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## School Leaders' and Teachers' Levels of Awareness and Use, and Perspectives on AI Integration in Education

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### ABSTRACT

This study investigated elementary school leaders' and teachers' awareness, usage and perspectives regarding Artificial Intelligence (AI) integration in education within the Schools Division of Batac City. Using a descriptive-correlational design, data were collected through a structured survey and analysed with descriptive statistics and Pearson's correlation. Respondents exhibited moderate AI awareness and positive perspectives, but actual usage remained low. Age, position and experience were negatively associated with awareness and usage, whereas gender was positively associated with engagement among school leaders. These findings indicate that although AI readiness exists, gaps in professional development and practice hinder adoption. The study concludes that targeted training, support for early adopters and longitudinal monitoring are needed to promote effective AI integration.

### INTRODUCTION

The rapid development of Artificial Intelligence (AI) technologies is transforming many aspects of society, including education. In basic education, AI promises to personalise learning, streamline administrative tasks and provide data-driven insights that can improve teaching and learning (Luckin *et al.*, 2016). However, meaningful AI integration depends on educators' awareness of what these technologies can do and their ability to apply them in age-appropriate ways (Holmes *et al.*, 2019). International experience shows that major investments in AI, such as those in the United States and China, have enabled the adoption of intelligent tutoring systems and smart classrooms, yet questions remain about how prepared educators are to use these tools effectively (Tyagi *et al.*, 2022; Li, 2020). In the Philippines, the Department of Education (DepEd) promotes digital transformation and highlights technology integration in its Education Sector Plan, but local studies reveal that teachers and school leaders often feel unprepared to apply AI in practice (Lameras, 2022; Bautista *et al.*, 2024).

Elementary education presents unique developmental and curricular considerations. AI integration must align with young learners' cognitive and socio-emotional development, and both teachers and school leaders need guidance on how to adapt instruction and management accordingly. Studies within Ilocos Norte indicate that interest in AI is growing, yet access to technology and training remains uneven, and many educators lack confidence in using AI tools (Bautista *et al.*, 2023; Dela Cruz, 2023). School leaders play a pivotal role in shaping institutional culture and providing professional development opportunities, so understanding their perceptions alongside those of teachers is essential for successful AI adoption (Ertmer & Ottenbreit-Leftwich,

2010).

To address these issues, this study examines the levels of awareness, usage and perspectives on AI integration among elementary school leaders and teachers in DepEd Batac City. Insights from this research can inform policy and professional development initiatives aimed at equipping educators with the skills and confidence necessary to adopt AI in ways that enhance teaching and learning.

### Objectives

This research seeks to: (1) describe the demographic profiles of elementary school leaders and teachers in terms of gender, age group, school location, position, teaching or administrative experience and participation in AI-related training; (2) assess their level of awareness regarding AI integration in education; (3) determine the extent to which they currently use AI tools in educational practice; (4) explore their perspectives toward the integration of AI into elementary education; and (5) examine whether significant relationships exist between demographic variables and the levels of awareness, usage and perspectives on AI integration.

### LITERATURE REVIEW

#### Artificial Intelligence in Education

Artificial intelligence (AI) has increasingly been positioned as a transformative development in contemporary education due to its capacity to support personalized learning, streamline administrative processes, and enhance data-informed instructional decision-making (Luckin *et al.*, 2016; Holmes *et al.*, 2019). Empirical studies document the growing use of AI-driven applications such as intelligent tutoring systems, automated assessment platforms, and learning analytics, which have

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shown promise in improving learner engagement and instructional efficiency across various educational levels (Tyagi *et al.*, 2022; Wang *et al.*, 2024). However, existing literature consistently emphasizes that the educational value of AI is contingent not on technological availability alone but on educators' conceptual understanding of AI and their pedagogical readiness to integrate these tools meaningfully (Zawacki-Richter *et al.*, 2019).

Within the context of basic education, scholars caution that AI integration must be developmentally appropriate and aligned with curricular goals. Rather than substituting teachers' professional judgment, AI should function as a complementary tool that augments human interaction and instructional expertise (Holmes *et al.*, 2019; Cruz-Benito, 2022). Despite the expanding global discourse on AI in education, persistent challenges—particularly inadequate infrastructure, ethical concerns, and insufficient teacher preparation—continue to constrain effective classroom implementation, especially in public school systems (Pesek *et al.*, 2022; Yim & Su, 2024).

