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AI Literacy, AI Self-Efficacy and Agency as Predictors of EFL Teachers' Intentions to Integrate AI: An Explanatory Mixed Methods Study

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ABSTRACT

Artificial intelligence (AI) is transforming English as a Foreign Language (EFL) instruction, yet factors shaping teachers' AI-integration intentions remain underexplored. This explanatory mixed-methods study examined associations between AI literacy, AI self-efficacy, integration intentions, and the mediating role of teacher agency. Quantitative data from 304 EFL teachers were analyzed using structural equation modeling, followed by semi-structured interviews with eight purposively selected teachers. AI literacy, AI self-efficacy, and teacher agency were positively associated with integration intentions. Teacher agency showed a direct association with intentions and partially mediated the relationships between AI literacy and intentions and between self-efficacy and intentions. Qualitative findings highlighted critical evaluation of AI outputs, pedagogical confidence, autonomous decision-making, and ownership of instructional choices. These accounts illuminate how teachers' knowledge, confidence, and agency relate to their stated intentions to integrate AI. The findings suggest that professional development should combine AI literacy development with opportunities to exercise pedagogical judgment and agency.

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Introduction

AI has moved from a peripheral tool to a central feature of language classrooms, reshaping how EFL teachers plan lessons, assess learners, and design materials (Lin, 2026; Mehrara et al., 2025). Yet the pace of technological change has outstripped the pace at which teachers translate new tools into classroom practice. Integrating AI into instruction is not simply a matter of access; it depends on what teachers know about these systems and how confident they feel using them. AI literacy, understood as a teacher's conceptual and practical understanding of AI technologies, and AI self-efficacy, understood as a teacher's belief in their capacity to use AI effectively, have both been proposed as antecedents of technology adoption (Dilek et al., 2025; Herzallah & Makaldy, 2025). Research on educational technology has repeatedly shown that knowledge and confidence alone cannot necessarily explain behavior change; a further psychological mechanism usually stands between belief and action. Agency, the capacity of teachers to make deliberate, self-directed decisions about their practice, may explain this mechanism (Huang & Tang, 2026). Teachers who possess AI literacy and self-efficacy are not passive recipients of new tools; they interpret, negotiate, and decide how AI fits their pedagogical goals, and this decision-making capacity may be what ultimately drives integration (Demir, 2026; Lin et al., 2025).

Despite growing interest in AI-related teacher cognition, the pathway linking literacy and self-efficacy to actual integration through agency remains largely untested, particularly in EFL contexts. Most existing studies treat AI literacy and self-efficacy as isolated predictors, overlooking the agentic process through which teachers convert knowledge and confidence into classroom action. Without accounting for agency, models of AI adoption risk portraying teachers as passive conduits rather than active decision-makers who shape how, when, and why AI enters their classrooms (Al Hasan et al., 2026). The present study addresses this gap through an explanatory mixed methods design. A quantitative phase tests a structural model in which AI literacy and AI self-efficacy predict intention to integrate AI both directly and indirectly through agency, followed by a qualitative phase that explores how EFL teachers themselves describe exercising agency when adopting AI. By combining these strands, the study aims to clarify not only whether AI literacy and self-efficacy matter, but how they come to matter, offering both theoretical insight into teacher agency and practical guidance for AI-related professional development in language education.

A brief note of previous works

Teacher Intentions to Integrate AI

Teachers' intentions to integrate AI refers to the purposeful and sustained incorporation of artificial intelligence tools into instructional planning, delivery, and assessment, rather than isolated or experimental use (Gokturk-Saglam, 2026; Li et al., 2025). Earlier technology integration literature framed integration as goal-directed use that supports curricular aims rather than technology for its own sake. Recent AI-specific frameworks extend this view to include ethical judgment, critical evaluation of AI output, and adaptive pedagogical decision-making (Ding et al., 2024). Integration, in this sense, is not a

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single adoption event confined to occasional tool use. It is an evolving practice shaped by teachers' knowledge, confidence, and classroom context (Tatar et al., 2025).

Within EFL settings, integration carries additional demands. Teachers must align AI tools with goals such as fluency, authentic communication, and learner autonomy, while managing concerns about overreliance and reduced human interaction (Javadinejad & Davari, 2026). intention to integrate AI in EFL teaching can be understood as a context-sensitive process through which teachers determine how AI can be incorporated into their instructional work. Such integration involves more than access to AI tools or favorable attitudes toward their use. Teachers need to recognize relevant applications, judge whether particular tools are appropriate for their instructional purposes, and make informed decisions about their use in specific classroom contexts (Dilek et al., 2025; Erol et al., 2025). Although AI integration refers to enacted instructional practice, intention to integrate AI refers to teachers' stated willingness or plans to use AI for such purposes. This distinction is important in the present study because the dependent variable captures behavioral intention rather than the frequency, duration, or observed quality of classroom AI use. Accordingly, the empirical model examines factors associated with teachers' intentions to integrate AI, while research on actual integration provides the broader context for interpreting those intentions. The following section examines AI literacy as one teacher-level resource that may be associated with this intention.

Teacher AI Literacy

Teacher AI literacy refers to teachers' capacity to understand how AI systems function, evaluate their outputs critically, and apply this understanding to instructional decisions (Deshen et al., 2026). The construct spans three dimensions: what teachers know about AI, how they feel about using it, and how responsibly they apply it in practice (Ng et al., 2021). Framed this way, AI literacy functions as a knowledge-based resource that teachers draw on when deciding whether, and how, to bring AI into their classrooms (Daher, 2025).

