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Teacher Leadership in the Age of Artificial Intelligence: A Survey of a Private School's Teachers' Confidence, Readiness, and Practices in Guiding Student AI Use

Simone Phillips

School of the Nations, Primary School, Georgetown
Email: Simone.Phillips@nations.gy

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Abstract

This study examined teacher leadership in the age of artificial intelligence (AI), focusing on teachers' awareness and use of AI, confidence in guiding student use, perceptions of leadership, teaching-for-thinking practices, and perceived challenges. A quantitative cross-sectional survey design was used to collect data from 43 teachers across school levels in Guyana. The questionnaire measured six constructs: AI awareness and use, perceived usefulness of AI, AI confidence, teacher leadership in AI use, teaching for thinking in AI contexts, and perceived challenges. Reliability analysis showed strong internal consistency across all constructs, with Cronbach's alpha values ranging from .831 to .923. Descriptive results indicated that teachers viewed AI as useful for teaching and learning, with the highest mean score recorded for perceived usefulness of AI. Correlation analysis showed significant positive relationships among AI awareness, confidence, teacher leadership, and teaching-for-thinking practices. The findings suggest that teachers' confidence and leadership are central to responsible AI integration. The study concludes that AI adoption in schools should be understood not only as a technological issue but also as a pedagogical and leadership challenge requiring professional development, clear guidance, and sustained attention to student thinking.

Keywords

Artificial intelligence; teacher leadership; AI readiness; student thinking; classroom practice.

1. Introduction

The rapid emergence of generative artificial intelligence (AI) technologies has begun to significantly reshape teaching and learning across educational contexts. Tools such as large language models are now capable of generating explanations, summaries, and extended written responses with a high degree of fluency, thereby transforming how knowledge is accessed and produced in classrooms. Recent research indicates that AI applications can support instructional design, feedback processes, and student engagement, while simultaneously introducing new complexities related to learning, assessment, and academic integrity (Crompton and Burke, 2023; Kasneci et al., 2023).

At the same time, the integration of AI into classroom practice has progressed faster than the development of formal policy and pedagogical guidance in many education systems. International reports and empirical studies highlight that educators are still adapting to these technologies, often with limited institutional support and unclear expectations regarding appropriate use (UNESCO, 2023; Holmes et al., 2022). This creates a context in which teachers must independently interpret how AI should be used in learning tasks, how it should be regulated, and how student work should be evaluated when AI assistance is present.

This shift has important implications for the role of teachers. Emerging literature suggests that AI is not simply an instructional tool but a transformative force that is redefining teacher roles, competencies, and professional responsibilities (Kasneci et al., 2023; Crompton and Burke, 2023). In particular, teachers are increasingly required to guide students in their interaction with AI systems, helping them evaluate outputs, use tools responsibly, and remain actively engaged in the learning process. This expanded role positions teachers not only as facilitators of learning but also as leaders of practice, shaping how emerging technologies are integrated into classroom environments.

Within this evolving landscape, teacher leadership becomes especially significant. Teacher leadership extends beyond formal roles and includes the capacity of teachers to influence instructional practices, support innovation, and guide student learning within their classrooms and professional communities (LeTendre, 2023). In the context of AI integration, this leadership role involves establishing norms for responsible use, modelling appropriate practices, and designing learning activities that maintain a focus on reasoning, explanation, and critical engagement.

A further challenge arises in relation to student thinking. While AI tools can assist students in producing high-quality outputs, there is growing concern that such outputs may not accurately reflect underlying understanding. Recent studies highlight that AI-generated content can obscure the cognitive processes involved in learning, making it more difficult for teachers to assess depth of understanding and reasoning (Kasneci et al., 2023). This creates a need for teaching approaches that emphasise visible thinking, where students are required

to explain, justify, and reflect on their ideas rather than simply present final answers.

These issues are particularly relevant in contexts where AI use is emerging ahead of clear classroom-level guidance. In the Guyanese private school context examined in this study, teachers were navigating AI use largely through professional judgement, local expectations, and individual classroom decisions.

The problem addressed in this study is therefore the limited empirical understanding of how teachers perceive and enact their leadership role in guiding AI use, particularly in relation to their confidence, readiness, and practices that support student thinking.

Given these emerging challenges, this study aims to examine teacher leadership in the age of artificial intelligence through a quantitative survey of teachers' awareness, confidence, classroom practices, and perceived challenges. The study is guided by the research questions below and is structured as follows: the next section reviews relevant literature, followed by the materials and method, results, discussion, conclusion, and supporting declarations.

1.1. Research Questions

1. What is the level of teachers' awareness and use of artificial intelligence in classroom practice?
2. How confident are teachers in guiding students in the responsible and effective use of AI tools?
3. To what extent do teachers perceive guiding AI use as part of their teacher leadership role?
4. To what extent do teachers implement instructional practices that promote student thinking in AI-mediated learning contexts?
5. What challenges do teachers experience in guiding the use of AI in classroom practice?
6. What relationships exist between teachers' AI awareness, confidence, leadership perceptions, and instructional practices?

