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Research Paper

Teachers' Awareness in Artificial Intelligence and Digital Competence in the Workplace

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Abstract

This study examines the impact of artificial intelligence (AI) on education, specifically in the areas of teaching, learning, and assessment. While AI offers benefits such as personalized learning, automation, and data-driven feedback, it also brings challenges such as data privacy, teacher adaptation, and equity concerns. This research examines the link between teachers' awareness of AI and their digital competence in the workplace. Using a descriptive correlational design, data were collected via an online survey from 144 public basic education teachers in Laguna, Philippines. The study employed validated tools: the AI Awareness Scale and the Digital Competence Questionnaire. Results showed that only one factor—attendance at AI or ICT-related training—significantly influenced AI awareness ($p = .044$). Thus, the hypothesis was partially accepted, as the other demographic attributes showed no significant differences. However, a notable finding is the rejection of the hypothesis that no significant relationship exists between AI awareness and digital competence, suggesting a meaningful connection between the two. This research provides new insights into a relatively unexplored area: how teachers' understanding of AI correlates with their ability to effectively use digital tools. Although AI's role in fields such as health care and technology is well studied, its educational impact, particularly on teachers' preparedness, remains underrepresented.

Keywords: *Teachers, Artificial Intelligence, Digital Competence, Awareness, Correlations*

INTRODUCTION

Technology nearly permeates every aspect of modern life, transforming how we function and interact. This shift is especially evident in education, where innovations like the Internet of Things (IoT) have changed traditional learning methods. Simultaneously, artificial intelligence (AI) is gaining significant relevance in educational settings, offering innovative opportunities to improve teaching and learning experiences. Al-Darayseh (2023) highlighted the importance of AI in education, noting its ability to personalize learning experiences to meet individual student needs, offer detailed feedback for ongoing improvement, engage and motivate learners to achieve better outcomes, and reduce teachers' administrative workload, allowing for more effective time management.

The adoption of AI tools to improve educational outcomes has accelerated in recent years, as demonstrated by Holmes et al. (2019). The COVID-19 pandemic accelerated this integration, as noted by Zawacki-Richter et al. (2019). With schools closing unexpectedly, AI-driven platforms and tools were rapidly implemented to maintain educational continuity. This period also saw a surge in user registrations for commercial AI education platforms, illustrating an increased dependence on AI to support remote learning, as documented by Miao et al. (2021).

Although AI offers considerable promise for advancing education, several challenges must be addressed. AI must be used equitably and without bias to avoid worsening existing inequalities among student groups. Moreover, thorough training programs for educators are crucial to enable teachers to successfully integrate AI into their classrooms. Although AI integration holds significant

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potential for enriching learning experiences, addressing issues such as bias reduction and providing adequate teacher training are key to its successful implementation in education.

One of the significant challenges confronting researchers in the realm of information systems and technology is the acceptance or rejection of modern technology by its users. The incorporation of advanced technologies, including mobile devices, tablets, laptops, simulators, and virtual laboratories, seeks to revolutionize the educational environment in schools and institutions. In light of the globalized nature of education, there is a growing imperative to incorporate digital technologies (Haleem et al., 2022). Consequently, the teaching profession is confronted with rapidly evolving demands, necessitating the acquisition of a diverse and advanced set of competencies (European Commission, 2023). The researchers of this study assert that digital competencies (DCs) are essential in today's educational system and serve as a linchpin for education's future.

Teachers across all levels must consistently enhance their digital skills and expertise to remain aligned with the fast-evolving technological landscape and expanding knowledge base. Digital competence (DC) is one of the eight key competencies necessary for effectively using a wide range of digital information and communication technologies, as well as for solving problems in various aspects of life. These competencies involve the skilled and responsible use of digital technologies in areas such as work, learning, social engagement, and interpersonal communication to achieve different goals (Caena & Redecker, 2019). Additionally, DCs include a broad understanding of digital technologies and their implications within the digital landscape (Becker et al., 2017).

Despite the growing body of literature on AI in education, a notable gap remains in understanding the intersection between teachers' digital competencies and their awareness or preparedness to integrate AI into pedagogical practice, particularly in diverse educational settings and across varying levels of technological infrastructure. Existing research has largely focused on AI's capabilities or its broad implementation, often overlooking the critical role of educators' digital literacy in mediating the effectiveness of these technologies.

To address this gap, this study investigated educators' awareness of AI and evaluated their digital competence. This dual focus is essential for informing strategic interventions aimed at enhancing professional development, fostering inclusive education, and ensuring equitable access to the benefits of AI-enhanced learning environments.