Empirical evidence on this relationship is not entirely consistent. Lin et al. (2025) found that teacher AI literacy significantly affects both AI acceptance and classroom engagement. Ding et al. (2024) similarly argue that comprehensive AI literacy development facilitates teacher intention to Integrate AI, since literate teachers can identify suitable tools and adapt them to instructional goals. Taheri et al. (2025), synthesizing findings across educator populations, identify AI literacy as a major individual-level factor associated with AI adoption, alongside beliefs and self-efficacy. Not all findings align, however. Maurer et al. (2026) report no significant correlation between teacher AI literacy and actual classroom AI use, suggesting that literacy alone may be insufficient to drive integration behavior. This inconsistency points toward an intervening mechanism rather than a simple, direct effect. Dilek et al. (2025) show that AI literacy strengthens teacher agency by expanding the scope of professional judgment and autonomous decision-making. Adding theoretical depth to this finding, Eedelouei (2026) establishes that generative AI literacy shapes the iterative dimension of agency. This dimension reflects how teachers draw on accumulated professional

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experience when making instructional decisions in AI-integrated environments. Together, these studies suggest that AI literacy may not translate directly into integration but operate through teachers' sense of agency, a possibility examined later in this review.

Teacher AI Self-Efficacy

Teacher AI self-efficacy denotes teachers' belief in their own capability to use AI tools effectively in instructional tasks (Chiu et al., 2025; Erol et al., 2025). Rooted in social cognitive theory, self-efficacy is not a general trait but a task-specific judgment, shaped by prior experience, mastery, and social modeling. Applied to AI, it captures how confident teachers feel adopting, experimenting with, and troubleshooting AI tools within their own teaching context, rather than technical skill alone (Bircan et al., 2026).

Several studies link self-efficacy to teacher agency. Zou et al. (2026) found that AI self-efficacy directly affects teacher agency. Min (2023) similarly reported that self-efficacy directly shaped teachers' agency toward reform aimed at greater autonomy. Polatcan et al. (2023) reached a comparable conclusion, showing that self-efficacy shapes how teacher agency develops within school settings. Across these studies, self-efficacy consistently functions as a precursor to agentic action rather than a parallel, unrelated construct. A second body of work connects self-efficacy directly to AI use. Wu et al. (2026) found that AI self-efficacy shapes teachers' AI adoption. Demir (2026) reported a similar pattern, showing that self-efficacy shapes actual AI use in teaching. Duan et al. (2026) extended this line by demonstrating that AI self-efficacy predicts teachers' behavioral intention to use AI technologies, even before adoption occurs. Taken together, self-efficacy appears central to both agency and integration, echoing the pattern observed for AI literacy. The next section considers agency itself, the construct proposed here as the mechanism linking both AI literacy and AI self-efficacy to intention to Integrate AI.

Teacher Agency

Teacher agency refers to teachers' capacity to act purposefully within their professional context, shaped by the interplay of individual belief, experience, and present conditions (Priestley et al., 2015). Rather than a fixed trait, agency is achieved through this interaction, meaning the same teacher may exercise more or less agency depending on the resources and constraints of a given situation (Tan et al., 2026). This ecological view positions agency as relational rather than purely internal, making it a plausible mechanism through which individual factors such as literacy and self-efficacy translate into observable practice.

Recent work extends this view to AI-related decision-making. Eedelouei (2026) positions agency as central to teachers' decisions to integrate AI, arguing that integration reflects an agentic choice rather than a passive response to available tools. Huang and Tang (2026) similarly show that agency shapes teachers' intentions to use AI tools by influencing how they interpret and act on AI-related professional opportunities. In addition, Nøhr et al. (2023) found that distinct dimensions of agency

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were significantly associated with technology-related teaching practices. This included teachers' influence over technology adoption and application, underscoring agency's broader role in technology use. Across these studies, agency consistently functions as an active, interpretive process rather than a byproduct of knowledge or confidence alone. This positions agency as a plausible mechanism which could explain how AI literacy and AI self-efficacy translate into intention to Integrate AI, a mediating role examined directly in the hypothesized model.

Given the above theoretical and empirical review, the following hypotheses were proposed:

H1. AI literacy is positively associated with EFL teachers' intentions to integrate AI.

H2. AI self-efficacy is positively associated with EFL teachers' intentions to integrate AI.

H3. Teacher agency is positively associated with EFL teachers' intentions to integrate AI.

H4. Teacher agency mediates the association between AI literacy and intentions to integrate AI.

H5. Teacher agency mediates the association between AI self-efficacy and intentions to integrate AI.