2. Literature Review

2.1. Artificial Intelligence in Education: Opportunities and Emerging Challenges

The integration of artificial intelligence (AI) into education has accelerated significantly in recent years, particularly with the emergence of generative AI systems capable of producing human-like text, explanations, and analyses. These developments have reshaped how knowledge is accessed, constructed, and communicated within educational environments. Recent systematic and meta-analytical reviews indicate that AI applications can enhance teaching efficiency, support personalised learning, and provide scalable feedback mechanisms, thereby transforming instructional practices (Crompton and Burke, 2023; Bond et al., 2024).

At the same time, the literature consistently highlights that the benefits of AI are accompanied by complex pedagogical and ethical challenges. Kasneci et al. (2023) argue that while large language models offer significant potential for learning support, they also risk encouraging superficial engagement if students rely on generated outputs without critically evaluating them. Similarly, Bond et al. (2024) emphasise that AI systems can influence learning behaviours in ways that are not yet fully understood, particularly in relation to cognitive effort, autonomy, and knowledge construction.

A key issue identified across studies is that AI alters the traditional relationship between student work and student understanding. In conventional educational settings, written outputs are often treated as proxies for learning. However, generative AI disrupts this assumption by enabling students to produce sophisticated responses without necessarily engaging deeply with the underlying concepts. This raises concerns about the validity of assessment practices and the extent to which educators can infer learning from observable outputs (Kasneci et al., 2023).

Furthermore, international policy-oriented research highlights that the adoption of AI in education is often occurring faster than the development of institutional frameworks to guide its use. UNESCO (2023) emphasises the need for educational systems to establish clear policies and pedagogical strategies to ensure that AI supports learning rather than undermines it. Holmes et al. (2022) similarly argue that AI integration requires careful consideration of ethical, pedagogical, and governance issues, particularly in contexts where teachers are required to make independent decisions in the absence of structured guidance.

2.2. Teacher Roles in AI-Mediated Learning Environments

The emergence of AI in education has significant implications for the role of teachers. Rather than diminishing the importance of teachers, the literature suggests that AI increases the complexity of teaching by requiring educators to mediate the interaction between students and technology. Teachers are no longer only responsible for content delivery but must also guide how students engage with AI tools, interpret outputs, and maintain meaningful learning processes (Crompton and Burke, 2023).

Kasneci et al. (2023) highlight that teachers play a critical role in ensuring that AI is used as a tool for learning rather than a substitute for thinking. This involves supporting students in evaluating the accuracy, relevance, and limitations of AI-generated responses. In this sense, teachers act as cognitive mediators, helping students navigate the boundary between assistance and over-reliance.

Research also indicates that teachers' ability to effectively integrate AI into their practice is influenced by their confidence, knowledge, and beliefs about technology. Studies on educational technology adoption consistently demonstrate that teachers' perceptions of usefulness and self-efficacy play a significant role in determining whether and how new tools are incorporated into

teaching (Crompton and Burke, 2023). In the context of AI, this suggests that teachers' confidence in guiding AI use is likely to influence their willingness to engage with these technologies and their ability to support students effectively.

However, empirical evidence suggests that many teachers currently feel underprepared for this role. Holmes et al. (2022) note that educators often lack sufficient training and support to navigate the complexities of AI integration, leading to uncertainty and inconsistent practices. This gap between technological advancement and teacher preparedness underscores the need for professional development and support systems that enable teachers to engage confidently with AI-mediated learning environments.

2.3. Teacher Leadership in the Context of AI Integration

Teacher leadership is increasingly recognised as a critical factor in educational innovation and improvement. It extends beyond formal leadership positions and encompasses the ways in which teachers influence instructional practices, support colleagues, and shape learning environments (LeTendre, 2023). In the context of AI integration, teacher leadership takes on new dimensions, as educators are required to interpret emerging technologies and establish norms for their use in classrooms.

LeTendre (2023) emphasises that teacher leadership operates within complex and evolving educational systems, where teachers play a central role in translating policy into practice. In contexts where formal AI policies are limited or absent, this role becomes even more significant, as teachers effectively act as informal governance agents, determining how AI is used and how its impact on learning is managed.

Recent research suggests that teacher leadership in technology integration is closely linked to collaboration, professional dialogue, and shared decision-making. Teachers who engage in leadership roles often contribute to the development of new practices by sharing experiences, experimenting with instructional strategies, and supporting peers in adapting to change (Crompton and Burke, 2023). In the case of AI, this may involve developing classroom norms, designing tasks that promote meaningful engagement, and guiding students in responsible use.

