

The Incorporation of Ethical AI Literacy and EFL Teachers' Instructional Styles in Language Education

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ARTICLE INFO	ABSTRACT
Article History: Received: June Accepted: July	When it comes to AI adoption in language pedagogy, AI ethical literacy plays a pioneering role by addressing the potential risks and challenges associated with AI use. Meanwhile, teaching style determines how teachers design instruction, interact with learners, and adopt new tools. It may significantly affect how they interpret, evaluate, and integrate AI technologies in pedagogical practices. Therefore, the extent to which English teachers' teaching styles are influenced by their AI literacy and AI ethical literacy has received limited scholarly attention. To fill this gap, in this study, 103 Iranian EFL teachers with different teaching styles, including lecture-based, interactive and discussion-oriented, project-based, game and activity-oriented, and problem-solving, were scrutinized. To do so, an explanatory sequential mixed methods design was adopted to design and develop an AI-based questionnaire to statistically measure the teachers' ethical AI literacy and its relationship with teaching style. The data provided clear evidence ($p < .05$) of the explicit relationship between English teachers' ethical AI literacy and their teaching styles. Subsequently, by conducting semi-structured interviews with 5 teachers from the same population, the findings revealed that different teaching approaches afforded different pedagogical roles for AI. Finally, these findings can be useful for teacher education programs to improve teachers' AI ethical literacy across diverse teaching styles.
KEYWORDS Digital Literacy Teachers' Ethical AI Literacy Teaching Style	

1. Introduction

With the increasing integration of digital tools into the ELT curricula, language teachers need to possess sufficient digital literacy (Durriyah & Zuhdi, 2018) and recognize its critical role in shaping real digital practices in the ELT classrooms (Iskandar et al., 2022). For example, artificial Intelligence has firmly established its role in English Language Teaching (ELT), leaving a lasting imprint across various dimensions of language pedagogy, and continues to strengthen its influence on language learning and teaching (Chiu, 2023). Previous research has also demonstrated that technology-enhanced instructional environments, including MOOCs and mobile-assisted learning, significantly improve language learning outcomes, further emphasizing the growing role of digital technologies in ELT (Shirkhani & Poorhadian, 2024). Accordingly, AI literacy is not only technical knowledge but also “developing the capacity to question, adapt, and integrate AI into classroom practices in ways that enhance language learning and uphold educational values” (Meniado, 2024, p. 293). To put it simply, AI literacy refers to “the ability to understand, evaluate, and use emerging AI technologies effectively and responsibly” (Mills et al., 2024, p. 5).

Despite the growing attention to teachers' AI literacy as a significant subject within the field of education (Ayanwale et al., 2024), many scholars have noted the lack of sufficient AI instructions for

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language teachers. Likewise, recent evidence has shown that teachers' technological pedagogical knowledge is positively associated with their willingness to participate in continuing professional development, highlighting the importance of strengthening teachers' digital competencies in technology-enhanced language education (Naseri & Kazemi, 2024). To confirm that, Mondal et al. (2023) have reported the inadequate familiarity of teachers with AI tools, even though they express positive attitudes toward using them in instructional practices (Aşık et al., 2020). Indeed, educators' AI literacy, especially in the use of various AI tools in classroom contexts, needs to be effectively taken into consideration (Salas-Pilco, 2022). Supporting this view, Hosseinzadeh and Tabatabaee-Yazdi (2026) found that digital game-based platforms can substantially enhance language learning outcomes, suggesting that teachers' competence in integrating digital technologies plays a crucial role in effective instruction.

Along with the need for effective AI training, its ethical concerns and implications must also be thoughtfully considered (Han et al., 2024). The contribution of AI literacy with AI ethical literacy acts as a fundamental prerequisite for engaging responsibly with this contemporary digital era, because both forms equip scholars and educators with a critical, informed, and flexible lens on AI-integrated pedagogical practices. When it comes to AI adoption in language pedagogy, AI ethical literacy plays a pioneering role by addressing the potential risks and challenges associated with AI use (Jobin et al., 2019; Long & Magerko, 2020; Qin et al., 2020; Shih et al., 2021; Van Brummelen & Lin, 2021). The reason is that individuals' concerns about AI ethics lead to their altered utilization of AI, and this will happen by examining and explicitly teaching AI ethics (Kaspersen et al., 2022; Ng et al., 2022; Potas et al., 2022). Thus, teachers' AI literacy requires greater emphasis—together with clearer articulation of AI ethical literacy within language pedagogy.