Theoretical Framework

This study is grounded in two complementary theoretical frameworks that together explain how EFL teachers move from knowing about AI to using it in the classroom. The first is Bandura's (2001) social cognitive theory, which models human functioning as a reciprocal interplay among personal factors, behavior, and environmental conditions. Within this framework, self-efficacy, defined as belief in one's capability to organize and execute a course of action, operates as a core personal factor that determines whether knowledge is translated into behavior (Erol et al., 2025; Jalali & Shokri, 2025). AI self-efficacy is a domain-specific extension of this construct, capturing teachers' confidence in using AI for instruction (Collie et al., 2024). The same theory also supplies the basis for agency. Bandura's (2001) agentic perspective characterizes human agency as intentional, forethoughtful action exercised through self-regulation and self-reflection, positioning it as the mechanism through which beliefs are converted into behavior. Applied to teaching, agency represents the deliberate choices teachers make about whether, when, and how to bring AI into their practice, shaped by the resources and constraints of their institutional context (Al Hasan et al., 2026). Framing self-efficacy and agency within one theory allows teachers' intention to integrate AI to be examined as a prospective behavioral outcome associated with personal beliefs and agentic decision-making, rather than as observed classroom behavior.

The third framework, Priestley et al.'s (2015) ecological approach to teacher agency, conceptualizes agency not as a fixed trait teachers possess, but as an achievement produced through the interplay of individual capacity and the conditions surrounding it. The model identifies three interconnected dimensions: the iterational dimension, reflecting how past experience and professional habits shape present practice; the projective dimension, reflecting teachers' future-

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oriented goals and aspirations; and the practical-evaluative dimension, reflecting the judgment teachers exercise in the moment, shaped by the cultural, structural, and material conditions of their immediate context. This framework grounds agency in the present study as a situated, context-dependent capacity rather than a stable individual disposition, positioning it as the mechanism through which the knowledge base described by AI literacy and the motivational belief captured by AI self-efficacy are translated into actual classroom decisions about intention to integrate AI.

Method

The study employed an explanatory mixed methods research design, using qualitative insights to clarify and deepen interpretation of quantitative findings.

Participants

The quantitative phase comprised 304 EFL teachers in Iran, selected through convenience sampling from primary and secondary schools, language academies, and higher education institutions. Data were collected using a mixed-mode strategy, with online questionnaires and paper-based copies distributed through professional and institutional networks. The sample included 212 female participants (69.7%) and 92 male participants (30.3%). Participants' mean age was approximately 28.0 years (SD = 7.3), and mean teaching experience was approximately 6.1 years (SD = 3.5). Regarding academic qualifications relevant to ELT, 164 participants (53.9%) held a Bachelor's degree, 119 (39.1%) held a Master's degree, 15 (4.9%) held a PhD, and 6 (2.0%) reported other qualifications.

The qualitative strand drew on eight EFL teachers from the quantitative sample. Consistent with the explanatory design, interviewees were purposively selected after the quantitative analysis to capture variation in their standing on the study constructs. Respondents were classified as high ($z \geq +1\ SD$), moderate ($-1\ SD < z < +1\ SD$), or low ($z \leq -1\ SD$) on AI literacy, AI self-efficacy, and teacher agency, using z-scores computed from the full quantitative sample, and the eight interviewees were drawn from across these groups. The profiles of interviewed teachers are presented in Table 1. Data were collected through individual online semi-structured interviews, each lasting approximately 20–40 minutes. The study followed ethical research guidelines. All participants provided informed consent and were assured of anonymity, confidentiality, and their right to withdraw at any stage.

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Table 1. Profiles of the Interview Participants

Participant	Gender	Qualification	Teaching Experience
T1	Female	MA	6
T2	Female	BA	3
T3	Female	MA	5
T4	Female	MA	6
T5	Male	BA	7
T6	Female	PhD	15
T7	Male	BA	2
T8	Female	MA	9

Measures

AI Literacy

AI literacy was assessed via a 12-item scale proposed by Wang et al. (2023). The instrument has four dimensions: Awareness (3 items; e.g., *"I can distinguish between smart devices and non-smart devices"*), Usage (3 items; e.g., *"I can skillfully use AI applications or products to help me with my daily work"*), Evaluation (3 items; e.g., *"I can choose the most appropriate AI application or product from a variety for a particular task"*), and Ethics (3 items; e.g., *"I am always alert to the abuse of AI technology"*). Responses were provided on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Items 2, 5, and 11 were reverse-coded before analysis. Reliability analysis indicated satisfactory internal consistency, with Cronbach's alpha of .879.

Intention to Integrate AI

Intention to integrate AI was measured using the five-item behavioral-intention subscale of the Teachers' acceptance of AI instrument developed by Guo et al. (2025). The items assess teachers' stated willingness to use AI for lesson preparation, classroom teaching, student assessment, and other teaching-related activities. Participants rated each item on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A representative item is *"I would like to use AI tools to perform different teaching-related activities."* In the present sample, the subscale demonstrated acceptable internal consistency (Cronbach's $\alpha = .860$).

Agency

Teacher agency was assessed using the 10-item teacher professional agency in the classroom scale developed by Soini et al. (2016). The scale encompasses two dimensions: collaborative environment and transformative practice, and reflection in the classroom. Items were rated on a seven-point scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). A representative item is *"I am able to find teaching methods to engage even the most challenging group of students."* In the present sample, the scale demonstrated internal consistency of Cronbach's $\alpha = .886$. The instrument measures general classroom professional agency rather than agency specifically exercised in AI-related decisions.

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Therefore, the construct is interpreted as teachers' general professional agency considered in relation to their reported AI-related experiences, not as a direct measure of AI-specific agency.