However, the literature also highlights that teacher leadership is influenced by contextual factors, including institutional support, access to resources, and professional learning opportunities. In settings where these factors are limited, teachers may face challenges in exercising leadership effectively, particularly in relation to complex and rapidly evolving technologies such as AI (Holmes et al., 2022).

2.4. Theoretical Framing: Teacher Self-Efficacy and Teacher Leadership

This study is informed by teacher self-efficacy theory and teacher leadership literature. Teacher self-efficacy refers to teachers' beliefs about their capacity to organise and carry out actions required to support student learning (Bandura, 1997). In the context of AI integration, confidence is especially important because teachers are required to interpret unfamiliar tools, guide students' use, and make professional judgements about learning and assessment. Teacher leadership provides a complementary lens, as it emphasises teachers' influence on instructional practice, innovation, and professional decision-making within schools. Together, these perspectives support the study's focus on the relationship between AI awareness, teacher confidence, perceived leadership, and teaching-for-thinking practices.

2.5. Teaching for Thinking in AI-Supported Classrooms

A central concern in the literature on AI in education is its impact on student thinking. While AI tools can enhance productivity and provide valuable support, there is a risk that they may reduce opportunities for students to engage in higher-order thinking processes if used without appropriate guidance. This has led to increased emphasis on the importance of teaching strategies that promote visible thinking, where students are required to demonstrate their reasoning, justification, and reflection.

Kasneci et al. (2023) argue that the effectiveness of AI in education depends largely on how it is integrated into learning activities. When used appropriately, AI can support critical thinking by providing alternative perspectives, generating questions, and facilitating exploration. However, when used as a shortcut, it can lead to passive learning and reduced cognitive engagement.

Research on metacognition and self-regulated learning provides a useful framework for understanding this issue. Effective learning involves not only acquiring knowledge but also the ability to plan, monitor, and evaluate one's own thinking processes. In AI-mediated environments, these skills become even more important, as students must actively engage with AI outputs rather than accept them uncritically (Bond et al., 2024).

This emphasis is consistent with research on self-regulated learning, which highlights the importance of learners planning, monitoring, and evaluating their own learning processes (Zimmerman, 2002). In AI-mediated environments, these processes become especially important because students must evaluate, revise, and justify their engagement with AI-generated outputs.

Crompton and Burke (2023) highlight that teaching for thinking in AI-supported contexts requires deliberate instructional design. Teachers must create tasks that require students to explain their reasoning, justify their choices, evaluate alternative responses, and reflect on their learning process. These practices help ensure that AI supports, rather than replaces, cognitive engagement.

2.6. Challenges in AI Integration and Teacher Practice

Despite the potential benefits of AI, the literature consistently identifies a range of challenges associated with its integration into education. One of the most significant challenges is the lack of clear policy and guidance at both institutional and national levels. UNESCO (2023) emphasises that many education systems are still developing frameworks to address issues such as ethical use, assessment, and data privacy, leaving teachers to navigate these challenges independently.

Another key challenge is the difficulty of assessing student learning in AI-mediated contexts. As AI-generated outputs become more sophisticated, it becomes increasingly difficult for teachers to determine whether student work reflects genuine understanding or reliance on external tools (Kasneci et al., 2023). This raises concerns about academic integrity and the validity of traditional assessment methods.

Teacher preparedness is also a significant issue. Holmes et al. (2022) highlight that many teachers lack the training and support needed to effectively integrate AI into their practice. This can lead to uncertainty, inconsistent practices, and resistance to adopting new technologies. Additionally, time constraints and workload pressures may limit teachers' ability to redesign tasks and develop new instructional approaches.

Finally, there are concerns about the potential impact of AI on student learning behaviours. Bond et al. (2024) note that while AI can support learning, it may also encourage dependency if students rely on it excessively. This underscores the importance of teacher guidance in ensuring that AI is used in ways that promote active engagement and critical thinking.

2.7. Summary and Research Gap

The literature demonstrates that AI is rapidly transforming educational practice, creating both opportunities and challenges for teaching and learning. While AI has the potential to enhance instruction and support student engagement, it also raises important questions about assessment, student thinking, and the role of teachers.

A consistent theme across the literature is the central role of teachers in mediating the use of AI. Teachers are required to guide student interactions with AI, promote responsible use, and design learning experiences that support cognitive engagement. This positions teachers as leaders of practice, particularly in contexts where formal policies are still developing.

However, despite growing interest in AI in education, there is limited empirical research examining how teachers perceive their leadership role in this context, particularly in relation to their confidence, readiness, and instructional practices. There is also a lack of research focusing on school-based contexts where AI integration is emerging without formal guidance.

This study addresses this gap by examining teacher leadership in the age of artificial intelligence through a quantitative survey of teachers' awareness, confidence, and classroom practices. By focusing on teachers' perspectives, the study seeks to provide practical insights into how educators are navigating AI integration and supporting student thinking in real-world classroom settings.