LITERATURE REVIEW

Background of The Study

The COVID-19 pandemic has significantly accelerated the adoption of online and blended learning models, prompting educators to integrate emerging technologies to enhance student outcomes. Among these technologies, artificial intelligence (AI) has gained considerable attention, particularly in virtual learning environments where it has been leveraged to support and enrich student learning experiences. Despite its transformative potential, many AI tools remain unfamiliar to educators who often lack the technical expertise required to effectively incorporate AI applications into their teaching practices or to foster students' digital competencies in AI.

The expanding significance of AI in education is demonstrated by a survey of international literature, which also highlights the advantages it offers to both instructors and students. AI competencies are now recognized as essential technological skills for the 21st century, enabling individuals to critically evaluate digital technologies, collaborate effectively, and apply AI tools in various contexts, including the workplace and home. The European digital competence framework for educators, specifically the DigCompEdu platform, offers a model for integrating AI into teaching and learning. Studies have indicated that AI can streamline administrative tasks for teachers while also empowering students to approach educational challenges with creativity and innovation.

However, to fully harness AI's potential, educators must enhance their pedagogical and technological competencies to create effective learning environments that maximize the benefits of AI (Tkhachenko, 2023).

Despite advancements in educational technology, a notable lack of research has identified the specific AI competencies that educators need to effectively integrate AI into their teaching practices. While general digital competency frameworks such as DigCompEdu and P21's 21st-century learning framework offer guidance, comprehensive studies addressing the unique challenges of teaching with AI are scarce. This study aims to address this gap by examining the opportunities and challenges of AI integration in education, with a focus on enhancing teaching, learning, and assessment. By adapting existing digital competency models to include AI-specific skills, this research seeks to provide practical recommendations for educators and researchers, facilitating AI literacy and the successful incorporation of AI tools into educational settings.

Theoretical Framework

Incorporating Artificial Intelligence (AI) and digital technologies into education requires a robust theoretical foundation to examine the connection between teachers' AI awareness and their digital competence. Various educational, psychological, and technological theories offer valuable perspectives on how educators learn, utilize, and integrate digital tools and AI into their professional routines.

The Technological Pedagogical Content Knowledge (TPACK) framework, introduced by Koh et al. (2015), emphasizes the interplay between three essential domains: Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK). For teachers to effectively incorporate AI tools into their instruction, a solid foundation in technological knowledge is essential, as it significantly impacts their pedagogical approaches and content delivery. AI awareness further empowers educators to utilize technology to enhance both teaching methods and learning experiences, positioning TPACK as a vital framework for understanding AI's integration into education.

The Digital Competence Framework (Ferrari, 2013) underscores the significance of digital literacy for educators, highlighting key competencies like information and data literacy, digital content creation, communication, collaboration, and problem-solving. A teacher's digital competence is crucial for effectively using AI in the classroom, as it involves not only the technical application of tools but also understanding their wider impact on learning, ethics, and the ability to adapt to various educational contexts.

A comprehensive understanding of the connection between teachers' digital competency and their awareness of AI can be obtained by combining these notions. Higher levels of digital competency are anticipated to be displayed by educators who are more knowledgeable about AI, which will boost their self-assurance and proficiency with AI tools. The theoretical framework also emphasizes the crucial role of peer support, training, and professional development in improving teachers' digital literacy and facilitating the effective incorporation of AI into teaching methods. This study investigates the elements that influence teachers' ability to integrate AI tools into their instructional settings and how their awareness of AI affects their digital competency, all based on this integrated framework.