In addition, the extent to which English teachers' teaching styles are influenced by their AI literacy and AI ethical literacy has received limited scholarly attention. In this study, five teaching styles, including lecture-based, interactive and discussion-oriented, project-based, game- and activity-oriented, and problem-solving were proposed to be scrutinized. To offer a concise clarification, the lecture-based teaching style is a teacher-centered approach through which the teacher holds the authority and transfers information to the students (Weimer, 2013). Interactive and discussion-oriented relies on a social-constructivist approach and focuses on meaning making through dialogues (Murphy et al., 2009). Unlike a lecture-based teaching style, project-based offers a learner-centered approach where knowledge acquisition occurs through investigations and responding to challenging questions (Chen & Yang, 2019). Regarding game and activity-oriented approaches, teachers purposefully attempt to incorporate games and entertaining activities into the educational environment to facilitate learning and increase engagement in creative ways (Plass et al., 2015). Also, problem-solving focuses on a specific problem requiring students to discover ways to solve the problem using their existing knowledge and logic (Hmelo-Silver, 2004). Succinctly, teaching style determines how teachers design instruction, interact with learners, and adopt new tools; therefore, it may significantly affect how they interpret, evaluate, and integrate AI technologies in pedagogical practices (Ertmer, 2005). For this reason, the present study attempts to address this gap by answering the following research questions:

RQ 1. To what extent do EFL teachers possess ethical AI literacy across its various dimensions?

RQ 2. To what extent do the current components of EFL teachers' ethical AI literacy – ranging from Attention to Network Awareness – reflect a balanced and functional understanding of AI ethics in education?

RQ 3. How do the dimensions of Social Media Literacies correlate with teaching style in AI-integrated language classrooms?

2. Review of Literature

Because teachers' AI literacy and ethical AI literacy develop within broader digital practices, this study adopts Rheingold's (2012) Social Media Literacies as a foundational framework that explains the socio-cognitive skills underlying responsible and effective engagement with AI tools.

The Social media literacies model (Rheingold, 2012) is composed of five key skills, including "Attention", "Participation", "Cooperation", "Network Awareness", and "Critical Consumption". At the heart of this model lies "Attention," which encompasses the ability to sustain concentration in a world full of distractions, notifications, and advertisements. Hence, deciding where individuals' focus

should be directed holds utmost value. Attention, as defined by Rheingold (2012), provides the cognitive discipline required for teachers to critically monitor AI-generated content, avoid over-reliance, and detect potential bias or misinformation embedded in AI tools.

Training focused attention enables individuals to engage in digital networks effectively and wisely. Instead of being passive consumers, individuals are highly recommended to interactively engage in digital communities. This skill refers to “Participation”, which empowers individuals to meaningfully shape and foster their cultural knowledge while they actively participate through sharing resources, commenting, and creating digital content (Rheingold, 2012). Rheingold’s notion of participation aligns with teachers’ AI literacy, as AI-powered pedagogical practices require active engagement, content creation, and interactive collaboration with learners (Leu et al., 2015).

“Cooperation,” as another skill of social media literacies, offers an effective interconnection with active participation. It emphasizes online contribution in an informal, self-organized collaborative environment within digital communities (Rheingold, 2012). Cooperation in social media environments parallels AI-supported collaborative learning in ELT, where teachers employ AI tools to scaffold interaction and build cooperative learning dynamics.

The ability to strategically use, navigate, and recognize social media influence is called “Network Awareness”. Understanding how social networks and digital platforms operate enables individuals to recognize how information spreads and how influence is amplified through digital systems (Rheingold, 2012). Network awareness, as the understanding of how digital systems operate and propagate influence, directly maps onto teachers’ AI literacy, particularly their ability to recognize algorithmic bias, data-driven limitations, and the ideological nature of AI-generated outputs (Van Dijck & Poell, 2013).

Reinforced by network awareness, “Critical Consumption” or “Crap Detection” is the ability to critically evaluate the credibility of online information (Rheingold, 2012). In an era of misinformation, this skill enables users to assess digital content effectively, engage responsibly in an online environment, and make informed decisions regarding information sources (Leu et al., 2015). As firmly asserted by Rheingold (2012), these literacies are truly interconnected and cannot be mastered in isolation since they mutually reinforce one another. Rheingold’s concept of critical consumption offers a foundational framework for ethical AI literacy, as teachers must scrutinize the credibility, accuracy, fairness, and ethical implications of AI-generated responses.