AI Self-Efficacy

AI self-efficacy was measured using the six-item self-efficacy subscale of the teachers' acceptance of AI instrument developed by Guo et al. (2025). The items assess teachers' beliefs in their capabilities to learn, operate, and use AI tools for educational purposes. Participants rated each item on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A representative item is *"I am able to integrate AI tools in my teaching practice."* In the present sample, the subscale demonstrated internal consistency of Cronbach's $\alpha = .881$. Because this construct concerns perceived capability, its empirical distinctiveness from both general teacher agency and intention to integrate AI was examined as part of the measurement-model assessment.

Semi-Structured Interviews

The interview guide was informed by the quantitative model and explored teachers' experiences of AI literacy, AI self-efficacy, agency, and intention to Integrate AI. Although participants were invited to describe their experiences and provide examples, some prompts explicitly addressed proposed relationships between these constructs, including whether greater AI knowledge had strengthened their perceived control. Such prompts may have influenced participants' descriptions of control and ownership, and this possibility was considered when interpreting the qualitative findings.

The interviewer used follow-up prompts where appropriate to clarify responses, probe emerging issues, and encourage participants to elaborate on particular experiences. Representative questions included: *"Has knowing more about AI given you a stronger sense of control over how you use it, compared to earlier when you knew less? Can you give an example?"* and *"How does your confidence in using AI tools affect what you're willing to try in the classroom versus what you avoid?"* Additional prompts explored changes in teachers' professional self-perceptions, their decision-making when evaluating or adapting AI-generated materials, and the ways in which AI influenced their willingness to experiment with instructional practices. The protocol was reviewed by two specialists in Applied Linguistics and Teacher Education to assess the clarity, relevance, and alignment of the questions with the study objectives. Interviews were conducted after obtaining informed consent, and participants were assured that their responses would remain confidential. To protect participants' identities, anonymous codes (e.g., T1, T2) were assigned and used consistently in transcripts, analysis, and the presentation of quotations.

Data analysis

Quantitative data were processed in SPSS 27 and analyzed in AMOS 26. The initial dataset contained 309 EFL teacher responses. Data screening addressed incomplete cases and multivariate outliers, with unsuitable cases removed before model estimation, resulting in a final sample of 304

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participants. The retained data were examined for missing values and distributional assumptions, with skewness and kurtosis assessed to determine their suitability for maximum-likelihood estimation. Quantitative analysis proceeded in two stages. First, confirmatory factor analysis (CFA) was conducted to examine the measurement model and assess the factorial structure and construct validity of the measures. Second, SEM was used to test the hypothesized direct relationships and mediation pathways among AI literacy, AI self-efficacy, agency, and intention to Integrate AI. Indirect effects of AI literacy and AI self-efficacy on intention to integrate AI through teacher agency were assessed using 2,000 bootstrap resamples. Effects were considered statistically significant when their 95% bootstrap confidence intervals excluded zero (Hayes, 2018). Model fit was evaluated using degrees of freedom ratio ($\chi 2$/df), the Incremental Fit Index (IFI), the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI). Furthermore, parsimony and error constraints were evaluated via the Root-Mean-Square Error of Approximation (RMSEA) and the Standardized Root-Mean-Square Residual (SRMR).

Interview data were analyzed using Braun and Clarke's (2006) thematic analysis, with ATLAS.ti 9 used to organize the transcripts and support coding. The analysis involved repeated familiarization with the data, iterative code development, and the refinement of themes relevant to the quantitative findings. Consistent with a reflexive approach, themes were understood as interpretive outcomes rather than categories validated through coder agreement. Reflexivity was maintained through an analytic journal, discussions with critical colleagues who challenged emerging interpretations, and consideration of how the research team's background in EFL teacher education and familiarity with the study context shaped the analysis. Analytic decisions were also discussed within the research team. Accordingly, analytic rigor was supported through reflexive engagement and critical dialogue rather than intercoder-consensus statistics.

Results

Quantitative results

Descriptive statistics and correlations

Descriptive statistics, reliabilities, and correlations are presented in Table 2. Mean scores were above the scale midpoint for all four constructs. Because AI literacy and agency were measured on seven-point scales and AI self-efficacy and intention to integrate AI on five-point scales, raw means are not directly comparable; expressed as a proportion of the possible range, the four means were similar (61%–63%). Skewness and kurtosis values remained within ±2 (Kunnan, 1998) (all absolute values < 1), indicating that the study variables did not show substantial departures from normality. As shown in Table 2, all four variables were significantly and positively correlated and all correlations were below .80, suggesting no multicollinearity concern.

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Table 2. Descriptive Statistics, Reliabilities, and Correlations Among Study Variables

Construct	M (SD)	Range	Skewness	Kurtosis	1	2	3	4
1. AI Self-Efficacy	3.52 (1.07)	1–5	-0.51	-0.74	_			
2. AI Literacy	4.76 (1.25)	1–7	-0.549	-0.042	0.387**	_		
3. Agency	4.66 (1.38)	1–7	-0.34	-0.71	0.397**	0.369**	_	
4. Intention to Integrate AI	3.47 (1.09)	1–5	-0.32	-0.99	0.473**	0.475**	0.522**	_