3. Materials and Methods

3.1. Research Design

This study employed a quantitative, cross-sectional survey design to examine teachers' perceptions of their role in guiding the use of artificial intelligence (AI) in classroom practice. A survey-based approach is widely recognised as appropriate for collecting standardised data from a defined population in order to describe trends, attitudes, and relationships among variables (Creswell and Creswell, 2018). In the context of this study, the design enabled the systematic investigation of teachers' awareness, confidence, leadership perceptions, instructional practices, and perceived challenges related to AI integration.

The cross-sectional nature of the design allowed data to be collected at a single point in time, providing a snapshot of current teacher perceptions within a specific institutional context. Such designs are commonly used in educational research to explore emerging phenomena where baseline understanding is limited (Bryman, 2016). Given that the use of AI in classrooms is still developing, particularly in contexts without formal policy guidance, an exploratory survey design was considered appropriate for identifying patterns and relationships that may inform future research.

Furthermore, the study adopted a correlational approach within the survey design to examine relationships between key variables. Specifically, the study explored associations between teachers' AI awareness, confidence, leadership perceptions, and practices related to promoting student thinking. Correlational analysis is appropriate in studies where the aim is to identify relationships rather than establish causality (Field, 2018).

3.2. Research Context

The study was conducted within a school setting in Guyana, where the integration of AI tools into teaching and learning is emerging in the absence of formal national policy frameworks. This context is significant, as it reflects a setting in which teachers are required to interpret and regulate AI use through professional judgement and local classroom practice.

Research on educational technology adoption highlights that institutional context plays a critical role in shaping teacher behaviour and decision-making (Ertmer and Ottenbreit-Leftwich, 2010). In environments where policy guidance is limited, teachers often rely on personal beliefs, experience, and professional judgement to guide practice. This makes such contexts particularly valuable for

examining how teacher leadership and instructional practices develop in response to emerging technologies.

The study was conducted in a private K–12 school in Georgetown, Guyana, serving students across nursery, primary, and secondary levels. At the time of the study, teachers had varying levels of exposure to AI tools through personal and professional use. While discussions regarding AI use had begun within the school community, no formal school-wide AI policy or structured professional development programme had yet been implemented. Consequently, teachers were largely relying on professional judgement and individual classroom decision-making when responding to student use of AI technologies.

3.3. Participants and Sampling

Participants consisted of 43 teachers across multiple subject areas and school levels. A non-probability convenience sampling approach was used, as participation was based on voluntary response. This sampling method is commonly used in exploratory educational research where the aim is to gain initial insights rather than to generalise findings to a wider population (Etikan, Musa and Alkassim, 2016).

The sample included teachers with varying levels of teaching experience, subject specialisation, and familiarity with AI tools. This variation allowed for the collection of diverse perspectives on AI integration and teacher leadership. While convenience sampling limits the generalisability of findings, it is appropriate for small-scale, context-specific studies aimed at understanding emerging practices within a particular setting (Bryman, 2016).

3.4. Instrumentation

Data were collected using a structured questionnaire developed specifically for this study. The instrument was designed to align with established constructs in the literature and the study's research questions. The questionnaire measured six key constructs: AI awareness and use, perceived usefulness of AI, AI confidence, teacher leadership in AI use, teaching for thinking in AI contexts, and perceived challenges.

The use of structured questionnaires with Likert-scale items is well established in educational research as a reliable method for measuring attitudes, perceptions, and self-reported practices (DeVellis, 2017). Each construct was measured using multiple items to improve reliability and capture different dimensions of the concept. All scale items were measured using a five-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Likert scales are widely used because they capture degrees of agreement and facilitate quantitative analysis of subjective constructs (Boone and Boone, 2012).

The instrument also included demographic questions, including teaching experience, subject area, school level taught, and prior use of AI tools. Three open-ended questions were included to capture additional teacher perspectives

on challenges, support needs, and the skills students should demonstrate when using AI.

Table 1

Examples of items used to measure each construct.

Construct	Example item
AI Awareness and Use	I am familiar with AI tools that students may use for schoolwork.
Perceived Usefulness of AI	AI tools can help teachers prepare learning materials more efficiently.
AI Confidence	I feel confident guiding students in the responsible use of AI.
Teacher Leadership in AI Use	I see guiding students' use of AI as part of my professional responsibility.
Teaching for Thinking in AI Contexts	I require students to explain their answers when using AI tools.
Perceived Challenges	I am concerned that AI may reduce students' independent thinking.

Because all constructs were measured through a single self-report questionnaire administered at one point in time, the study may be subject to common-method variance. To reduce this risk, the questionnaire included construct-specific sections, clear item wording, anonymity, and both positively and challenge-oriented items. Nevertheless, the correlational findings are interpreted cautiously as associations rather than causal relationships.