Taken together, Rheingold’s (2012) Social Media Literacies provide a foundational socio-cognitive lens for understanding how teachers engage with emerging digital technologies. The five core literacies, attention, participation, cooperation, network awareness, and critical consumption, establish the behavioral, analytical, and ethical capacities required for effective navigation of digital environments. These capacities closely align with the competencies outlined in teachers’ AI literacy and ethical AI literacy.

Therefore, the integration of Rheingold’s (2012) model with teachers’ AI literacy and ethical literacy offers a coherent and theoretically grounded framework, capturing both the foundational digital literacies and the advanced competencies required in AI-mediated teaching. This integrated framework also addresses a gap in ELT research, where the intersection between social media literacies, AI literacy, ethical literacy, and teaching style remains underexplored.

Building on this foundation, the following section focuses on teachers’ AI and ethical AI literacies in pedagogical contexts where AI increasingly mediates instructional practices.

In an era increasingly characterized by advanced technologies—most notably Artificial Intelligence—AI literacy and AI ethical literacy emerge as fundamental prerequisites for engaging with this contemporary digital era (Rini & Nabhan, 2023). AI literacy, as highlighted by Ng et al. (2023), goes beyond being only familiar with how to use AI-powered tools. It embodies various competencies such as critical AI evaluation, different contextual utilization, and effective AI collaboration (Long & Magerko, 2020; Hornberger et al., 2023). A significant trace of these emerging phenomena is discernable in English Language Teaching (ELT), too. Recent research suggests that AI literacy has a significant influence on teachers’ professional development (Velandar et al., 2023). Accordingly, teachers with sufficient AI literacy demonstrate a positive and confident professional identity. Tied with this work, Kahveci (2021) underscores the increasing integration of digital tools into the ELT curricula which demands sufficient digital literacy of language teachers to optimally incorporate them into their

profession (Ding et al., 2024; Sperling, 2024). In this situation, individuals with proper AI literacy indicate deeper interest in AI adoption (Chai et al., 2022; Celik, 2023). In a study by Almasri (2024), it is argued that teachers who use AI for content development contribute to enhanced educational outcomes. Beyond that, Seo et al. (2021) pointed out that AI utilization promotes individualized interaction among learners and teachers. Considering teaching methods, Chen (2023) explored the effective role of AI in conducting efficient teaching methods in different teaching contexts. In another study, Renz and Hilbig (2020) mentioned the positive influence of AI in the learning environment. AI facilitates stronger meaningful connections among teachers and learners. Above all, concerning AI ethical implications, educators with high AI literacy not only capture AI technical aspects but also distinguish AI ethical limitations and considerations (Hockly, 2023; Sperling, 2024). However, Gong et al. (2020) have demonstrated that ethical issues, such as bias in AI, are neglected among AI users; thus, it is suggested that teachers to equip themselves with the essential AI ethical literacy and realize AI potential concerns. In addition, novice teachers are advised to be sensitive to AI ethical implications and challenges such as bias and privacy that might affect their assessment (Nguyen et al., 2023; Dignum, 2021). In light of this prominent concern, the present study seeks to incorporate Rheingold's (2012) Social Media Literacies model into teachers' AI and ethical literacies to provide a proper instrument for the examination of their potential relationships with teachers' teaching styles.

3. Method

To incorporate both statistical and qualitative dimensions, which collectively strengthen the rigor and credibility of the study, an explanatory sequential mixed methods design was adopted in the current study. Therefore, for the first phase, the researchers attempted to initially design and develop an AI-based questionnaire embracing Rheingold's (2012) model to statistically measure the teachers' ethical AI literacy and its relationship with teaching style. Given that the application of AI is inextricably linked with its ethical implications, this AI-based questionnaire was purposefully designed to integrate and measure teachers' ethical literacy and AI literacy under Rheingold's (2012) model within the pedagogical context. Subsequently, by conducting semi-structured interviews, the researchers meticulously delved into the teachers' voices for a thick, in-depth description of their perceptions concerning their ethical AI literacy and teaching style.

3.1. Participants and Setting

In line with the purpose of the study, 103 English teachers aged 19–46 were conveniently selected to participate in this study. These individuals comprised English teachers with academic degrees ranging from BA to PhD, ensuring the diversity in the sample. Accordingly, their professional features, including gender, age, academic degree, and teaching style, were initially measured by the questionnaire. The following table demonstrates the professional features of the teachers under study (Table 1).