Convergent and Discriminant Validity of the Measurement Model

Convergent and discriminant validity were assessed using average variance extracted (AVE), composite reliability (CR), and the Fornell–Larcker criterion (Fornel & Larcker, 1981). As presented in Table 3, AVE values ranged from 0.552 to 0.624, exceeding the recommended threshold of 0.50. CR values ranged from 0.739 to 0.881, exceeding the recommended threshold of 0.70 and indicating adequate construct reliability. Discriminant validity was assessed using the Fornell–Larcker criterion. The square roots of AVE were 0.743 for intention to integrate AI, 0.765 for Agency, 0.790 for AI literacy, and 0.744 for AI self-efficacy. These values exceeded the corresponding interconstruct correlations. Specifically, the correlations of intention to integrate AI with Agency, AI literacy, and AI self-efficacy were 0.688, 0.570, and 0.542, respectively. The correlations of Agency with AI literacy and AI self-efficacy were 0.507 and 0.516, respectively, while the correlation between AI literacy and AI self-efficacy was 0.453. Additionally, AVE values exceeded the corresponding maximum shared variance (MSV) values for all four constructs. Overall, these results support the convergent and discriminant validity of the measurement model.

Table 3. Convergent and Discriminant Validity

	Convergent validity			Discriminant validity			
Construct	AVE	CR	MSV	AI literacy	AI self-efficacy	Agency	Intention to integrate AI
AI literacy	.624	.869	.325	**.790**			
AI self-efficacy	.553	.881	.294	.453***	**.744**		
Agency	.586	.739	.473	.507***	.516***	**.765**	
Intention to integrate AI	.552	.861	.473	.570***	.542***	.688***	**.743**

Note. AVE = average variance extracted, CR = composite reliability, MSV = maximum shared variance. Diagonal entries in bold represent the square roots of the AVE, while off-diagonal values correspond to correlation coefficients. * $p < 0.050$, ** $p < 0.010$, *** $p < 0.001$

SEM Analysis

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SEM was used to test the hypothesized direct relationships and indirect pathways among AI literacy, AI self-efficacy, teacher agency, and intention to integrate AI. Three structural models were compared to identify the most parsimonious and best-fitting representation of the relationships among the variables. Model A specified direct effects without agency as a mediator, Model B specified full mediation without any direct pathways, and Model C specified partial mediation, retaining both direct and indirect pathways through teacher agency. The fit indices for the three models are presented in Table 4. Model C provided the most favorable fit (χ^2/df = 1.486, RMSEA = .040, SRMR = .045, CFI = .950, TLI = .946, IFI = .951). In comparison, the SRMR values for Model A (.148) and Model B (.096) exceeded the commonly recommended .08 threshold, despite their other fit indices being generally acceptable. Overall, the fit indices favored the partial mediation model, supporting the retention of both direct and indirect pathways through teacher agency.

Table 4. Goodness-of-Fit Evaluation for the Models

Model	χ^2/df	RMSEA	SRMR	CFI	TLI	IFI
Direct Effect Model (A)	1.722	.050	.148	.926	.919	.926
Full Mediation Model (B)	1.606	.045	.096	.937	.932	.938
Partial Mediation Model (C)	1.486	.040	.045	.950	.946	.951

In the partial mediation model all structural paths were statistically significant; however, because the structural portion of the model is just-identified, these global fit indices do not independently establish the adequacy of the hypothesized directional relationships. The structural hypotheses were therefore evaluated through the estimated path coefficients and bootstrapped confidence intervals. Table 5 presents the standardized direct, indirect, and total effects. AI literacy positively predicted agency (β = .344, p < .001) and intention to integrate AI (β = .249, p < .01), and AI self-efficacy positively predicted agency (β = .360, p < .001) and intention to integrate AI (β = .190, p < .05). Agency, in turn, positively predicted intention to integrate AI (β = .463, p < .001).

Bootstrapping confirmed both indirect pathways to intention to integrate AI. The pathway from AI literacy through agency was significant (β = .159, 95% CI [.079, .288], p < .001), as was the pathway from AI self-efficacy through agency (β = .167, 95% CI [.085, .302], p < .001). The total effect of AI literacy on intention to integrate AI was β = .408 (p < .001), and the total effect of AI self-efficacy on intention to integrate AI was β = .357 (p < .001) (see Figure 1). Because both direct paths remained significant alongside their corresponding indirect paths, agency partially mediated the effects of AI literacy and AI self-efficacy on intention to integrate AI, supporting H4 and H5.

Figure 1. The Mediation Model

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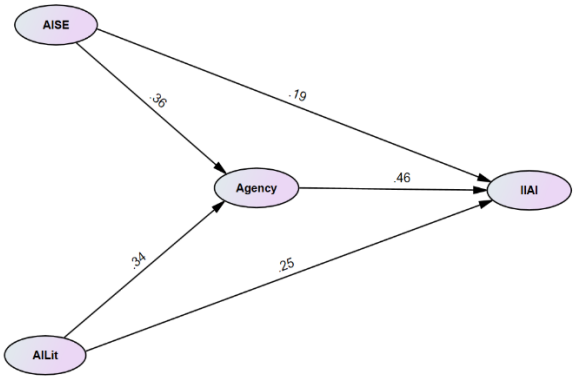

Note. AISE = AI self-efficacy. IIAI = intention to integrate AI. AILit = AI literacy