3.5. Validity and Reliability

To support content validity, questionnaire items were developed from constructs identified in the literature on AI in education, teacher confidence, teacher leadership, and teaching for thinking. Content validity refers to the extent to which an instrument adequately represents the construct it is intended to measure (Creswell and Creswell, 2018). Items were reviewed for clarity, relevance, and appropriateness for the school context.

A pilot review was conducted with a small group of teachers to evaluate item clarity, relevance, and completion time. Feedback was used to refine wording and improve consistency of interpretation. Pilot testing is an important step in instrument development because it helps identify potential weaknesses before full-scale administration (DeVellis, 2017).

Internal consistency reliability was assessed using Cronbach's alpha for each construct. Cronbach's alpha is widely used to evaluate the extent to which items within a scale measure the same underlying construct (Field, 2018). A threshold of alpha >= 0.70 was considered acceptable for reliability, consistent with common standards in social science research.

3.6. Data Collection Procedure

The questionnaire was administered using an online survey platform. Participants were invited through internal communication channels within the school and completed the survey voluntarily. Before participation, teachers were informed of the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses. Informed consent was obtained before respondents proceeded with the survey.

The survey remained open during the school's data collection period and yielded 43 complete responses. Online surveys are widely used in educational research because they are efficient, accessible, and allow respondents to complete questionnaires flexibly (Bryman, 2016).

3.7. Data Analysis

Data analysis was conducted using descriptive and inferential statistical techniques aligned with the research questions. Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarise teachers' responses across the six constructs. These analyses addressed Research Questions 1 to 5, which focused on levels of awareness, confidence, leadership perceptions, instructional practices, and perceived challenges.

Reliability analysis was conducted using Cronbach's alpha to assess internal consistency for each construct. Composite mean scores were then calculated for each construct by averaging the relevant items. This approach allowed the study to compare construct-level patterns while retaining the interpretability of the five-point Likert scale.

To address Research Question 6, Pearson correlation analysis was conducted to examine relationships between key variables, including AI awareness and confidence, confidence and teacher leadership, and teacher leadership and teaching for thinking. Where appropriate, demographic comparisons were also considered to explore whether responses varied by teaching experience or school level. The open-ended responses were reviewed thematically to identify recurring patterns related to challenges, support needs, and expectations for student AI use.

3.8. Ethical Considerations

Ethical considerations were addressed throughout the study. Participation was voluntary, and respondents were informed of their right to decline participation. No personally identifiable information was collected, and all responses were treated as confidential. Data were stored securely and used only for the purposes of this research. Ethical practices in educational research emphasise the importance of protecting participant confidentiality, obtaining informed consent, and ensuring that participation does not result in harm (Creswell and Creswell, 2018).

The study was reviewed and approved by the school's research oversight process. As the study involved adult participants, voluntary participation, anonymous responses, and minimal risk, formal institutional review board approval was not required.

4. Findings and Results

This section presents the findings from the survey of 43 teachers. The results are organised according to the study's research questions and include participant characteristics, reliability analysis, descriptive statistics, perceived challenges, and correlation analysis. Descriptive statistics were used to summarise teachers' awareness and use of AI, confidence, leadership perceptions, teaching-for-thinking practices, and perceived challenges. Inferential analysis was then used to examine relationships among the major constructs. Interpretation of the findings is reserved for the Discussion section.

4.1. Participant Profile

A total of 43 teachers completed the survey. Participants represented a broad range of teaching experience, with the largest groups reporting 0–5 years (27.9%) and more than 20 years (25.6%) of service. The majority taught at the primary level (58.1%), followed by nursery (32.6%). Almost all participants (95.3%) reported having used AI tools themselves, although only 27.9% reported that their students used AI. Participant characteristics are summarised in Table 2.

Table 2

Participant Characteristics (N = 43)

Variable	Category	*n*	%
Teaching experience	0–5 years	12	27.9
	6–10 years	8	18.6
	11–15 years	4	9.3
	16–20 years	8	18.6
	20+ years	11	25.6
Level taught	Nursery	14	32.6
	Primary	25	58.1
	Lower secondary	2	4.7
	Mixed	2	4.7
Used AI tools	Yes	41	95.3
	No	2	4.7
Students used AI	Yes	12	27.9
	No	17	39.5
	Not sure	14	32.6

4.2. Reliability Analysis

Internal consistency was assessed for each construct using Cronbach's alpha. As shown in Table 3, all six scales exceeded the conventional threshold of .70 (Nunnally and Bernstein, 1994), with coefficients ranging from .831 to .923, indicating good to excellent reliability.