3.2. Instrumentation

To accomplish the objectives of this explanatory sequential mixed methods study, at the outset, a Likert-scale questionnaire concerning teachers' ethical AI literacy and teaching style was designed. The proposed items were conscientiously prepared to encompass both aspects of AI literacy and its leading ethical considerations in conjunction with due regard to their teaching styles.

Throughout the second phase of the study, five semi-structured interviews were conducted to assist the researchers in gaining an in-depth analysis of teachers' perspectives on their AI ethical literacy and its relationship with their teaching styles. Six interview questions were also double-checked and validated by two PhD holders in TEFL.

3.3. Procedures

To address the first phase of the study, the researchers aspired to develop a questionnaire based on the Social Media Literacies framework by Rheingold's (2012). To ensure content validity and clarity, the initial 101 items were reviewed by two PhD holders, resulting in the refinement and reduction of the questionnaire to 76 items. The revised TEAIL-Q was then piloted with a small sample of teachers to assess its reliability and overall usability before full administration in the main study. The data were

collected by an online Google Form, which was created and sent to the participants after obtaining their consent to join the study, guaranteeing their privacy and anonymity.

Moreover, in the second phase of the study, eight semi-structured interviews were conducted to guide the researchers toward a more profound exploration of the participants' insights regarding their ethical AI literacy and teaching style. To accomplish this aim, the interview questions were developed within the overarching framework of Rheingold's (2012) digital literacy model and were further informed by three interrelated analytical lenses, namely Critical AI Literacy, Ethical Literacy in Education, and Mindfulness and Critical Digital Pedagogy. These lenses represent a guiding framework for understanding and applying AI and its ethical implications in education. Several studies have also acknowledged the functional contributions of these three theoretical traditions in shaping AI applications in educational practice (Conrad & Kamperman, 2025; Wickramasinghe et al., 2026; Stommel, 2014). Hence, with these conceptual orientations in mind, the researchers developed, revised, and validated 6 interview questions concerning each teaching style (lecture-based, interactive and discussion-oriented, project-based, game- and activity-oriented, and problem-solving). To conduct the semi-structured interviews, the researchers conveniently invited 5 MA students in TEFL from the 103 participants to join the interview phase of the study. They were selected via purposeful maximum variation sampling, one teacher from each category of teaching style, to ensure diverse pedagogical perspectives and to compare AI and ethical AI literacy across teaching styles.

In doing so, the researchers purposefully utilized the social media platforms–Telegram and WhatsApp–for participants' convenience and ease of access to conduct the interviews. Therefore, the researchers interviewed each individual by sending them the interview questions one by one, allowing them ample time to reflect and provide their answers in the form of audio recordings. The collected audio files were precisely transcribed, coded, and thematically analyzed by the researchers to address the objectives of the qualitative phase of the study.

Table 1
Participants' Professional Characteristics

Sample Characteristics	n	%
Gender		
Male	31	30.1
Female	72	69.9
Age		
19-24	50	48.5
24-29	26	25.3
29-49	27	26.2
Academic Degree		
BA	39	37.9
MA	53	51.5
PhD	11	10.7
Teaching Style		
Lecture-based	14	13.6
Interactive and discussion-oriented	52	50.5
Project-based	2	1.9
Game- and activity-oriented	32	31.1
Problem-solving	3	2.9

4. Results

4.1. The Quantitative Phase

Considering the explanatory sequential mixed methods design of the study, the researchers aimed to initially construct and validate a questionnaire to provide a well-substantiated response to the first and second research questions and bridge the gap in the literature by clarifying the interplay between English teachers' ethical AI literacy and their teaching styles. As a means to this end, a Likert-scale questionnaire named Teachers' Ethical AI Literacy (TEAIL-Q) comprising 50 consolidated items pertaining to both AI literacy and ethical literacy across teaching styles was developed considering Rheingold's (2012) framework.

4.1.1. Answers to Research Questions 1 and 2

4.1.1.2 TEAIL-Q Development. To examine the relationship between English teachers' ethical AI literacy and their teaching style and to provide a suitable answer to the first and second research questions, the piloted TEAIL Questionnaire, containing 50 reliable items, was systematically finalized. TEAIL-Q is segmented into five sections, grounded in Rheingold's (2012) Social Media Literacies model including, "Attention", "Participation", "Cooperation", "Network Awareness", and "Critical Consumption". Table 2 demonstrates the statistically analyzed and validated TEAIL Questionnaire divided into the five previously mentioned sections.