Table 5. Path Coefficients of SEM Results

Path	*β*	SE	95% CI [Lower bound; Upper bound]	*p*
Direct Effects				
AI Literacy → Agency	0.344	0.077	[0.192; 0.492]	<0.001
AI Self-Efficacy → Agency	0.360	0.073	[0.210; 0.498]	<0.001
AI Literacy → Intention to Integrate AI	0.249	0.082	[0.079; 0.396]	<0.01
AI Self-Efficacy → Intention to Integrate AI	0.190	0.079	[0.019; 0.341]	<0.05
Agency → Intention to Integrate AI	0.463	0.099	[0.292; 0.675]	<0.001
Indirect Effects				
AI Literacy → Agency → Intention to Integrate AI	0.159	0.051	[0.079; 0.288]	<0.001
AI Self-Efficacy → Agency → Intention to Integrate AI	0.167	0.054	[0.085; 0.302]	<0.001
Total Effects				
AI Literacy → Intention to Integrate AI	0.408	0.071	[0.262; 0.543]	<0.001
AI Self-Efficacy → Intention to Integrate AI	0.357	0.063	[0.237; 0.487]	<0.001

Note. β =Standardized path coefficient, SE =Standard Error, CI =Confidence Interval. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Finally, Harman's one-factor test was conducted to assess potential common method bias. The first unrotated factor explained 28.9% of the total variance, below the conventional 50% threshold. Although this finding indicates that a single factor did not account for the majority of the variance, it does not rule out potential common method bias (Podsakoff et al., 2003).

Qualitative results

Theme 1: From bind trust to calibrated use

Across the interviews, the depth of a teacher's understanding of how AI models actually work sets the terms for what gets brought into the classroom. Teachers with limited technical understanding describe one of two starting points: an early period of overtrust, when the tool is treated as near-

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infallible, or a standing wariness that keeps AI out of teaching almost entirely. T1 recalls thinking AI *"can do everything"* before learning it can be confidently wrong, a shift she marks by naming a concept she had no word for before: *"before I didn't even know this word."* That naming becomes a practical filter; she now checks dates and facts before use. T6, whose exposure stayed surface-level, names the same worry about confidently wrong output, but without the accumulated understanding to resolve it, avoidance rather than checking becomes her default: *"I basically avoid it in my real teaching."*

Teachers with deeper technical grounding describe a different relationship to the tool. T3 and T8, both with academic backgrounds in Teaching English as a Foreign Language (TEFL), treat AI output as unfinished material rather than a product. T8 uses it *"as raw material that I, as expert, refine,"* never as a final answer. T2's account adds a curriculum-specific layer to literacy: her awareness that AI-generated English can diverge from the grammar tradition taught locally becomes a reason to restrict its use rather than adopt it wholesale. Understanding does not simply permit or block AI use; it determines its shape.

Theme 2: confidence as a gate

Self-efficacy functions less as a general trait in these accounts and more as a boundary marking which specific uses of AI a teacher is willing to attempt. Teachers who describe themselves as confident with technology extend that confidence into a wide range of classroom applications. T7, whose supervisor *"told me to slow down,"* lists role-play scenarios, pronunciation feedback, and discussion-topic generation among his experiments. T8 describes a similarly wide range but frames her confidence as calibrated rather than unlimited: she knows *"exactly where the tool is strong and where it's weak,"* which is why differentiated materials are fair game while high-stakes assessment stays off-limits.

For teachers who describe low confidence, the boundary sits much closer in. T6 restricts herself to occasional curiosity at home and prefers *"my old method that I know works after 15 years."* T4's low confidence compounds with a practical barrier, unreliable internet and a VPN that *"sometimes doesn't work well",* so uncertainty about the tool and uncertainty about access reinforce each other, producing avoidance in the live classroom even as she experiments alone at home. What separates these accounts is not access to the technology, since all eight teachers describe some contact with it, but the width of the boundary each one draws around her own competence.

Theme 3: Deciding without being told

None of the eight teachers describe a clear, enforced institutional policy on AI use. What exists instead ranges from silence to informal caution to guidance that is stated but never followed up on. In this vacuum, teachers who describe making independent professional judgments are the same teachers who integrate AI into their practice, regardless of what their institute has or has not said. T1

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continues using AI for her own preparation after her supervisor called it unreliable, keeping the decision private rather than dropping it: *"I still use it for myself... I just don't show students directly."* T3 designs her own pilot of AI-assisted feedback based on her own reading rather than waiting for university guidance: *"I don't wait for institutional guidelines, I design my own small-scale trial."* T5 goes further, proposing a new practice to his institute manager rather than waiting to be asked.

T8 names this stance directly: her decisions *"often become recommendations for others, not the other way."* By contrast, T6, who reports no push from colleagues and no policy either way, resolves the same vacuum by choosing not to act: *"my decision, honestly, was mostly to not use it."* The presence or absence of formal policy does not appear to settle integration on its own, what matters is whether a teacher treats the vacuum as room for her own judgment or as a reason to wait.

Theme 4: From Knowing to Owning

The clearest pattern across the interviews is that literacy and confidence rarely act on integration directly; they act by changing how much control a teacher feels he/she has over the tool, and that felt control is what drives his/her classroom decisions. T5 puts this conversion into words: *"I feel like the tool works for me, not like I'm just guessing."* The shift is not that he suddenly trusts AI completely, but that he now experiences himself as directing the interaction rather than hoping it turns out well.