Table 3

Reliability Statistics for Survey Constructs

Construct	Items	Cronbach's α
AI Awareness and Use	6	.867
Perceived Usefulness of AI	5	.882
AI Confidence	6	.885
Teacher Leadership in AI Use	7	.918
Teaching for Thinking in AI Contexts	7	.923
Perceived Challenges	8	.831

4.3. Descriptive Statistics

Composite mean scores were calculated for each construct using the five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Descriptive statistics are presented in Table 3. The highest mean was recorded for Perceived Usefulness of AI (M = 3.73, SD = 0.93), and the lowest for Perceived Challenges (M = 3.32, SD = 0.78). All construct means fell above the scale midpoint of 3.00, suggesting generally positive orientations toward AI across the sample.

Table 4

Descriptive Statistics for Major Constructs

Construct	n	M	SD	Min	Max
Perceived Usefulness of AI	43	3.73	0.93	1.40	5.00
AI Confidence	43	3.62	0.82	1.33	5.00
AI Awareness and Use	43	3.60	0.98	1.00	5.00
Teaching for Thinking in AI Contexts	43	3.59	1.07	1.14	5.00
Teacher Leadership in AI Use	43	3.44	0.97	1.14	4.86
Perceived Challenges	43	3.32	0.78	1.38	4.88

4.4. Perceived Challenges

Item-level analysis was conducted for the Perceived Challenges construct (Table 5). The most strongly endorsed challenges were concerns that students may misuse AI (M = 3.72, SD = 1.22), the need for further training on AI use (M = 3.70, SD = 1.19), and the lack of a national AI policy (M = 3.56, SD = 1.08). The lowest-rated item concerned AI complicating assessment (M = 2.63, SD = 1.18).

Table 5

Item-Level Means and Standard Deviations for Perceived Challenges

Challenge item	*M*	*SD*
Students may misuse AI	3.72	1.22
I need more training on AI use	3.70	1.19
There is a lack of national AI policy	3.56	1.08
AI reduces independent thinking	3.44	1.20
Time constraints limit redesign of tasks	3.26	1.05
There is a lack of school guidance on AI use	3.21	1.19
It is difficult to verify student work	3.02	1.12
AI complicates assessment	2.63	1.18

4.5. Inferential Analysis

Pearson product–moment correlation analysis was conducted to examine relationships among the key constructs (Table 6). All reported correlations were positive and statistically significant at $p < .001$, with coefficients ranging from $r = .696$ to $r = .814$. The strongest relationship was observed between AI Awareness and Use and AI Confidence ($r = .814$, $p < .001$).

Table 6

Pearson Correlations Among Major Constructs

Relationship	*r*	*p*
AI Awareness and Use – AI Confidence	.814	< .001
AI Awareness and Use – Teacher Leadership	.756	< .001
AI Awareness and Use – Teaching for Thinking	.696	< .001
AI Confidence – Teacher Leadership	.753	< .001
AI Confidence – Teaching for Thinking	.778	< .001
Teacher Leadership – Teaching for Thinking	.710	< .001

Using conventional effect-size interpretation, all reported correlations were large in magnitude, as coefficients exceeded .50. These findings indicate strong positive associations among AI awareness, AI confidence, teacher leadership, and teaching-for-thinking practices. However, the cross-sectional design does not permit causal interpretation.

4.6. Demographic Comparisons

An analysis of variance (ANOVA) was conducted to examine whether teachers' perceptions differed according to years of teaching experience. No statistically significant differences were found across any of the six constructs measured.

Table 7

Differences in Construct Scores by Teaching Experience

Construct	F	p
AI Awareness and Use	1.57	.202
Perceived Usefulness of AI	0.91	.470
AI Confidence	0.74	.570
Teacher Leadership	0.67	.617
Teaching for Thinking	1.07	.387
Perceived Challenges	0.11	.979

The results indicate that teachers' perceptions of AI awareness, confidence, leadership, teaching-for-thinking practices, and challenges were broadly consistent across different levels of teaching experience. No statistically significant differences were observed at the $p < .05$ level.

4.7. Analysis of Open-Ended Responses

Three open-ended questions invited teachers to identify their biggest challenges in guiding students' use of AI, the forms of support they would find most helpful, and the skills students should demonstrate when using AI. Responses were reviewed using an inductive thematic approach, resulting in five recurring themes.

Theme 1: Promoting Independent Thinking and Preventing Over-Reliance

The most frequently recurring concern was the risk that students may become overly dependent on AI-generated responses. Teachers expressed concern that some students viewed AI as an "answer machine" and relied on generated outputs without engaging in meaningful thinking or learning. Several respondents emphasised the challenge of encouraging students to think independently and critically rather than simply accepting AI-generated content.

Representative comments included:

"Getting students to stop just copy-pasting and actually think about what the AI gives them."

"The biggest challenge is helping them use it responsibly while still thinking and learning for themselves."

"Students should be able to form their own responses rather than depending on AI to formulate a complete answer."

Theme 2: Accuracy, Interpretation, and Evaluation of AI Outputs

Teachers also expressed concern regarding the reliability and interpretation of AI-generated information. Respondents noted that students need support in determining whether AI responses are accurate, relevant, and appropriate for specific contexts.

