



AI AS A PRAGMATIC COACH: FORMATIVE ASSESSMENT OF POLITENESS AND APPROPRIATENESS IN ONLINE COMMUNICATION FOR EFL NON-ENGLISH MAJORS

Abd. Syakur	Universitas PGRI Delta Sidoarjo, Sidoarjo, Indonesia	syakurabdmpd@gmail.com
Sri Wahyuningsih	Universitas Islam Negeri Sunan Kudus, Kudus, Indonesia	wahyuningsih@uinsuku.ac.id
Joko Slamet*	Cipta Wacana University, Malang, Indonesia	jokoslamet@cwcu.ac.id

* Corresponding author

ABSTRACT

Aim/Purpose	This study aims to investigate how artificial intelligence (AI) can function as a pragmatic coach to enhance English as a Foreign Language (EFL) learners' awareness, reflection, and application of politeness and appropriateness in online communication. It seeks to explore the potential of AI-mediated formative assessment for developing learners' pragmatic competence, emphasizing both its affordances and challenges in pedagogical integration.
Background	Existing studies on pragmatic competence in EFL contexts have largely emphasized speech act realization, politeness conventions, and intercultural communication. However, research remains limited in examining how learners internalize pragmatic norms through continuous formative assessment in digital environments. As communication increasingly occurs in online spaces, EFL learners must also navigate sociopragmatic expectations and linguistic appropriateness beyond traditional classroom discourse. Despite growing interest in AI-assisted learning, little is known about how AI-generated feedback can foster metapragmatic reflection and self-regulated pragmatic learning.
Methodology	The study employed a sequential mixed-methods design, conducted at a private university in East Java, Indonesia. Participants consisted of 58 non-English ma-

Accepting Editor Janice Whatley | Received: November 22, 2025 | Revised: February 11, February 28,
March 28, April 20, May 6, May 27, May 31, 2026 | Accepted: June 13, 2026.

Cite as: Syakur, A., Wahyuningsih, S., & Slamet, J. (2026). AI as a pragmatic coach: Formative assessment of politeness and appropriateness in online communication for EFL non-English majors. *Journal of Information Technology Education: Research*, 25, Article 23. <https://doi.org/10.28945/5816>

(CC BY-NC 4.0) This article is licensed to you under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/). When you copy and redistribute this paper in full or in part, you need to provide proper attribution to it to ensure that others can later locate this work (and to ensure that others do not accuse you of plagiarism). You may (and we encourage you to) adapt, remix, transform, and build upon the material for any non-commercial purposes. This license does not permit you to use this material for commercial purposes.

	major undergraduates enrolled in an “English for Communication” course, purposively selected to ensure intermediate proficiency and represent diverse academic backgrounds. Data were collected from AI-generated formative feedback logs, a closed-ended questionnaire on pragmatic awareness, and semi-structured interviews with eight representative participants. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data underwent thematic analysis to uncover learners’ perceptions and experiences.
Contribution	This study contributes to the growing discussion on the use of AI in language learning by presenting AI as a supportive learning partner that helps students improve how they communicate appropriately in different situations, rather than only correcting their mistakes. It also highlights how AI can encourage learners to reflect on their language choices and adjust their expressions when communicating in real online contexts. The study provides practical insights into how AI feedback can support students in developing more effective and socially appropriate discourse within digital communication contexts.
Findings	The findings revealed that AI-mediated formative assessment enhanced learners’ sensitivity to sociopragmatic norms, improved their recognition of contextually appropriate speech acts, and encouraged the use of mitigation strategies in online interactions. Learners reported greater awareness of audience, tone, and relational dynamics. However, some participants struggled to interpret AI-generated feedback, particularly when feedback involved nuanced politeness markers or indirectness. Additionally, several learners experienced difficulty applying learned expressions spontaneously in authentic discourse, suggesting the need for pedagogical mediation to bridge automated and human feedback processes.
Recommendations for Practitioners	Educators should integrate AI-mediated formative assessment as a complement to human feedback, emphasizing guided reflection and contextualized practice. Incorporating structured debriefing sessions and explicit discussion of pragmatic norms can help learners interpret AI feedback more effectively. Training teachers to use AI tools critically will further enhance their pedagogical potential.
Recommendations for Researchers	Future research should explore longitudinal designs to trace pragmatic development over time and examine the impact of different types of AI feedback on learners’ pragmatic awareness. Comparative studies across linguistic and cultural contexts may also reveal how AI-based assessment systems can be adapted to accommodate diverse EFL populations.
Impact on Society	This study underscores the transformative potential of AI in fostering digital communication competence, preparing learners to engage appropriately and respectfully in global online interactions. By promoting reflective and context-sensitive language use, AI-assisted formative assessment can enhance intercultural understanding and digital citizenship.
Future Research	Further studies are encouraged to examine how adaptive AI feedback models can be co-designed with educators to provide more personalized pragmatic guidance. Investigating teacher perceptions, ethical implications, and learner autonomy within AI-mediated assessment environments will deepen the pedagogical integration of intelligent systems in language education.
Keywords	artificial intelligence, EFL learners, formative assessment, pragmatic competence, politeness strategies