T8's account traces the same conversion across a longer arc. Years of accumulating technical understanding move her from *"just reacting to whatever was available"* to a stated present position: *"I set the agenda for how AI enters my classroom."* She ties this directly to the initiative she now takes and observes in teachers she trains. T3 makes a parallel claim about confidence rather than literacy: *"if I was less confident, I don't think I would take this much responsibility for my own decisions"*; self-efficacy, in her account, is what permits the pilot she designs, not the pilot itself. T7 describes the same conversion in miniature over a single year, moving from following *"whatever trend I see on Instagram reels"* to feeling that he *"actually controls what I bring to class."* T6 offers a counterexample to this pattern. Despite some exposure to AI, she did not describe developing a comparable sense of control, stating, *"I wouldn't say control."* This account is consistent with her earlier description of avoiding AI in live teaching. Her experience suggests that exposure alone does not necessarily translate into agentic decision-making or classroom use, cautioning against treating the pattern observed across the interviews as universal.

Integration of Quantitative and Qualitative Findings

Integration of the quantitative and qualitative findings provides an explanation of the hypothesized relationships. Consistent with H1, the SEM indicated that AI literacy positively predicted intention to integrate AI ($\beta = .249$, $p < .01$). Theme 1 clarifies this association by showing that literacy enables teachers to interrogate, verify, and delimit AI-generated outputs. Thus, literacy appears to support

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deliberate classroom integration rather than uncritical adoption. H2 was supported, with AI self-efficacy positively predicting intention to integrate AI (β = .190, p < .05). Theme 2 explains this relationship by showing how confidence expands teachers' willingness to experiment with instructional applications, whereas low confidence narrows use and may foster avoidance. The findings further illuminate H3, for which agency showed a strong association with intention to integrate AI (β = .463, p < .001). Theme 3 demonstrates how teachers' capacity to make independent judgments translated into initiating, adapting, or withholding AI use. This provides contextual meaning to the association between agency and integration.

Most importantly, the qualitative findings explain the mediation proposed in H4 and H5. Theme 4 indicates that AI literacy and self-efficacy become significant for integration when they foster teachers' perceived control, responsibility, and willingness to act. This aligns with the significant indirect effects of AI literacy through agency (β = .159, 95% CI [.079, .288]) and self-efficacy through agency (β = .167, 95% CI [.085, .302]). Collectively, the qualitative evidence explains agency as the mechanism through which AI-related knowledge and confidence are translated into purposeful instructional integration. Table 6 presents a joint display linking the quantitative findings with the qualitative themes and illustrative interview excerpts.

Table 6. Integration of Quantitative and Qualitative Findings

Quantitative finding	Related qualitative theme	Illustrative interview excerpt
H1: AI literacy → outcome (β = .249, p < .01)	Theme 1: From Blind Trust to Calibrated Use	T8: *"as raw material that I, as expert, refine."*
H2: AI self-efficacy → outcome (β = .190, p < .05)	Theme 2: Confidence as a Gate	T8: *"exactly where the tool is strong and where it's weak."*
H3: Agency → outcome (β = .463, p < .001)	Theme 3: Deciding Without Being Told	T3: *"I don't wait for institutional guidelines, I design my own small-scale trial."*
H4: AI literacy → agency → outcome (β = .159, 95% CI [.079, .288])	Theme 4: From Knowing to Owning	T8: *"I set the agenda for how AI enters my classroom."*
H5: AI self-efficacy → agency → outcome (β = .167, 95% CI [.085, .302])	Theme 4: From Knowing to Owning	T3: *"if I was less confident, I don't think I would take this much responsibility for my own decisions."*

Discussion

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The findings provide convergent quantitative and qualitative evidence for the proposed relationships among AI literacy, AI self-efficacy, teacher agency, and EFL teachers' intentions to integrate AI. The SEM demonstrated acceptable model fit, and all hypothesized paths were statistically significant. More importantly, the qualitative phase extends these findings by explaining how the relationships identified quantitatively are experienced and enacted in teachers' professional practice.

H1 was supported, as AI literacy positively predicted intention to integrate AI, consistent with previous studies (Ding et al., 2024; Lin et al., 2025; Taheri et al., 2025). This finding suggests that intention to integrate AI is influenced not simply by teachers' exposure to AI tools but by their capacity to understand and evaluate what these tools produce. Theme 1 provides an explanation for this relationship. Teachers with more developed understandings of AI described moving away from either unquestioning trust or generalized avoidance toward more selective and evaluative use. T1's recognition that AI can be "confidently wrong," followed by her practice of checking dates and factual information, illustrates how literacy can become an operational resource for instructional decision-making. Similarly, T3 and T8 described AI outputs as material requiring professional evaluation rather than as authoritative answers. T2's awareness of differences between AI-generated English and locally established grammatical conventions further demonstrates that literacy enables teachers to recognize contextual limitations and impose appropriate boundaries. Thus, the qualitative evidence suggests that AI literacy contributes to integration by supporting critical and calibrated use, rather than indiscriminate adoption. Our findings contrast with those of Maurer et al. (2026), who reported no significant relationship between teachers' AI literacy and their actual classroom use of AI, suggesting that AI literacy alone may not necessarily translate into integration.