Conceptual Framework

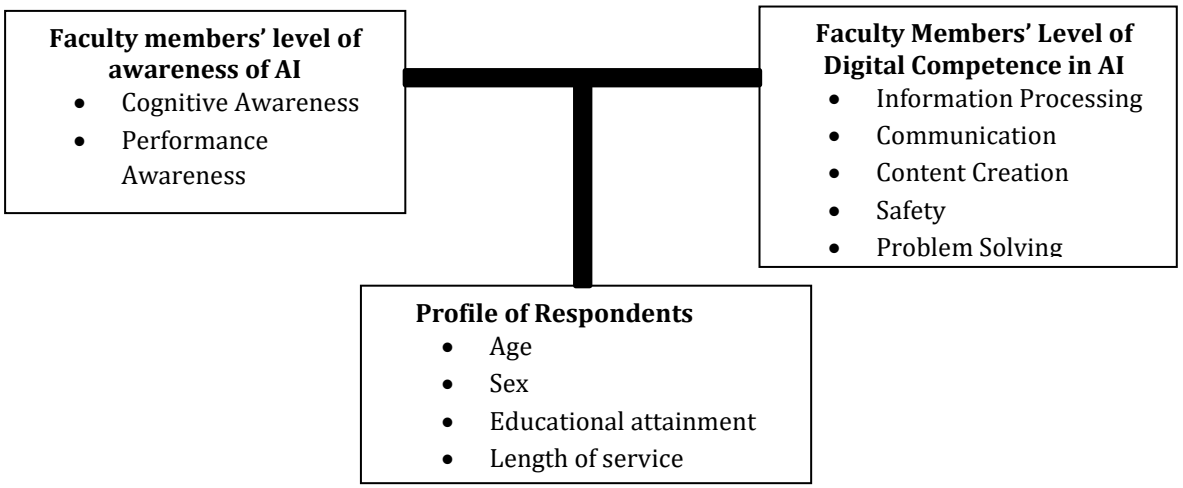

Figure 1. Research Paradigm

Statement of the Problem

This study assesses the relationship between artificial intelligence awareness and the digital competence of teachers in the workplace.

Specifically, it answers the following questions:

1. The profile of the respondents in terms of age, sex, educational attainment, length of service, level taught, ICT-related training, and AI-related training.
2. What is the mean level of respondents' artificial intelligence awareness?
3. The mean level of respondents' digital competence
4. Is there a significant difference between the profile and artificial intelligence awareness of groups?
5. Is there a significant relationship between teachers' artificial awareness and digital competence in the workplace?

RESEARCH METHOD

The study utilized a descriptive correlational research design, which is suitable for describing and measuring the levels of teachers' awareness of Artificial Intelligence (AI) and their digital competence in the workplace, while also exploring potential relationships or correlations between these variables. This approach allows researchers to identify patterns and associations, offering valuable insights into how teachers' AI knowledge may be linked to their digital skills in a professional setting. The correlational nature of the design is particularly beneficial for identifying potential connections between variables without manipulating them, making it ideal for examining naturally occurring traits among teachers.

To ensure that the findings of this study can be applied more broadly and to avoid sampling bias, a simple random sampling method was used. Public Basic Education Teachers from the Province of Laguna, Philippines, were selected randomly, giving everyone in the target group an equal chance to participate. Surveys were distributed online using Google Forms, making it easier to reach various participants. In total, 144 teachers completed the survey. This number is considered sufficient for studies of this kind, as it allows for meaningful analysis without becoming too large to manage. It strikes a good balance between being large enough to reflect the views of the population and small enough to manage with available resources. The sample size also meets

common recommendations for educational research, thus supporting the credibility of the results.

To assess respondents' awareness of Artificial Intelligence, the AI Awareness Scale was developed as it provides a validated tool specifically designed to measure AI awareness. This scale effectively evaluates various aspects of AI knowledge and familiarity, which aligns with the focus of the study. For evaluating Digital Competence, the Digital Competence Questionnaire was selected due to its proven reliability and relevance in measuring digital proficiency. This tool effectively captures the key competencies needed in contemporary educational settings, and it fits well with the study's goal of examining digital skills among teachers in their professional environment.

To analyze the demographic profile of the respondents, frequency and percentage distributions were employed, as these are appropriate for summarizing categorical data and identifying patterns in respondent characteristics. To determine the level of awareness and digital competence, the mean and standard deviation were utilized, providing a measure of central tendency and variability that helps interpret the overall trends and dispersion in the respondents' responses. Furthermore, to examine the significant relationships between variables, both the chi-squared test and Pearson's product-moment correlation coefficient were applied. The chi-squared test was suitable for evaluating associations between categorical variables, whereas Pearson's r was used to assess the strength and direction of linear relationships between continuous variables. The selection of these statistical tools was based on the nature of the data and the specific objectives of the study, ensuring that the analyses were valid and appropriate.

FINDINGS AND DISCUSSION

Table 1. Distribution of the respondents in terms of age

Age	Frequency	Percentage
24-34 years old	81	56.25
35-45 years old	47	32.64
46-56 years old	13	9.03
57 years old and above	3	2.08
Total	**144**	**100.00**

The age distribution of respondents is displayed in Table 1. More than half of the respondents were comparatively young people, as the majority of them (56.25%) were between the ages of 24 and 34. The second-largest group is the 35-45 years old category, comprising 32.64% of the respondents. A smaller proportion of respondents were between 46 and 56 years old (9.03%), and an even smaller segment was 57 years old and above (2.08%). This distribution suggests that the sample is skewed toward younger age groups.

The sample's age skew may limit the generalizability of the results to the entire population of educators, particularly if older age groups are more prevalent in certain schools or regions. Future studies could benefit from a more balanced age distribution to provide insights that more accurately reflect the diversity within the teacher population.

Table 2. Distribution of the respondents in terms of sex

Sex	Frequency	Percentage
Female	115	79.9
Male	29	20.1
Total	**144**	**100.00**

In a study examining AI awareness among teachers, Table 2 shows that the majority of

respondents were female, accounting for 79.9% of the sample, while male teachers represented 20.1%. This notable imbalance in gender distribution suggests that the findings and perspectives from this study are largely reflective of female teachers.