Table 2
Teachers' Ethical AI Literacy Questionnaire (TEAIL-Q)

Items	Attention	
1	I consciously manage my digital tool usage to protect my well-being and prevent stress or burnout.	.654
2	I am mindful of the time I spend interacting with AI systems and digital platforms, ensuring it aligns with my goals.	.543
3	When using an AI tool, I focus on its limitations and potential for error rather than accepting its output uncritically.	.865
4	I ponder over the potential consequences of sharing AI-generated content before I act.	.654
5	I pay attention to the data I am providing to an AI system and consider what it might be used for.	.835
6	I am aware of how my emotional state can be affected by digital interactions and take steps to manage it.	.765
7	When receiving an AI-generated recommendation (e.g., for a lesson plan), I consciously assess whether it truly meets my students' needs before adopting it.	.810
8	I am attentive to the environmental impact (e.g., energy consumption) of the digital tools and AI models I use regularly.	.405
9	I try to understand a new AI app's basic functions before using it for important tasks.	.809
10	I closely monitor privacy settings on digital platforms and apps, configuring them to protect my information.	.743
11	When a student uses an AI tool, I observe their process to understand their level of critical engagement with the technology.	.735
12	I am mindful of balancing digital tools with analog, human-to-human interactions in my classroom.	.769
13	I actively notice my own biases that might influence how I interpret or use the output from an AI system.	.766
14	I set specific goals for my AI use to ensure it enhances rather than disrupts my teaching workflow.	.599
15	I pay attention to how AI-generated content might affect different students in my classroom differently.	.677
16	I regularly check if my use of digital tools is aligning with my core teaching philosophy.	.677
17	I notice when over-reliance on AI is hindering my own professional growth or creativity.	.663
Critical Inspection		
18	I can critically evaluate the output of an AI system (e.g., a chatbot's response) for potential errors, biases, or misinformation.	.687
19	I can identify potential ethical issues (e.g., related to fairness, privacy, or accountability) in a new digital product or AI service.	.654
20	I verify information from AI-generated content or social media using other reliable sources before sharing or using it.	.587
21	I can analyze and evaluate existing digital content for compliance with accessibility standards and inclusive design principles.	.580
22	I can distinguish a standard program from one using AI by understanding their core operational differences.	.571
23	I can assess the potential benefits and limitations of an AI system to make an informed judgment about whether and how to use it.	.432
24	I can evaluate whether an AI-driven learning platform is treating all students fairly.	.432
25	I can evaluate the credibility of an AI tool's source and the interests of its creators before adopting it.	.543
26	I can explain basic AI concepts and their ethical implications in simple terms to my students.	.459
Participation		
27	I am interested in shaping AI technologies that promote positive social impact.	.459
28	I feel confident in co-creating with my students a "Classroom Charter for Ethical AI Use" that outlines our shared responsibilities.	.663
29	I actively seek and incorporate feedback from users with diverse abilities to improve the accessibility of my digital products.	.687
30	I advocate for digital accessibility, ethical AI use, and inclusion within my team, organization, or community.	.654
31	I am willing to participate in digital literacy and AI ethics workshops to improve my skills.	.587
32	I see myself as an active designer who shapes meaning with digital tools, rather than just a passive consumer of technology.	.580
33	I believe that ensuring digital accessibility is a shared responsibility, not solely the duty of IT specialists.	.405

34	I participate in providing feedback to developers on the ethical design and functionality of educational AI tools.	.809
35	I engage students in AI's societal impact, encouraging informed and critical participation in the digital world.	.743
36	I work to make my online teaching spaces inclusive, with low barriers and valued contributions from all.	.735
37	I share my own experiences and challenges with digital tools to help build a collective understanding within my professional community.	.710
38	I encourage students to participate responsibly in online educational communities.	.766
39	I create opportunities for students to share their digital creations with authentic audiences.	.430
Collaboration		
40	I can use digital tools to differentiate instruction and personalize support, collaborating to meet diverse student needs.	.580
41	I collaborate with AI to analyze student data, but I use my professional judgment to interpret the results and make final decisions.	.654
42	I see myself as a mediator who interprets, adapts, and humanizes AI-generated learning paths using holistic student knowledge.	.587
43	I collaborate with colleagues to share best practices and jointly evaluate the ethical and pedagogical implications of new AI tools.	.405
44	I use AI translation tools to facilitate collaboration with individuals who speak different languages, while being aware of the tools' limitations.	.743
45	I use digital polling and feedback tools to collaboratively gauge understanding and gather input from students or colleagues.	.580
Network Awareness		
46	I can explain how digital services and AI systems collect, use, and share personal data within broader networks.	.654
47	I understand that digital technologies themselves (like search algorithms) shape human relationships and can reproduce social biases on a large scale.	.587
48	I consider the environmental impact of the digital content I create or use.	.587
49	I understand how AI influences the rapid spread of information and misinformation across online networks.	.580
50	I understand that a classroom that develops digital literacy should function as a supportive network or community.	.654