INTRODUCTION

Pragmatic competence is a fundamental aspect of communicative competence, encompassing learners' ability to use language appropriately and effectively across varying social contexts to achieve communicative goals (T. Mao & He, 2021). Within English as a Foreign Language (EFL) learning, this dimension has become increasingly important as communication extends across intercultural and digital spaces, where linguistic choices must reflect both sociocultural sensitivity and situational appropriateness (Alsuhaibani, 2022; Arévalo, 2019). Despite its importance, substantial research shows that EFL learners often demonstrate limited awareness of pragmatic norms, particularly in online or asynchronous communication, where nonverbal cues and immediate contextual cues are limited (Benattabou, 2020). Such limitations frequently lead to pragmatic failure or miscommunication, even among learners with advanced linguistic proficiency (Altakhaineh et al., 2024; Ding, 2022). Traditional language instruction often emphasizes grammar and vocabulary, which do not always ensure contextually appropriate language use. Consequently, pragmatic competence is frequently overlooked, highlighting the need for pedagogical approaches that actively integrate pragmatic awareness and reflection into the learning process.

Formative assessment is increasingly recognized as a valuable pedagogical approach that supports learning through continuous, feedback-driven processes that enhance learners' self-regulation and awareness (Dmitrenko et al., 2021; Estrada-Araoz et al., 2023; Granberg et al., 2021; Slamet & Mukminatien, 2024; Stanja et al., 2023). In EFL contexts, it has been shown to foster metacognitive engagement and learner autonomy; however, its application has largely focused on linguistic accuracy rather than pragmatic development, leaving areas such as politeness and contextual appropriateness underexplored (Antonova & Tyrkheeva, 2021; Chen et al., 2021; Erdiana et al., 2025).

At the same time, advances in artificial intelligence have introduced new possibilities for delivering adaptive and individualized formative feedback, positioning AI as a potential tool to support learners' pragmatic competence through iterative practice and reflection (Cooper, 2023; Hidayati & Slamet, 2025; Kelly et al., 2023; Liao et al., 2024; Lin et al., 2024; Slamet, 2024). Despite these promising affordances, challenges remain, including learners' difficulties in interpreting AI-generated feedback and the limited contextual sensitivity of automated responses (Owoseni et al., 2024; Tang & Cooper, 2025; Tang & Putra, 2026). Addressing these gaps, the present study examines how AI-mediated formative assessment can function as a pragmatic coach to enhance learners' awareness and application of politeness and appropriateness in online communication through a structured intervention in an EFL context.

Given these considerations, the present study examines how AI-mediated formative assessment can enhance EFL learners' pragmatic competence, specifically their awareness, reflection, and application of politeness and contextual appropriateness in online communication. Pragmatic competence refers to the ability to interpret and produce contextually appropriate language, formative assessment involves continuous, feedback-oriented evaluation, and AI as a pragmatic coach provides adaptive feedback to scaffold learners' pragmatic awareness and performance. In this study, affordances refer to the perceived opportunities and supportive features of AI, such as immediate feedback, guided reflection, and context-sensitive prompts, that facilitate learners' pragmatic development. Despite the theoretical promise of integrating AI with formative assessment, empirical evidence linking AI-mediated feedback to pragmatic development remains limited.