### Teachers' Awareness and Usage of AI

Teachers' awareness of AI has been identified as a critical antecedent to its classroom adoption. Research indicates that while many educators possess a general awareness of AI concepts, their understanding of pedagogical applications remains limited (Agbo *et al.*, 2022; Ventura, 2024). Teachers are more likely to engage with AI-powered productivity tools, such as automated grading or content generation, than to employ AI for instructional design, formative assessment, or differentiated learning (Kim & Kim, 2022; Kumar *et al.*, 2023). This pattern suggests a functional rather than pedagogical orientation toward AI use.

Prior studies further reveal that younger and less experienced teachers often demonstrate greater openness to experimenting with emerging technologies, reflecting higher digital confidence and adaptability (Rogers, 2003; Almaraz-López *et al.*, 2023). In contrast, teachers with longer professional tenure may exhibit reluctance, frequently attributed to limited training opportunities, perceived technological complexity, or concerns regarding professional relevance (Ertmer & Ottenbreit-Leftwich, 2010; Molefi *et al.*, 2024). Collectively, these findings underscore that awareness alone is insufficient to ensure meaningful AI integration, highlighting the importance of sustained institutional support and hands-on professional learning experiences.

### School Leaders' Perspectives on AI Integration

School leaders occupy a pivotal role in shaping organizational readiness for AI adoption through their influence on school culture, policy formulation, and professional development priorities (Zhao & Frank, 2003; Cheng & Wang, 2023). Existing research suggests that while many school leaders express generally positive attitudes toward AI integration, the depth of their engagement varies according to leadership experience,

access to resources, and contextual constraints (Khulood, 2021; Abed *et al.*, 2024). Leaders who conceptualize AI as a strategic instrument for school innovation are more inclined to encourage teacher experimentation and allocate resources for technology-focused capacity building.

Some studies also report gender-related differences in leadership engagement with educational technologies, noting higher levels of advocacy and involvement among female school leaders (Alenezi, 2024; Cheng & Wang, 2023). Nonetheless, similar to teachers, school leaders frequently report inadequate training that addresses the practical, ethical, and instructional implications of AI use, thereby limiting their capacity to effectively lead technology-driven reforms (Black *et al.*, 2024).

### Demographic Factors and AI Engagement

Demographic variables—including age, professional position, years of experience, and training exposure—have been widely examined in relation to technology adoption in educational settings. Diffusion of Innovations Theory posits that early adopters are typically more receptive to change, whereas later adopters often require stronger institutional support structures (Rogers, 2003). Consistent with this framework, empirical studies have reported inverse relationships between age and technology usage, including AI applications, among educators (Xuan & Yunus, 2023; Villarino, 2025).

Notably, prior training does not invariably lead to increased AI utilization, particularly when professional development initiatives emphasize theoretical knowledge over practical application (Bautista *et al.*, 2024; Molefi *et al.*, 2024). This recurring limitation in the literature underscores the necessity for sustained, practice-oriented professional development models that promote mentoring, collaborative learning, and contextualized application across varying levels of professional experience.

### Synthesis and Research Gap

The reviewed literature indicates that although educators generally exhibit positive perceptions of AI, actual classroom integration remains limited due to gaps in awareness, confidence, and institutional support. Existing studies have largely focused on higher education or pre-service teachers, with fewer investigations examining elementary school contexts, particularly in the Philippine setting (Estrellado & Miranda, 2023; Villarino, 2025). Moreover, limited research has compared school leaders' and teachers' awareness, usage, and perspectives within the same educational system.

Addressing these gaps, the present study examines AI integration among elementary school leaders and teachers in Deped Batac City, focusing on demographic influences and engagement patterns. By doing so, the study contributes empirical evidence to inform targeted professional development and policy initiatives aimed at promoting responsible and effective AI integration in basic education.

## MATERIALS AND METHODS

### Research Design

The study employed a descriptive-correlational design. This design enabled the researchers to describe participants' awareness, use, and perspectives regarding ai in education and to examine relationships among these variables. By correlating demographic factors with awareness, usage and perspectives, the study identified patterns that may influence ai adoption.

### Research Instrument

Data were collected through an online survey questionnaire with three main sections. Part 1 gathered demographic information, including gender, age, school location, current position, years of experience and number of trainings related to ai integration. Part 2 assessed participants' level of awareness and usage of ai in education, adapted from Ventura and Lopez (2024). Part 3 measured participants' perspectives on ai integration, drawing on instruments developed by Khulood (2021). Respondents completed the survey via computer, tablet or smartphone at their convenience.

### Population and Sampling

All elementary school leaders and teachers from the Schools Division of the City of Batac constituted the study population. A complete enumeration approach was adopted, ensuring that every individual in this defined group was invited to participate. Only elementary-level educators were included; secondary-level teachers and administrators were excluded to maintain focus on ai integration in elementary education.