The findings indicate that the AI awareness results mainly reflect the perspectives of female teachers. This gender imbalance could affect the outcomes because potential differences in technology adoption or attitudes toward AI based on gender may not be fully represented. Future studies with a more balanced gender distribution could provide a more comprehensive understanding of AI awareness among educators.

Table 3. Distribution of the respondents in terms of highest educational attainment

Highest Educational Attainment	Frequency	Percentage
Bachelor's degree	4	2.8
Bachelor's degree with MA units	23	16.0
Master's degree	109	75.7
Doctorate degree	6	4.2
Post Doctorate Degree	2	1.4
Total	**144**	**100.0**

Table 3 shows that most respondents hold a Master's degree (75.7%), indicating a high level of advanced education within the sample. A significant proportion of students have a Bachelor's degree with MA units (16.0%), indicating that many are pursuing further studies. A smaller segment has a Doctorate degree (4.2%), and a very minimal percentage have a Bachelor's degree (2.8%) or a post-doctoral degree (1.4%).

This high level of educational attainment among respondents suggests that teachers are well-qualified and likely to have a strong foundation in both theoretical and practical aspects of education. Their advanced educational background might also influence their perceptions and awareness of AI, potentially leading to more informed and insightful perspectives on the topic.

Table 4. Distribution of respondents in terms of service length

Length in Service	Frequency	Percentage
1-10 years	87	60.42
11-20 years	48	33.33
21-30 years	9	6.25
Total	**144**	**100.00**

As indicated in Table 4, the majority of respondents (60.42%) have been in service for 1–10 years, suggesting that most are relatively early in their careers and may offer fresh perspectives along with greater adaptability to new technologies like AI. The next largest group, comprising 33.33%, has been in service for 11 to 20 years, offering a balance between experience and openness to innovation. A smaller group, 6.25%, has been in service for 21–30 years, providing in-depth expertise and historical perspectives on the educational landscape.

This distribution of experience levels is important because it reflects a diverse range of teachers who can offer different insights into AI awareness and its potential effects on teaching practices. The combination of newer and more experienced educators can enrich the understanding and adoption of AI in education.

Table 5. Distribution of the respondents in terms of grade level taught

Grade Level	Frequency	Percentage
Grade 1-6	50	34.7
Grade 7-10	62	43.1
Grage 11-12	25	17.4
Kinder	7	4.9
Total	**144**	**100.00**

Table 5 presents the distribution of respondents based on the grade levels they taught. A significant portion of the respondents (43.1%) teach grades 7-10, indicating strong representation from middle and junior high school educators. Teachers of grades 1-6 make up 34.7% of the sample, while 17.4% teach grades 11-12, reflecting a solid presence of elementary and high school teachers. A smaller percentage of respondents (4.9%) taught kindergarten.

The wide range of grade levels taught by the respondents provides a thorough perspective on AI awareness across different educational stages. It is particularly valuable as each grade level faces distinct challenges in integrating AI into their teaching methods. This diverse distribution ensures that the study captures a broad array of educational experiences and viewpoints on AI.

Table 6. Distribution of the respondents in terms of AI and ICT Training

Training	Frequency	Percentage
AI Training	3	2.1
ICT Training	119	82.6
Both (ICT and AI Training)	22	15.3
Total	**144**	**100.00**

Table 6 illustrates the distribution of teachers based on their training in AI and Information and Communications Technology (ICT). A significant majority of respondents (82.6%) have received ICT training, indicating that most teachers possess fundamental technological skills. However, only a small proportion (2.1%) received specific training in AI. Approximately 15.3% of respondents have been trained in both AI and ICT, indicating more thorough preparation for modern technological skills.

This distribution indicates that while ICT training is widespread among teachers, AI-specific training remains less common. To improve AI awareness and its integration into teaching, greater emphasis should be placed on providing AI training to educators, helping them effectively utilize AI tools in the classroom and stay updated with technological advancements.