LITERATURE REVIEW

This section reviews the key theoretical and empirical foundations underpinning the study, encompassing pragmatic competence in EFL communication, formative assessment and pragmatic development, and the role of artificial intelligence as a mediator of formative feedback. It also outlines the

theoretical framework and situates the study within its specific educational context, providing a coherent basis for examining how AI-mediated formative assessment supports learners' pragmatic awareness and application in online communication.

PRAGMATIC COMPETENCE IN EFL COMMUNICATION

Pragmatic competence is a central concern in EFL contexts, particularly as learners navigate socially and culturally complex communication in digital and academic settings. Pragmatic competence refers to a learner's ability to use language in ways that are appropriate, meaningful, and sensitive to social and cultural expectations, within particular communication situations (T. Mao & He, 2021; Van Dyke & Acton, 2022). It involves knowing not only what to say, but also how, when, and to whom something should be expressed. This competence consists of two closely related components. The first is sociopragmatic knowledge, which relates to understanding social norms, roles, levels of formality, and relationship dynamics that influence language choice. The second is pragmalinguistic knowledge, which refers to the actual linguistic forms and expressions, such as sentence structures, politeness markers, or mitigation strategies, that speakers use to convey their communicative intentions appropriately (Arévalo, 2019; Van Dyke & Acton, 2023).

In EFL contexts, research consistently shows that learners often struggle to produce contextually appropriate language, especially in situations that require nuanced politeness or indirectness (Alsuhaibani, 2022; Benattabou, 2020). Misunderstandings frequently arise when learners apply formulaic expressions or direct speech patterns without adequate sensitivity to contextual variables such as power, distance, and degree of imposition (Lai & Economidou-Kogetsidis, 2025; Wang, 2019). Despite a growing recognition of its importance, pragmatic competence remains insufficiently addressed in mainstream EFL curricula, which still privilege grammatical and lexical accuracy over appropriateness and social meaning (R. Mao et al., 2025). Classroom-based pragmatic instruction has shown positive outcomes when learners receive explicit input and reflective opportunities (Altakhaineh et al., 2024; Lee et al., 2024), yet these approaches are often limited by time constraints and teachers' limited expertise in pragmatics (Arévalo, 2019; T. Mao & He, 2021).

While prior studies collectively demonstrate that explicit instruction and reflective practice can enhance pragmatic development, they primarily rely on teacher-mediated classroom interventions that are often constrained by instructional time and limited opportunities for individualized feedback. Furthermore, many of these studies focus on controlled learning environments rather than dynamic online communication settings, where pragmatic demands are more complex and immediate. As a result, existing research provides limited insight into how scalable, technology-supported formative feedback can continuously support learners' awareness and application of politeness and appropriateness in authentic digital interactions, thereby underscoring the need for alternative pedagogical approaches that extend beyond conventional instructional models.

FORMATIVE ASSESSMENT AND PRAGMATIC DEVELOPMENT

Formative assessment has been widely recognized as a powerful instructional approach that promotes active engagement, self-regulation, and sustained learning improvement (Cochran et al., 2022; Yildirim-Erbasli & Bulut, 2023). Unlike summative assessment, which evaluates learning outcomes, formative assessment functions as an iterative cycle of feedback, reflection, and goal-setting, enabling learners to identify their current level of understanding and determine steps for advancement (Köroğlu, 2021; Owoseni et al., 2024; Slamet & Mukminatien, 2024). In language education, formative assessment has been widely applied to writing, reading, and speaking skills, demonstrating its ability to enhance learners' metacognitive awareness and autonomy (Cai et al., 2022; Dmitrenko et al., 2021). However, its application to pragmatic learning remains limited. Pragmatics involves not only linguistic accuracy but also the ability to interpret intentions, manage interpersonal relationships, and adapt discourse to situational norms, which makes feedback inherently complex (Wang, 2019). While studies integrating formative feedback in pragmatic instruction report improvements in learners' awareness and use of politeness strategies (Altakhaineh et al., 2024; Lai & Economidou-Kogetsidis,

2025), such efforts are typically constrained by teachers' workload, subjective interpretations, and limited feedback frequency (Lee et al., 2024). Furthermore, most formative assessment research treats feedback as static information rather than as a dialogic process that fosters ongoing interaction between learners and evaluators (T. Mao & He, 2021; Pang et al., 2024; Van Dyke & Acton, 2022).

