutral, with major reservations about over-reliance, ethical implications, and the potential to promote performance-based teaching. Private school teachers showed slightly higher levels of knowledge and willingness, but they also indicated more concerns than public school teachers, but these differences were not statistically significant. Furthermore, teachers' years of service influenced their readiness and concerns, with more experienced teachers having greater reservations about the technology.

The study further discovered a positive relationship between knowledge and worries, indicating that as teachers learn more about GenAI, their understanding of its limitations and ethical challenges grows. In contrast, concerns have a negative impact on willingness, emphasizing the importance of addressing these issues in order to build a more positive attitude about adoption. Despite the limited connections between knowledge, willingness, and concerns, the findings highlight the need for focused initiatives for closing perception and readiness gaps.

To ensure the success of GenAI integration, teachers must be exposed to AI technology and given opportunities for practical application. Training programs and seminars can help them improve their knowledge and expertise, allowing them to use GenAI more successfully while addressing ethical and practical challenges. These findings can help policymakers and stakeholders develop policies and guidelines for the responsible and informed implementation of GenAI technologies in MAPEH education and beyond.

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