Table 7. Mean level of respondents' artificial intelligence awareness in terms of cognitive awareness of artificial intelligence in teaching

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
1. I know enough about AI applications and programs.	3.38	0.74	Moderate
2. I know enough about faculty members' responsibilities regarding using AI in the classroom.	3.38	0.82	Moderate

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
3. I am familiar with the fundamentals of creating and executing lessons using AI tools and programs.	3.19	0.93	Moderate
4. I am aware of the techniques used by AI software to assess student work.	3.21	0.89	Moderate
Overall	**3.29**	**0.74**	**Moderate**

Table 7 presents the respondents' cognitive awareness of artificial intelligence in teaching, as assessed using various indicative statements. The overall mean score of 3.29 (SD = 0.74) was classified as "Moderate." The mean scores for individual statements ranged from 3.19 to 3.38, all falling under the "Moderate" category. This indicates that although teachers possess a basic understanding of AI applications, their roles in teaching, lesson planning, and student assessment, there is potential for further growth. The moderate level of cognitive awareness suggests that teachers are somewhat familiar with AI in education but may require additional training and support to fully incorporate AI tools and strategies into their teaching practices. Expanding AI training programs and offering ongoing professional development could enhance students' comprehension and use of AI in the classroom.

The findings align with Sysoyev (2023), who suggested that the use of AI tools in education is still in its infancy. university professors frequently lack a thorough awareness of the possible organizational, instructional, and learning uses of artificial intelligence. Many educators possess only partial knowledge, which tends to focus narrowly on their specific teaching areas, limiting their ability to fully grasp AI's broader educational possibilities. Nonetheless, most faculty members have a neutral or open attitude toward incorporating AI tools into their teaching. However, practical experience with AI in education remains limited, with only isolated instances of specific technologies being applied to particular aspects of discipline instruction.

Table 8. Mean level of respondents' artificial intelligence awareness in terms of performance awareness of artificial intelligence in teaching

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
1. I can use AI applications to create various files.	3.11	0.95	Moderate
2. I can use AI tools to create course materials.	3.19	1.15	Moderate
3. I can use AI tools to summarize lengthy documents.	3.38	1.00	Moderate
4. I can employ chatbots to answer questions from learners.	3.22	1.05	Moderate

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
5. I can use AI (sound-making) software to turn course textual materials into audio files.	2.85	1.03	Moderate
6. I will be able to use AI applications in the classroom that focus on scientific rivalry, challenges, and suspense.	2.91	0.97	Moderate
7. AI tools can be used to convert printed text or images into editable text files.	3.03	1.09	Moderate
8. I can use AI tools to transform written texts into instructional movies.	2.80	1.09	Moderate
Overall	**3.06**	**0.84**	**Moderate**

Table 8 presents teachers' performance awareness regarding the use of artificial intelligence in their teaching practices. The overall mean score of 3.06 (SD = 0.84) was classified as "*Moderate*." The mean scores for individual statements ranged from 2.80 to 3.38, all falling under the "*Moderate*" category. This suggests that teachers have a moderate level of awareness regarding their ability to apply various AI tools in their teaching methods. The moderate level of performance awareness indicates that although teachers are somewhat capable of using AI tools, they have significant potential for improvement. Further training and resources focused on the practical application of AI in education could help enhance teachers' skills and confidence in using these technologies.

The findings align with Uygun et al. (2024), who indicated that younger educators and those with advanced academic qualifications tend to possess stronger practical knowledge of AI. However, the study had certain limitations, such as a relatively small sample size and reliance on the accuracy of participants' responses. Despite these constraints, assessing teachers' levels of AI awareness is crucial for informing the development of AI-related educational programs. Gaining insight into teachers' perceptions and understanding of AI can guide the design of targeted training initiatives and enhance educators' skills in integrating AI technologies effectively into the classroom.

Table 9. Mean level of respondents' digital competence in terms of Information Processing

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
1. I can find information on various search engines.	4.15	0.90	High
2. I can locate trustworthy information online using sophisticated search techniques.	1.90	0.30	Low

Indicative Statement	Mean	SD	Descriptive Interpretation
3. To compare and evaluate the accuracy of the material I find, I apply a few criteria.	3.79	0.93	Moderate
4. Once files or content are saved or stored, I can access them later.	4.01	0.97	High
5. I can store materials from the internet in many formats. I can use cloud storage services, such as Google Drive.	4.12	0.93	High
Overall	**3.59**	**0.68**	**Moderate**

Table 9 outlines the digital competence of teachers in terms of information processing. The overall mean score of 3.59 (SD = 0.68) was categorized as "Moderate." Teachers demonstrated strong competence in using various search engines (Mean = 4.15) and storing information in different formats (Mean = 4.12). However, their ability to use advanced search strategies to locate reliable information was low (Mean = 1.90), highlighting a key area for improvement. Their competence in using filters to assess information reliability (Mean = 3.79) and saving content (Mean = 4.01) ranged from moderate to high. While teachers are skilled at basic digital tasks and cloud services, additional training in advanced search techniques may be beneficial to improve their ability to find trustworthy information. This could include workshops or professional development focused on effective search methods and evaluation of online sources.

In light of these findings, it may be construed that in order for teachers to be competent in digital transformation and digital technologies, inculcation of both theoretical and practical learning on digitalization should start as early as the undergraduate level of the field they are specializing in and continue through the professional stages they may be climbing (Ferikoglu & Akgun, 2022).