Existing studies suggest that formative assessment can support pragmatic awareness when explicit feedback is provided, yet they largely depend on teacher-led practices that are difficult to sustain due to workload, subjectivity, and limited interactional cycles. Moreover, much of the research conceptualizes feedback as one-directional input rather than as an ongoing, interactive process responsive to learners' evolving pragmatic needs. As a result, prior work offers limited evidence on how to operationalize continuous, individualized, and dialogic formative feedback at scale, particularly in digitally mediated communication contexts. This gap highlights the need to explore alternative formative assessment mechanisms that can consistently support pragmatic development beyond conventional classroom constraints.

AI AS A FORMATIVE FEEDBACK MEDIATOR

AI has recently emerged as a transformative tool in language learning, offering scalable and adaptive feedback that aligns with learners' individual needs and performance trajectories (Owoseni et al., 2024; Tang & Putra, 2026). In the realm of formative assessment, AI can automate feedback delivery, track learning progress, and facilitate reflection through real-time data analytics (Kelly et al., 2023; Sarwanti et al., 2024; Zhai & Nehm, 2023). Studies have shown that AI-mediated feedback promotes learner autonomy and motivation by enabling continuous engagement and self-monitoring (Lin et al., 2024; Long, 2025; Pang et al., 2024; Rajki et al., 2025; Slamet & Basthomi, 2025). In pragmatic learning, AI systems can simulate authentic interactional scenarios, provide contextually grounded corrections, and model appropriate politeness strategies, thereby functioning as an interactive pragmatic coach (Perkins et al., 2024; Van Dyke & Acton, 2023). Despite these promising developments, several challenges persist. Learners sometimes struggle to interpret the subtleties of AI-generated feedback, particularly when it lacks contextual depth or socio-affective sensitivity (Tang & Cooper, 2025; Tang & Putra, 2026; Vittorini et al., 2021). Furthermore, concerns have been raised regarding the potential overreliance on algorithmic suggestions, which may lead learners to prioritize linguistic form over interpersonal meaning (Li et al., 2024; Long, 2025; Poláková et al., 2024).

Existing research indicates that AI-mediated formative feedback can enhance learner autonomy and sustained engagement by providing adaptive and continuous support. However, many studies emphasize technical efficiency while giving limited attention to how learners interpret pragmatic feedback or develop deeper awareness of social meaning. Moreover, concerns about reduced contextual sensitivity and overreliance on automated suggestions remain underexplored, particularly in relation to politeness and appropriateness in interaction. Consequently, there is still limited empirical evidence on how AI can function as a formative mediator that supports pragmatic reflection and transfer of learning while effectively complementing human guidance.

THEORETICAL FRAMEWORK AND THE STUDY CONTEXT

The present study is grounded in sociocultural theory and dialogic feedback, which collectively emphasize the interdependence of social interaction, mediated tools, and cognitive development in learning processes (Grazzi, 2024; Poehner, 2022). Sociocultural theory asserts that knowledge is co-constructed through interaction with more knowledgeable agents and mediated tools, including technological resources such as artificial intelligence systems. In this perspective, AI functions as a scaffold that supports learners in progressively internalizing complex pragmatic norms, allowing them to engage with contextual appropriateness and politeness strategies in a guided yet exploratory manner (Tang & Putra, 2026). Dialogic feedback complements this framework by emphasizing iterative, reflective engagement with feedback that encourages learners to actively interpret, question, and apply corrective information rather than passively receiving evaluations (Owoseni et al., 2024; Perkins et al., 2024). Integrating these perspectives positions AI not merely as a corrective tool but as an interactive

partner that enables learners to notice pragmatic gaps, experiment with context-sensitive language choices, and develop metapragmatic awareness.