The findings supported H2 by indicating that AI self-efficacy is associated with teachers' intentions to integrate AI. This is on a par with previous studies demonstrating that teachers with higher levels of AI self-efficacy were more likely to integrate AI into their instructional practices (Demir, 2026; Duan et al., 2026; Wu et al., 2026). The qualitative findings indicate that self-efficacy operates as a boundary around teachers' willingness to act. Theme 2 shows that teachers who felt more capable with AI were prepared to explore a broader range of instructional applications, whereas those with lower confidence restricted their use or avoided classroom implementation. T7's experimentation with role-play, pronunciation feedback, and discussion generation contrasts with T6's preference for established practices and reluctance to use AI in her teaching. T4 further illustrates how uncertainty about technological competence can become intertwined with practical barriers such as unreliable internet access. Importantly, the interviews do not portray self-efficacy as synonymous with unrestricted confidence. T8's ability to identify where AI was useful and where it was unsuitable suggests that productive self-efficacy is accompanied by judgment.

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H3 was supported, with teacher agency showing a strong direct association with intention to integrate AI. This finding resonates with that of Eedelouei (2026) and Huang and Tang (2026), demonstrating that professional agency shapes teachers' intentions to integrate AI tools. The qualitative findings provide a particularly compelling explanation for this relationship. Theme 3 shows that teachers frequently operated without clear institutional prescriptions regarding AI. Yet the absence of formal guidance produced different responses. T1 continued using AI for preparation despite supervisory concerns; T3 independently designed a small-scale AI-assisted feedback trial; and T5 proposed an AI-related practice to his institutional manager. By contrast, T6 responded to the same general absence of institutional direction by deciding not to use AI. These accounts suggest that agency is expressed through teachers' capacity to make and enact professional judgments under conditions of uncertainty. Recent work similarly emphasizes that teacher agency remains central when educators negotiate the possibilities and constraints introduced by AI and other digital technologies (Nøhr et al., 2023).

H4 and H5 were supported, with teacher agency significantly mediating the associations of AI literacy and AI self-efficacy with intention to integrate AI. These findings align with prior research suggesting that self-efficacy, particularly AI-related self-efficacy, serves as an important psychological resource for strengthening teachers' professional agency (Zou et al., 2026; Min, 2023; Polatcan et al., 2023), while AI literacy can similarly contribute to teachers' capacity to exercise agency in technology-mediated contexts (Dilek et al., 2025; Eedelouei, 2026).

The indirect effect of AI literacy through agency was significant, and because both corresponding direct effects remained significant, the findings indicate partial mediation. The qualitative evidence offers a process-oriented interpretation of these indirect relationships through Theme 4. This theme suggests that knowledge and confidence become vital for integration when teachers translate them into a sense of control and responsibility over AI-related decisions. T5's statement that "the tool works for me" captures this shift from uncertainty to perceived control. Similarly, T8 described moving from reacting to available technologies toward setting the agenda for how AI enters her classroom, while T3 connected her confidence with taking responsibility for independent experimentation. These accounts suggest that agency is not simply another predictor located alongside literacy and self-efficacy. Rather, it represents a process through which teachers mobilize these resources in practice (Dilek et al., 2025; Zou et al., 2026).

The partial nature of the mediation is theoretically important. The significant direct effects indicate that AI literacy and self-efficacy remain associated with integration beyond their indirect associations through agency. The qualitative findings help explain why. Literacy may directly inform teachers' evaluation and selection of AI applications, while self-efficacy may directly increase their willingness to experiment (Demir, 2026; Ding et al., 2024). At the same time, these resources appear

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more likely to result in sustained and purposeful integration when teachers experience themselves as capable of making, adapting, and owning implementation decisions. Agency therefore appears to function as a translational mechanism between what teachers know and believe they can do and what they actually choose to enact (Al Hasan et al., 2026).

Taken together, the integrated findings point to a more nuanced account of intention to integrate AI than one based on technological competence alone. AI literacy provides evaluative capacity; AI self-efficacy supports willingness to act; and teacher agency converts these resources into professionally owned decisions about classroom use. Teachers may possess knowledge of AI without integrating it, or feel confident using AI without exercising sustained pedagogical judgment. What appears particularly consequential is whether they can use their knowledge and confidence to establish boundaries, make independent decisions, and assume responsibility for how AI is incorporated into teaching.

Conclusion

This study deepens insight into how EFL teachers integrate AI by demonstrating that AI literacy, AI self efficacy, and teacher agency are each associated with intention to integrate AI, with agency also partially mediating the link between literacy and self efficacy and actual AI use. The qualitative strand clarifies these patterns: knowledge and confidence matter most when teachers are able to appraise AI outputs critically, set clear boundaries for use, and retain ownership of pedagogical choices. Taken together, the results imply that professional learning should couple literacy and efficacy work with structured opportunities for teachers to make situated, autonomous decisions about AI, instead of focusing narrowly on technical skills. Institutions, in turn, should offer guidance that encourages experimentation while safeguarding teachers' professional judgment.

Several limitations should be acknowledged. Because the design is cross sectional, we cannot draw firm inferences about directionality or causality. Dependence on self report scales and interview narratives may have introduced reporting or social desirability biases. Moreover, the modest size of the qualitative subsample constrains how far the explanatory insights can be generalized across EFL settings. Future research would benefit from longitudinal or experimental designs, objective or observational measures of AI use, and closer attention to how institutional conditions shape the co development of teacher agency and intention to integrate AI over time.

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