Table 10. Mean level of respondents' digital competence in terms of Communication

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
1. I can communicate with others using video calls or chat using basic features (e.g. voice messaging, SMS, text exchange).	4.42	0.89	High
2. I can use collaboration tools and contribute to e.g. shared documents/files created by others.	4.24	0.92	High
3. I actively participate in online spaces and use several online services (e.g. public services, e-banking, online shopping…).	4.14	0.89	High

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
4. I can use advanced communication tool features (e.g. video conferencing, data sharing, application sharing).	4.11	0.90	High
5. I pass on or share knowledge with others online (e.g. via social networking tools or in online communities).	4.06	0.91	High
Overall	**4.19**	**0.82**	**High**

Table 10 highlights teachers' digital competence in communication. With an overall mean score of 4.19 (SD = 0.82), categorized as "High," teachers demonstrate strong abilities in this area. They excel at using basic communication tools like video calls and chats (Mean = 4.42) and effectively utilize the advanced features of these tools (Mean = 4.11). High proficiency was also evident in their use of collaboration tools (Mean = 4.24) and participation in online spaces and services (Mean = 4.14). In addition, they scored well in sharing knowledge online through various platforms (Mean = 4.06).

This high level of competence reflects teachers' readiness to integrate digital communication tools into their teaching practices, which is a critical skill for creating dynamic and interactive learning environments, especially in blended or remote learning settings.

The findings align with Annus (2024) who emphasized that a teacher's primary role must shift from being the sole knowledge provider. Rather than simply presenting information, teachers are now expected to guide students toward developing independence and collaborative thinking skills. In the digital age, self-sufficiency is crucial and includes the capacity to effectively search for, locate, and use information.

Table 11. Mean level of respondents' digital competence in terms of Content Creation

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
1. I can produce simple digital content (e.g. text, tables, images, audio files) in at least one format using digital tools.	4.11	0.90	High
2. o I can make basic editing of content produced by others (e.g., adding and deleting).	4.11	0.90	High
3. I know how to apply licenses and copyrights and when necessary.	4.15	0.90	High

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
4. I can modify simple functions of software and applications can be modified by changing the default settings.	3.62	1.02	Moderate
5. I can use several programming languages. I know how to design, create, and modify databases using computer tools.	3.13	1.09	Moderate
Overall	**3.82**	**0.76**	**High**

Table 11 outlines teachers' digital competence in content creation, with an overall mean score of 3.82 (SD = 0.76), classified as "High." Teachers exhibited strong skills in creating simple digital content (Mean = 4.11) and performing basic edits (Mean = 4.11). They also displayed a solid grasp of licenses and copyright application (Mean = 4.15). However, their proficiency in modifying software settings (Mean = 3.62) and working with programming languages (Mean = 3.13) was moderate.

The high level of competence in basic content creation tasks indicates that teachers are well-prepared to integrate digital tools into their instructional methods. Nevertheless, the moderate programming and software modification scores highlight opportunities for additional training. Improving these skills could enable teachers to produce more advanced digital content and maximize the capabilities of educational technologies.

Reflecting findings similar to those of Annus (2024), the present study highlights AI's transformative potential in education. We identified key areas and technologies where AI could significantly impact teaching and learning. Machine learning and data analytics, for instance, will allow educational systems to better address individual student needs. Therefore, students need to learn how to leverage these available technologies. However, critical thinking and strong understanding are necessary for students to accurately interpret and apply AI tools effectively. In this regard, teachers play a crucial role in guiding students to use AI resources responsibly and ethically. Our survey revealed that educators, across age groups and disciplines, generally welcome intelligent systems that enhance teaching support.

Table 12. Mean level of respondents' digital competence in terms of Safety

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
1. I can take basic steps to protect my devices (e.g. using anti-viruses and passwords).	3.91	0.86	High
2. I use different passwords to access equipment, devices, and digital services, and I modify them periodically.	3.82	0.99	High

Indicative Statement	Mean	SD	Descriptive Interpretation
3. I understand the health risks associated with the use of digital technology (e.g., risk of addiction).	4.13	0.88	High
4. I take basic measures and actions to save energy.	4.07	0.87	High
5. I understand the positive and negative impacts of technology on the environment.	4.30	0.84	High
Overall	**4.05**	**0.76**	**High**

Table 12 highlights teachers' digital competence in the area of safety, with an overall mean score of 4.05 (SD = 0.76), categorized as "High." Teachers demonstrated strong abilities in basic device protection (Mean = 3.91) and regularly updating passwords (Mean = 3.82). They also scored highly for understanding the health risks associated with digital technology (Mean = 4.13) and adopting basic energy-saving measures (Mean = 4.07). The highest competence was observed in recognizing the environmental impact of technology, both positive and negative (Mean = 4.30).