### Inclusion/Exclusion Criteria

The chosen respondents for this study are all elementary teachers and elementary school leaders, as the researcher is an elementary educator and aims to focus on this specific group. Further, teachers and school leaders in the secondary level will be excluded in this study because the research specifically explores the use of ai in elementary education.

### Data Collection Procedures/Ethical Guidelines

Before data collection, approval was obtained from the Mariano Marcos State University University Research Ethics Review Board. The researcher then sought permission from the Schools Division of The City Of Batac to conduct the study. Potential participants were informed about the study's purpose, procedures, benefits and risks, and provided informed consent. Participation was voluntary, and respondents could withdraw at any time. Data collection took place over ten days in December 2024. Completed surveys and consent forms were stored in a password-protected digital folder accessible only to the researcher and were permanently deleted after the study.

### Statistical Analysis Plan/Data Analysis Plan

Descriptive statistics—frequency distributions,

percentages and means—were used to summarise demographic variables and to compute the average levels of awareness, usage and perspectives. The level of awareness was interpreted using a five-point likert scale ranging from “not aware” to “extremely aware.” Usage and perspectives were similarly interpreted using scales ranging from “never” to “always” and from “very negative” to “very positive,” respectively. Pearson's correlation coefficient was calculated to examine relationships between demographic characteristics and respondents' awareness, usage and perspectives toward ai integration. Correlation coefficients were interpreted using standard guidelines, with values from  $\pm 0.1$  to  $\pm 0.3$  indicating weak correlations and those from  $\pm 0.7$  to  $\pm 1.0$  indicating strong correlations.

## RESULTS AND DISCUSSION

### Findings

The present study examined disparities in the levels of awareness, usage, and perspectives of teachers and school leaders in the Schools Division of the City of Batac regarding the integration of artificial intelligence (AI) in education. Findings are presented in accordance with the research questions.

### Respondents' Profile

The majority of respondents were between 25 and 44 years old and occupied teaching positions (Teacher I–III), with most reporting 6 to 15 years of professional experience. Female respondents constituted a sizeable proportion of the sample. Approximately half of the participants were assigned to rural schools, and a substantial number indicated that they had not received prior formal training related to AI integration in education. This demographic composition reflects the typical workforce structure in Philippine public elementary schools and provides an appropriate basis for examining technology engagement patterns within the division.

### Awareness, Usage, and Perspectives on AI

Overall, respondents demonstrated a moderate level of awareness of AI, indicating familiarity with general concepts and common applications. However, their understanding of AI's pedagogical functions—particularly in areas such as differentiated instruction, formative assessment, and learning analytics—was limited. Actual usage of AI tools was low and largely confined to non-instructional or productivity-oriented applications, including automated grading systems and communication chatbots. Despite this limited usage, respondents expressed generally positive perspectives toward AI, suggesting openness to its potential benefits in teaching and school management. This divergence between positive attitudes and low levels of actual use reflects a well-documented phenomenon in educational technology research, wherein favorable perceptions do not automatically translate into practice due to structural, pedagogical, or capacity-related constraints (Zawacki-Richter *et al.*, 2019).

### Relationships Between Demographic Variables and AI Engagement

Pearson’s correlation analysis (see Table 1) revealed several statistically significant relationships with moderate to strong effect sizes. Among teachers, age demonstrated strong negative correlations with AI awareness, usage, and perspectives ( $r = -0.519$  to  $-0.660$ ,  $p < .01$ ), indicating that younger teachers were substantially more engaged with AI across all dimensions. Years of experience likewise exhibited moderate to strong negative correlations ( $r = -0.431$  to  $-0.549$ ,  $p < .01$ ), suggesting that longer tenure is associated with reduced openness to AI integration. Teaching position also showed a significant negative relationship with AI engagement ( $r = -0.386$  to  $-0.486$ ,  $p < .05/.01$ ), indicating that teachers in higher ranks were less likely to engage with AI tools. Among school leaders, sex demonstrated a significant positive relationship with AI engagement ( $r = 0.458$ ,  $p$

$< .05$ ), reflecting a moderate effect size and indicating higher engagement levels among female leaders. Years of experience was negatively correlated with perspectives toward AI ( $r = -0.457$ ,  $p < .05$ ), suggesting that prolonged service may influence leaders’ openness to technological change. No significant relationships were found between AI engagement and school location or prior AI training for either group.

The magnitude of these correlations indicates that demographic variables—particularly age and experience—play a meaningful role in shaping AI engagement, whereas contextual factors such as school location appear less influential in this setting.