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

To ensure that factor analysis is appropriate for the dataset, the researchers aimed to apply the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. Through this process, the KMO statistic (0.812) showed that the proportion of variance among the proposed variables that might be common variance is sufficiently high, which is of great significance to factor analysis. In addition, Bartlett's Test of Sphericity successfully rejected the null hypothesis that the correlation matrix is an identity matrix, yielding a highly significant result ($p < .001$). Hence, these diagnostics confirmed that the dataset implied the required statistical assumptions for factor analysis. Table 3 demonstrates KMO and Bartlett's test results.

Table 3
KMO and Bartlett's Test Output

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.812
Bartlett's Test of Sphericity	Approx. Chi-Square	1.654E4
	Df	2034
	Sig.	.000

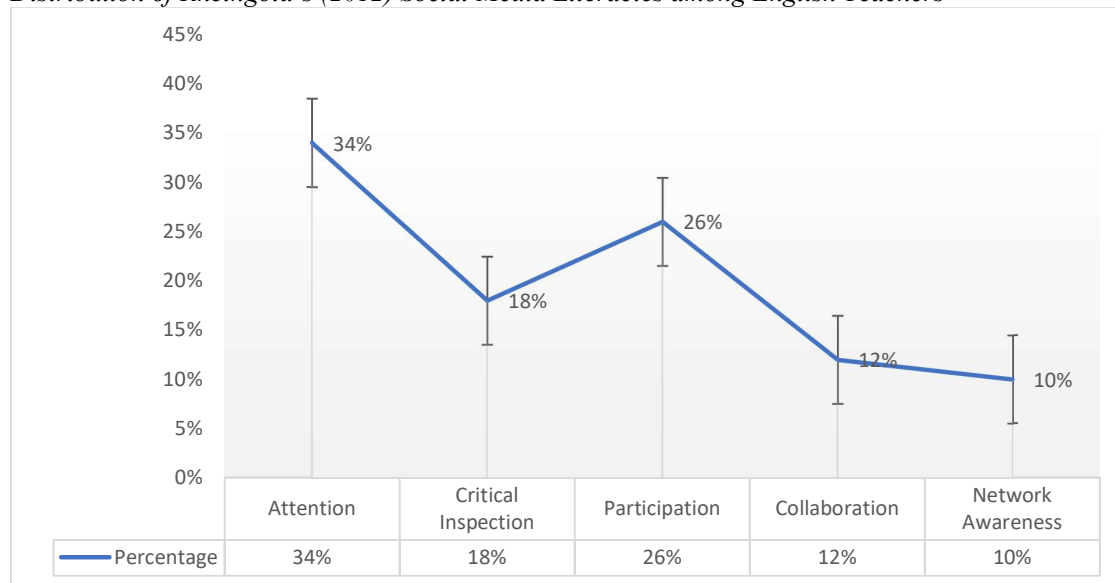
4.1.1.3. TEAIL-Q Reliability Analysis. Once the validity and credibility of the questionnaire have been established, ensuring its reliability stands as one of the most essential statistical considerations. Accordingly, the reliability of the Teachers' Ethical AI Literacy Questionnaire (TEAIL-Q) was assessed using Cronbach's Alpha statistical analysis, and the results indicated a high level of reliability for the designed instrument. The following table illustrates Cronbach's Alpha reliability estimation.

Table 4
Cronbach's Alpha Reliability Coefficient

	Reliability Coefficient (α)
Total	.854

4.1.1.4. Interpretation of Research Questions 1 and 2 .As the first research question of this study presents: *To what extent do teachers possess ethical AI literacy across its various dimensions?* – examining the connection between English teachers' ethical AI literacy, considering Rheingold's (2012) five-dimensional Social Media Literacies model, and their teaching styles, including, lecture-based, interactive and discussion-oriented, project-based, game- and activity-oriented, and problem-solving, is of considerable significance to the study. Thus, the researchers' developed an instrument (TEAIL-Q) alongside the proposed tests of significance providing clear evidence of the explicit relationship between English teachers' ethical AI literacy and their teaching styles. Accordingly, with regard to the second research question – *To what extent do the current components of teachers' ethical AI literacy – ranging from Attention to Network Awareness – reflect a balanced and functional understanding of AI ethics in education?* – it is noteworthy to indicate that the interplay of the two factors of English teachers' AI ethical literacy and the five components of Rheingold model results in mutual effects, reinforcing the complexity of their relationship. The following figure significantly demonstrates the percentage distribution of Rheingold's (2012) five Social Media Literacies dimensions, including Attention (34%), Critical Inspection (18%), Participation (26%), Collaboration (12%), and Network Awareness (10%).