Representative comments included:

"AI information may be wrong."

"Getting them to verify correct information."

"Students should be able to challenge AI when necessary."

These responses suggest that teachers view evaluation and judgement as important competencies in AI-mediated learning environments.

Theme 3: Professional Development and Teacher Support

A substantial number of responses highlighted the need for additional professional learning opportunities. Teachers expressed a desire for training, workshops, practical guidance, and examples of effective classroom strategies for AI use.

Representative comments included:

"The support that would help me most is training and guidance on how to use AI safely and effectively in teaching and learning."

"Professional development and training."

"More training."

"Ready-made examples and activities that show students how to check and improve AI answers."

The consistency of these responses indicates a strong demand for structured professional development related to AI integration.

Theme 4: Ethical and Responsible AI Use

Several participants emphasised the importance of ethical use, academic honesty, and responsible engagement with AI. Concerns about plagiarism and inappropriate dependence on AI tools were evident throughout the responses.

Representative comments included:

"Ensuring ethical and responsible usage while promoting genuine understanding."

"Plagiarism."

"Students should use AI safely and honestly."

These responses reinforce the view that teachers see AI use as both a pedagogical and ethical issue.

Theme 5: Critical Thinking as the Core Student Competency

The strongest theme emerging from responses regarding student skills was the importance of critical thinking. Teachers repeatedly identified reasoning, problem solving, questioning, evaluation, creativity, and independent judgement as essential competencies for students using AI.

Representative comments included:

"Critical thinking and reasoning."

"Students should demonstrate critical thinking, creativity, responsibility, and problem-solving."

"Knowing how to ask good questions, checking if the answer makes sense, fixing mistakes, and making it their own."

"They should still be independent thinkers."

Across all three open-ended questions, teachers consistently positioned critical thinking as the most important safeguard against inappropriate or ineffective AI use.

Summary of Qualitative Findings

The qualitative findings complement the quantitative results by providing deeper insight into teachers' concerns and priorities. While teachers generally recognised the potential value of AI, they expressed concern about student over-reliance, the accuracy of AI-generated information, and the need for greater professional support. At the same time, they consistently emphasised critical thinking, independent judgement, and responsible use as essential goals of AI-supported learning.

5. Discussion

This study examined teachers' awareness and use of artificial intelligence (AI), their confidence in guiding student use, their perceptions of teacher leadership, their teaching-for-thinking practices, and the challenges they experience in AI-mediated classroom contexts. Overall, the findings suggest that teachers are not approaching AI simply as a technical tool. Rather, they are beginning to interpret AI as a pedagogical and professional issue requiring judgement, guidance, and leadership.

The relatively high mean score for perceived usefulness of AI suggests that teachers recognise its potential value for teaching and learning. This aligns with Crompton and Burke (2023), who identify growing interest in AI applications for instructional design, feedback, and learning support. However, this perceived usefulness should be interpreted cautiously. Bond et al. (2024) emphasise that AI integration must also address ethical, pedagogical, and methodological concerns. Therefore, positive teacher perceptions do not remove the need for clear guidance and responsible implementation.

The strong relationship between AI awareness and AI confidence ($r = .814$, $p < .001$) indicates that teachers who are more familiar with AI tools are also more likely to feel confident guiding student use. This supports Holmes et al. (2022) and UNESCO (2023), who argue that teacher preparedness, institutional support, and policy clarity are central to responsible AI integration. Confidence should therefore not be viewed only as an individual teacher attribute, but as something shaped by professional learning and organisational conditions.

The strong correlation between AI confidence and teacher leadership ($r = .753$, $p < .001$) is especially important. Teachers who felt more confident with AI were more likely to perceive themselves as having a leadership role in guiding its use. This supports Ghamrawi, Shal and Ghamrawi (2024) who argue that AI can expand teacher leadership when teachers are positioned as active professional agents rather than passive users of technology. It also aligns with LeTendre (2023), who frames teacher leadership as influence within complex and changing educational systems.

The findings on teaching for thinking further strengthen the study's contribution. Teachers reported practices such as encouraging students to explain, justify, evaluate, and reflect when using AI. This connects directly with the literature's concern that AI-generated outputs can obscure student understanding (Kasneci et al., 2023). However, the finding also extends beyond academic integrity concerns by showing that teachers may already be developing practices that keep student reasoning visible.

The positive relationship between teacher leadership and teaching for thinking ($r = .710$, $p < .001$) suggests that leadership is not separate from pedagogy. Teachers who see themselves as leaders in AI use are also more likely to report practices that support reasoning and reflection. This supports Sposato's (2025) view that AI implementation in education requires attention to leadership, judgement, and organisational practice.