### Discussion

The findings indicate that while teachers and school leaders in Batac City exhibit moderate awareness and generally positive attitudes toward AI, meaningful integration into

**Table 1:** Correlation Between Demographic Variables and AI Engagement of Teachers and School Leaders

Demographic Variable	Teachers: Awareness	Teachers: Usage	Teachers: Perspective	School Leaders: Awareness	School Leaders: Usage	School Leaders: Perspective
Sex	ns	ns	ns	$r = 0.458^*$	$r = 0.421^*$	$r = 0.439^*$
Age	$r = -0.519^{**}$	$r = -0.660^{**}$	$r = -0.588^{**}$	ns	ns	ns
School Location	ns	ns	ns	ns	ns	ns
Position	$r = -0.386^*$	$r = -0.486^{**}$	$r = -0.402^*$	ns	ns	ns
Years of Experience	$r = -0.431^{**}$	$r = -0.549^{**}$	$r = -0.472^{**}$	ns	ns	$r = -0.457^*$
Prior AI Training	ns	ns	ns	ns	ns	ns

instructional and leadership practices remains limited. This pattern aligns with international studies reporting a persistent gap between educators’ perceptions of AI and their capacity to apply it pedagogically (Agbo *et al.*, 2022; Kim & Kim, 2022).

The strong negative relationships between age, experience, and AI engagement among teachers lend empirical support to Diffusion of Innovations Theory, which posits that younger individuals are more likely to function as early adopters of new technologies due to greater risk tolerance, digital familiarity, and adaptability (Rogers, 2003). In contrast, more experienced teachers may encounter cognitive, institutional, and professional identity barriers that reduce their willingness to adopt AI, particularly when innovations are perceived as disruptive to established pedagogical routines (Ertmer & Ottenbreit-Leftwich, 2010).

Similarly, the negative association between years of experience and school leaders’ perspectives suggests that prolonged exposure to traditional administrative models may constrain openness to AI-driven leadership practices. This finding mirrors international evidence indicating that leadership engagement with educational technologies is often shaped by prior professional socialization rather than formal authority or rank (Cheng & Wang, 2023).

The positive relationship between gender and AI

engagement among school leaders is consistent with emerging research highlighting women’s active roles in educational technology leadership, particularly in collaborative and instructional innovation contexts (Alenezi, 2024). This suggests that leadership engagement with AI may be influenced not only by technical competence but also by leadership orientation and advocacy for inclusive innovation.

Notably, prior AI training did not demonstrate a significant relationship with awareness or usage. This finding warrants critical interpretation. Consistent with international research, the absence of training effects likely reflects the predominance of short-term, theory-heavy professional development initiatives that lack contextual relevance, sustained mentoring, and opportunities for practical application (Bautista *et al.*, 2024; Molefi *et al.*, 2024). Without authentic classroom integration and follow-up support, training fails to translate into behavioral change, thereby limiting its impact on actual AI usage.

The absence of significant differences between urban and rural schools suggests that infrastructural access alone does not account for variations in AI engagement within the division. This finding contrasts with studies from other contexts where urban–rural disparities remain pronounced (Yim & Su, 2024), indicating that equitable baseline access in Batac City may have mitigated location-

based inequalities. However, access without pedagogical capacity remains insufficient to drive innovation. Collectively, these results underscore the need for multilevel, practice-oriented professional development strategies that address not only technical skills but also beliefs, professional identity, and organizational culture. Mentorship models that leverage younger, technologically inclined teachers as AI champions may help bridge generational gaps and promote collaborative learning. Furthermore, leadership training must explicitly address ethical, instructional, and strategic dimensions of AI to enable school leaders to function as informed change agents rather than passive adopters.

## CONCLUSIONS

This study examined elementary school leaders' and teachers' awareness, usage and perspectives on AI integration in education in DepEd Batac City. Respondents demonstrated moderate awareness and positive attitudes, yet actual usage of AI tools remained low. Younger teachers were more engaged than older, higher-ranking or more experienced colleagues. Gender influenced engagement among school leaders but not among teachers. Training programmes did not significantly affect AI readiness, underscoring the need for more practical and tailored professional development. Future initiatives should leverage early adopters as mentors, prioritise hands-on experience and monitor changes over time to ensure that AI integration fulfils its promise of enhancing educational experiences for young learners.

Understanding the demographic factors that influence AI adoption can guide policy and professional development efforts. The generational divide observed in this study underscores the importance of cross-generational mentoring, while gender differences among leaders suggest the value of inclusive leadership programmes. Future research should employ qualitative methods to explore why experienced teachers and leaders may resist AI adoption and should examine the effectiveness of specific training approaches. Longitudinal studies tracking changes in awareness, usage and student outcomes as AI becomes more prevalent would further illuminate the conditions under which AI integration improves teaching and learning.

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