This high level of safety awareness reflects teachers' preparedness to safeguard their devices and use technology responsibly. These skills are essential for fostering a secure and sustainable digital environment for both teachers and students. Ongoing training and professional development can further reinforce and enhance these competencies.

As noted by Karsenti (2019), platforms such as Google, Facebook, YouTube, and Wikipedia were almost unheard of two decades ago. Today, they rank among the most widely utilized digital tools worldwide. In this rapidly evolving landscape, digital technology has significantly influenced the economic, social, and cultural development of societies. With new technologies increasingly shaping daily life and resonating with younger generations, educational institutions must adapt by integrating these tools. Moreover, in line with 21st-century objectives, nations expect teachers and students alike to embody the qualities of informed and responsible digital citizens.

Table 13. Mean level of respondents' digital competence in terms of Problem Solving

Indicative Statement	Mean	SD	Descriptive Interpretation
As a faculty member…			
1. I find support when a technical problem occurs or when using a new program.	3.94	0.86	High
2. I know that digital tools can help me solve problems.	3.99	0.88	High
3. I am aware of new technological developments. I understand how new tools work.	3.86	0.80	High
4. I am aware of I need to update my digital skills regularly.	4.23	0.78	High

Indicative Statement	Mean	SD	Descriptive Interpretation
5. I frequently update my digital skills to decrease my limits and increase my knowledge.	3.94	0.82	High
Overall	**3.99**	**0.72**	**High**

Table 13 presents the teachers' digital competence in terms of problem-solving skills. The overall mean score of 3.99 (SD = 0.72) was classified as "High." Teachers demonstrated high competence in finding support for technical problems (Mean = 3.94) and knowing that digital tools can help solve problems (Mean = 3.99). There was also a high awareness of new technological developments (Mean = 3.86) and the need for regularly updating digital skills (Mean = 4.23). The frequent updating of digital skills to increase knowledge also scores high (Mean = 3.94).

The high level of problem-solving competence indicates that teachers are well-equipped to handle technological challenges and adapt to new digital tools. This is crucial for maintaining effective teaching practices in a rapidly evolving digital landscape. Continuous professional development and access to support resources can further enhance these competencies, ensuring that teachers stay current with technological advancements and integrate them effectively into their teaching methods.

Table 14. Test of Significant Difference in the Respondents' Level of IA Awareness when grouped according to their profile

Profile	df	Chi-square	p-value	Remarks
Age	124	100.357	.941	Not Significant
Sex	4	3.092	.543	Not Significant
Highest Educational Attainment	16	9.938	.870	Not Significant
Length of Service	88	93.943	.313	Not Significant
Grade Level Taught	12	8.326	.759	Not Significant
Relevant Trainings	8	15.906	.044	Significant

Table 14 summarizes the test for significant differences in respondents' AI awareness levels based on various profile attributes. Statistical significance was assessed using the p-value, with results indicating that only attendance in relevant training programs showed a significant difference (p = .044). This finding highlights that participation in AI and ICT-related training significantly enhances teachers' awareness of AI, emphasizing the critical role of continuous professional development in keeping educators informed and skilled in AI technologies.

Similarly, Uygun et al. (2024) found that younger teachers and those with higher academic qualifications generally possess a stronger practical understanding of AI. However, this study has some limitations, including a small sample size and reliance on the accuracy of participant responses. Despite these challenges, understanding teachers' awareness of AI is vital for designing AI-focused educational programs. By exploring teachers' perspectives and knowledge, targeted training initiatives can be developed to enhance teachers' capacity to effectively integrate AI

technologies into teaching practices.

Table 15. Test of the Significant Relationship between Teachers' AI Awareness and Digital Competence

Variables	r-value	Strength	p-value	Remarks
AI Awareness and Digital Competence	0.662	Moderate	.000	Significant

Table 15 presents the test results for the significant relationship between teachers' AI awareness and their digital competence. The r-value, which measures the strength of the relationship, is 0.662, indicating a moderate positive correlation. This suggests that as teachers' AI awareness increases, their digital competence also improves. The p-value of .000 confirms that this relationship is statistically significant.

This result underscores the strong connection between AI awareness and digital competence among teachers. By enhancing AI awareness through targeted training and professional development, teachers can improve their overall digital skills. This highlights the need for comprehensive training programs that simultaneously address both AI awareness and digital competence, equipping educators to integrate technology more effectively into their teaching practices.