Figure 1
Distribution of Rheingold's (2012) Social Media Literacies among English Teachers



The results derived from the analysis of Rheingold's (2012) five-dimensional Social Media Literacies model among English teachers reveal a contentious perspective regarding English teachers' ethical AI literacy. As demonstrated in Figure 1, Attention emerged as the most prevalent factor (34%), whereas the Network Awareness factor represented the lowest percentage (10%). This indicates that English teachers exhibit greater awareness and vigilance in their attention to ethical AI use compared to their network awareness. Nevertheless, English teachers' network awareness, holding the lowest percentage (10%), signifies a lack of complete familiarity and a significant gap in teachers'

understanding of this dimension of the model concerning the effective integration of ethical AI in language classrooms. Additionally, the Participation dimension, with a relatively higher percentage (26%), and the factors Critical Inspection and Collaboration, with comparatively lower percentages (18% and 12%), also indicate the level of awareness among English teachers regarding the ethical use of AI in the classroom. As presented in Figure 1, the Participation dimension exhibits the second-highest percentage (following Attention at 34%), reflecting English teachers' awareness regarding ethical utilization of AI. Conversely, Critical inspection and Collaboration, with modest percentages of 18% and 12%, respectively, highlight teachers' inadequate knowledge and, consequently, their limited ethical AI literacy.

4.2. The Qualitative Phase

Within the second phase of this explanatory sequential mixed methods study, the qualitative data were scrupulously assembled by semi-structured interviews to enable the researchers to move beyond the statistical procedures to a more in-depth and rich analysis of English teachers' perceptions regarding their ethical AI literacy within their teaching styles. Therefore, to provide a suitable answer to the last research question "How do the dimensions of Social Media Literacies (Rheingold, 2010) correlate with teaching style in AI-integrated language classrooms?" The researchers thematically analyzed the responses to the six interview questions.

4.2.1. Answer to Research Question 3. To proceed with the qualitative phase of this study, 4 guiding analytic questions were proposed:

- Which teaching styles reinforce the particular use of AI?
- In which style is teacher-centeredness more pronounced?
- Where is student agency more visibly supported through AI-mediated activities?
- How do institutional and cultural concerns shape AI integration?

It was found that different teaching approaches afforded different pedagogical roles for AI. For example, in lecture-oriented educational environments, artificial intelligence operated as an auxiliary instructional mechanism rather than an interactive pedagogical agent. Whereas, in the interactive approach of teaching, AI was used in interactive individual and group activities. It underpinned feedback, revision, and skill development. AI embedded in game-based and collaborative activities focused on motivation, engagement, and experiential learning. Problem-solving classes utilized AI as an adjunct tool that bolsters independent reasoning and critical interaction with content.

The results indicated that across instructional contexts, teachers retained different forms of control over AI use. In a lecture-based teaching style, it was emphasized that there should be a moral assessment of AI-generated content and information privacy with full control over accuracy, relevance, and alignment with lesson objectives. In this situation, the responsibility of ethical accountability and critical assessment predominantly lies with the educator. In contrast, based on the problem-solving approach of teaching, teachers guide ethical use and content evaluation to nudge students toward critical thinking and analytical skills. In the interactive style of teaching, the teacher also focuses on validation, personalization, and curriculum alignment, in which the stress is on responsible and ethical use of AI.

It was highlighted that student agency was more visibly supported in interactive and game-oriented approaches, where AI-mediated activities encouraged participation, collaboration, and guided autonomy. Maintaining students' voice and avoiding AI over-reliance are emphasized in these two styles of teaching. Hence, the data insist that interactive classes connect the capabilities of AI to foster active involvement and self-regulation of students. Following that, in a problem-based approach to teaching, AI supports analytical, reflective, and problem-based activities, because students evaluate, modify, and extend AI-generated outputs. In other words, it highlights high levels of student engagement and collaboration. This methodology fosters learner independence and promotes higher-order cognitive processes, situating AI as a supportive scaffold for intricate learning endeavors. In fact, it concentrates on guided autonomy to create avenues for collaborative learning.