The qualitative findings provide further support for this interpretation. Teachers repeatedly identified critical thinking, independent judgement, questioning, and evaluation as essential competencies for students using AI. Participants also expressed concern that students may become overly dependent on AI-generated responses if appropriate guidance is not provided. These findings suggest that teachers view AI not merely as a technological tool but as a pedagogical challenge requiring deliberate attention to student reasoning and cognitive engagement.

The challenges reported by teachers, including assessment uncertainty, student over-reliance, lack of guidance, and limited professional development, are consistent with the concerns identified by UNESCO (2023), Holmes et al. (2022), and Bond et al. (2024). These findings indicate that teachers are working in a space of both opportunity and uncertainty. AI may support learning, but without clear expectations and professional support, its use may become inconsistent or superficial.

The qualitative responses also highlighted a strong demand for professional learning related to AI integration. Teachers consistently requested training, practical examples, and guidance on classroom implementation. This finding reinforces Holmes et al. (2022), who argue that teacher preparedness remains one of the most significant barriers to effective AI adoption. It also suggests that confidence in AI use may be strengthened through targeted professional learning opportunities that focus on both technical competence and pedagogical application.

Overall, the findings indicate that teacher leadership, AI awareness, AI confidence, and teaching-for-thinking practices are positively associated. Teachers reporting higher levels of awareness also tended to report higher levels of confidence, leadership perceptions, and teaching-for-thinking practices. While the correlational design does not permit causal conclusions, the findings suggest that these constructs are closely interconnected within AI-mediated learning environments.

This means that schools should not treat AI integration as a purely technical matter. Professional development should focus on task design, assessment, ethical use, and strategies for making student thinking visible.

The study is limited by its single-school context, convenience sample, and reliance on self-reported data. The findings should therefore be interpreted as exploratory rather than generalisable. Future research could include classroom observations, interviews, and analysis of student work to examine how teacher leadership in AI use is enacted in practice.

The main contribution of this study is that it shifts attention from AI adoption alone to the professional role of teachers in shaping AI-mediated learning. In contexts where formal guidance is still emerging, teachers are already functioning as practical leaders of AI use. Their confidence, judgement, and instructional choices are therefore central to whether AI supports meaningful learning or merely produces more polished outputs.

6. Conclusion

This study examined teacher leadership in the age of artificial intelligence by investigating teachers' awareness and use of AI, confidence in guiding student use, perceptions of leadership, teaching-for-thinking practices, and perceived challenges. The findings indicate that teachers generally recognise the value of AI for teaching and learning, while also acknowledging the need for clearer guidance, professional support, and careful attention to student thinking.

The results suggest that AI awareness, confidence, teacher leadership, and teaching-for-thinking practices are closely connected. Teachers who reported greater awareness of AI were more likely to feel confident guiding student use. Those with higher confidence were also more likely to perceive themselves as having a leadership role in AI integration. In turn, teacher leadership was positively associated with practices that promote reasoning, explanation, reflection, and critical evaluation. These findings suggest that effective AI integration depends not only on access to technology but also on teachers' professional judgement and capacity to guide learning.

The study also highlights important challenges. Teachers identified concerns related to student misuse of AI, the need for further training, limited policy guidance, and uncertainty about how AI should be addressed in classroom practice. These concerns indicate that teachers are working in an emerging and unsettled area of practice, where expectations are still being formed. Schools therefore need to provide clear but flexible guidance that supports responsible AI use without discouraging innovation.

The practical implication is that professional development should move beyond technical demonstrations of AI tools. Teachers need support in designing AI-aware tasks, assessing AI-assisted work, promoting academic integrity, and helping students make their thinking visible. School leaders should also recognise teachers as key agents in shaping responsible AI use, especially in contexts where national policy is still developing.

The study is limited by its single-school context, small sample size, and reliance on self-reported data. Future research should extend the study across multiple schools and include interviews, classroom observations, and analysis of student work. Such approaches would provide deeper insight into how teacher leadership is enacted in practice and how AI affects student learning.

In conclusion, AI integration in education should not be understood primarily as a technological issue. It is a pedagogical and leadership issue. The findings suggest that teachers are central to ensuring that AI supports meaningful learning rather than superficial output. As AI becomes more embedded in education, teacher confidence, leadership, and commitment to student thinking will be essential to its responsible and effective use.

Because the study was conducted within a single private school context, the findings should be interpreted as exploratory and context-specific rather than representative of all schools or teachers in Guyana.

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Conflict of Interest

The author declares no conflict of interest.

Use of Artificial Intelligence (AI) Statement

AI-assisted tools were used to support language refinement, structural organisation, and editorial review of the manuscript. The author reviewed and approved all content and takes full responsibility for the accuracy, integrity, and interpretation of the work.

Data Availability

The data supporting the findings of this study are not publicly available due to participant confidentiality but may be made available by the author upon reasonable request and subject to ethical considerations.

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