The profound impact of modern technology across various sectors, with education being among the most significantly affected. The global transition to the fifth generation of the Internet, known as the Internet of Things (IoT), has opened up new opportunities in education. The integration of Artificial Intelligence (AI) into teaching and learning has gained considerable traction.

Educational institutions worldwide are increasingly adopting AI-driven strategies to enhance administrative and instructional functions. This integration is vital for improving operational efficiency, streamlining educational management, and boosting learning outcomes. The past decade has seen a significant rise in AI applications for learning support and enhancement, a trend that accelerated during the COVID-19 pandemic as schools and universities turned to AI tools to facilitate remote learning and ensure educational continuity.

In addition, AI technology companies have experienced a notable increase in user registrations from the education sector, indicating a market shift toward AI adoption. This growth reflects both the sector's confidence in AI solutions and its recognition of AI's potential to drive meaningful improvements in learning environments. As AI technologies continue to evolve, their integration into education is expected to deepen, with future applications becoming more sophisticated and tailored to meet the specific needs of educators and learners.

CONCLUSIONS

Considering the study findings, the following conclusions were drawn: The findings of this study indicate that among the various profile attributes examined, only attendance in AI- and ICT-related training demonstrated a statistically significant influence on teachers' awareness of artificial intelligence ($p = .044$). This suggests that professional development initiatives specifically targeting emerging technologies play a crucial role in shaping educators' understanding of AI. Consequently, the hypothesis that all profile variables bear no significant influence on AI awareness is partially upheld, highlighting the critical importance of targeted training programs in fostering technological literacy among teachers.

In contrast, the hypothesis positing no significant relationship between teachers' AI awareness and their digital competence is rejected. The analysis yielded an r-value of 0.662, denoting a moderate positive correlation, and a p-value of .000, confirming statistical significance. These results suggest that increased familiarity with AI concepts is closely associated with higher levels of digital competence.

Theoretically, this study contributes to the growing body of literature on digital transformation in education by reinforcing the interdependence between conceptual awareness of artificial intelligence and broader digital competencies. This underscores the notion that AI awareness is not an isolated construct but is intricately linked to educators' capacity to operate effectively within digitally mediated environments. This insight aligns with and extends existing models of technological integration, such as the Technological Pedagogical Content Knowledge (TPACK) framework, by emphasizing the foundational role of AI literacy in achieving comprehensive digital competence. As such, the findings provide a valuable lens through which future training programs and policy interventions can be developed to bridge gaps in both awareness and practical digital skill sets among educators.

Recommendations

Based on the study findings, the following recommendations were made:

1. Given that participation in relevant training was found to significantly enhance teachers' awareness of artificial intelligence, it is recommended that educational institutions develop and implement structured, ongoing professional development programs focused on AI and ICT integration. These training initiatives should be accessible, modular, and context-specific, allowing educators to build their competencies progressively while aligning with their teaching needs. Incorporating hands-on workshops, case studies, and practical applications of AI tools in the classroom can further support the effective translation of knowledge into practice. Institutionalizing such training efforts, schools can ensure that teachers remain well-informed about technological advancements and are equipped to apply them meaningfully in instructional settings.
2. To further develop teachers' skills, it is crucial to support continuous professional development through workshops, seminars, and certification programs focused on AI and digital tools. Regular training can help teachers improve their knowledge and digital competence, enabling them to apply AI effectively in their classrooms.
3. Considering the strong connection between AI awareness and training, educational policymakers may design AI-focused programs that specifically address teachers' needs. These programs should emphasize the practical use of AI in educational settings and highlight how it can enhance student learning outcomes.
4. Schools should foster collaborative learning environments where teachers can exchange ideas, strategies, and challenges related to AI use. This could be supported through peer learning, online discussion forums, or mentorship programs that encourage shared learning experiences.
5. Teachers may be encouraged to engage in AI-related research or pilot initiatives. Direct involvement in AI projects can deepen students' understanding of its applications in education and enhance their digital skills, leading to better teaching practices and student outcomes.

LIMITATIONS AND FUTURE RESEARCH

This study provides valuable insights into the relationship between teachers' AI awareness and digital competence, but it is limited by its scope and methodology. The sample was drawn from

a specific educational context, which may have affected the generalizability of the findings. In addition, the use of self-reported data introduces the risk of bias, as participants may have misjudged their actual competence or awareness. The correlational design also limits the ability to draw causal conclusions, leaving room for other influencing factors that were not examined.

Future research should consider broader and more diverse samples to validate these findings across different regions and school systems. Qualitative methods, such as interviews and observations, can enrich the data and provide a deeper context. Longitudinal studies would also help track the long-term effects of AI-related training. Finally, further investigation into institutional factors, such as infrastructure, leadership support, and policy—could offer a more comprehensive understanding of the factors that enable effective AI integration in education.

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