Finally, it was designated that the way AI was incorporated into teaching approaches was greatly influenced by institutional and cultural attitudes, and pedagogical considerations were not the

only factors inducing teachers' decisions to restrict, control, or carefully structure AI use. AI use was also impacted by concerns about cheating, unclear institutional policies, and broader cultural expectations on academic integrity. Because of this, AI was frequently integrated with cautious and rule-based procedures in which the teachers establish clear boundaries to prevent misinterpretation and misuse. In this situation, teachers were positioned as responsible gatekeepers who navigated institutional uncertainty while seeking to uphold ethical and educational norms, which led to a more conservative and mediated adoption of AI.

5. Discussion

The present explanatory sequential mixed methods study sought initially to explain the relationship between English teachers' ethical AI literacy and their teaching style, followed by an in-depth exploration of their perspectives on their ethical AI literacy regarding their teaching style. Therefore, three critical research questions were proposed within the two phases of quantitative and qualitative approaches. In the first phase, the quantitative data were collected through a researcher-designed questionnaire, i.e., Teachers' Ethical AI Literacy Questionnaire (TEAIL-Q), to clarify the answers to the research questions 1 and 2. Following a qualitative approach in the second phase, eight semi-structured interviews were conducted to deeply explore English teachers' perspectives on ethical AI literacy within their teaching styles. This phase enabled the researchers to critically navigate ethical AI literacy based on English teachers' voices, develop the last research question, and provide comprehensive descriptions of the study. The observed positive relationship between teachers' instructional approaches and their ethical AI literacy is consistent with recent research findings. Ng et al. (2023) contend that teachers who use student-centered styles, such as project-based, typically exhibit higher ethical AI awareness and attention; however, they often lack a systematic understanding of socio-technical networks. Additionally, Luckin (2023) affirms that ethical literacy serves as a prerequisite for teachers' comprehension of AI tools, particularly with a problem-solving style that naturally enhance critical thinking in instructional design.

On the other hand, other studies offer an alternative perspective. For example, Selwyn (2023) argues that when it comes to AI integration with a lecture-based style, institutional demands and technology infrastructure frequently take precedence over individual teaching approaches, which discourages autonomous AI use. In a similar vein, Koehler et al. (2023) propose that the main predictor of ethical AI adoption is a teachers' general digital competency rather than their specific teaching style, suggesting that the relationship may be more nuanced than a direct stylistic influence.

The results of this study have important pedagogical implications, especially when it comes to using AI-mediated instruction to foster student agency. According to the research, when AI is incorporated into interactive and game-oriented approaches, it becomes a substance for involvement, cooperation, and directed autonomy. This emphasizes how critical it is to change the emphasis from AI as an information source to AI as a self-regulation facilitator. Furthermore, the use of AI as a cognitive scaffold in problem-based learning suggests that ethical AI literacy enables educators to go beyond simple integration and inspire students to think more critically by analyzing and adjusting AI outputs. However, a crucial conflict between pedagogical innovation and institutional caution is revealed by the rise of the teachers' role as a responsible gatekeeper. It appears that ethical AI literacy alone is insufficient for the full adoption of AI because teachers' decisions are highly impacted by laws and concerns about academic dishonesty.

6. Conclusion

To sum up, this explanatory sequential design investigated the complex relationship between the ethical AI literacy of English teachers and their pedagogical approaches. The findings demonstrated that although interactive and problem-solving teaching styles suggest a strong role of AI in promoting students' critical thinking, this is embedded within the institutional expectations and cultural attitudes regarding academic integrity. While teachers can create a more independent and thoughtful learning environment with the help of ethical AI literacy, they are frequently forced to take a cautious and rule-based approach to AI integration due to institutional policy. In the end, our study shows that a dual strategy for AI is needed to improve instructors' own ethical literacy and to create explicit, encouraging institutional standards that enable teachers to become creative facilitators of AI-enhanced learning

rather than gatekeepers. The results indicate that teacher education programs need to include ethical AI literacy training specific to each teaching style and that educational institutions should have explicit AI policies to guide responsible and pedagogically beneficial AI integration. Future research could explore how teaching styles relate to ethical AI literacy in various educational settings and with larger samples, as well as investigate how AI literacy training affects teacher instructional practice over time.

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