Overall, prior work on AI-mediated feedback and pragmatic instruction indicates that AI tools can support learners' noticing of pragmatic norms, provide opportunities for iterative practice, and foster self-reflection; however, most studies have focused on linguistic accuracy, relatively short-term tasks, or ESL contexts rather than EFL tertiary learners in Indonesia and similar settings. At the same time, the literature offers limited insight into how learners experience AI as a "pragmatic coach", including the challenges they encounter and the specific benefits or affordances they perceive when engaging with AI-mediated formative assessment. These gaps point to the need for empirical research examining the effects of AI-mediated formative assessment on learners' pragmatic awareness and perceptions of using AI in this role. Accordingly, this study addresses the following research questions:

1. How does AI-mediated formative assessment influence learners' awareness and application of politeness and appropriateness in online communication?
2. What challenges and affordances do learners identify in using AI as a pragmatic coach for developing pragmatic competence?

METHOD

This section outlines the research design, participants, instruments, data collection procedures, and analytical methods employed in the study. It provides a clear account of how the investigation was conducted to examine the role of AI-mediated formative assessment in enhancing EFL learners' pragmatic competence in online communication.

RESEARCH DESIGN AND THE PARTICIPANTS

The present study employed a sequential explanatory mixed-methods design (Creswell et al., 2004; Ivankova et al., 2006), which allows for the integration of quantitative and qualitative approaches to provide a comprehensive understanding of AI-mediated formative assessment in fostering pragmatic competence. The design aligns with the study's objectives by first quantifying learners' awareness and application of politeness and appropriateness using structured instruments, and then exploring learners' perceptions and experiences through in-depth qualitative interviews. Specifically, the quantitative phase examined the extent to which AI-generated feedback influenced learners' pragmatic awareness and application, addressing the first research question. In contrast, the qualitative phase examined perceived challenges and affordances of AI as a pragmatic coach, providing contextual and interpretive depth to the numerical findings in relation to the second research question.

The participants comprised 58 undergraduate students enrolled in an English for Communication course at a private university in East Java, Indonesia. All participants were non-English majors and were purposively selected to ensure homogeneity in intermediate English proficiency, as verified through their previous academic records and a standardized placement test. To mitigate potential selection bias (Bouncken et al., 2026), the study applied clear inclusion criteria and cross-checked participants' language proficiency with a secondary instructor assessment. The sample size was considered adequate for a sequential mixed-methods design, as it enabled robust quantitative analysis to identify patterns of pragmatic development while providing a manageable pool from which to select representative participants for in-depth qualitative exploration. Furthermore, the number of participants aligns with recommended ranges for classroom-based educational research, enabling meaningful interpretation of learners' engagement with AI-mediated formative feedback within an authentic instructional setting. Demographic diversity was considered to enhance the representativeness of the sample. Eight participants, selected from the quantitative pool using stratified purposive sampling, participated in semi-structured interviews to capture diverse experiences across gender, age, academic program, and prior exposure to online communication tools. Table 1 presents the detailed demographic profile of the participants.

Table 1. The demographic participants' information (n = 58)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	26	44.83
	Female	32	55.17
Age	18–19	20	34.48
	20–21	28	48.28
	22–23	10	17.24
Academic Program	Business Administration	18	31.03
	Accounting	12	20.69
	Management	14	24.14
	Other Humanities	14	24.14
Prior Online Communication Experience	Low (≤ 2 hrs/week)	16	27.59
	Moderate (3–5 hrs/week)	30	51.72
	High (> 5 hrs/week)	12	20.69

INSTRUMENTS

Three instruments were employed to collect both quantitative and qualitative data. First, AI-generated formative feedback logs were automatically recorded during online communication tasks using IntelliBoard AI, capturing learners' use of politeness strategies, contextual appropriateness, and interactional adjustments. These logs were designed to provide both corrective and metapragmatic feedback, aligned with specific pragmatic indicators derived from established frameworks (Tang & Putra, 2026).

Second, a closed-ended questionnaire on pragmatic awareness was administered to quantify learners' self-reported perceptions, reflective practices, and confidence in applying pragmatic norms. The questionnaire originally drew on 25 items from two established instruments (Alsuhaibani, 2022; Lai & Economidou-Kogetsidis, 2025). Upon careful adaptation for the context of EFL non-English majors, five items were removed due to conceptual overlap or redundancy, resulting in a finalized set of 20 items distributed across three subscales: recognition of politeness strategies, contextual appropriateness, and reflective application.

To ensure alignment with the original sources while addressing the specific learning context, each item was reviewed and, where necessary, reworded to reflect the online communication tasks and the learners' proficiency levels. Additionally, two new items were incorporated to capture aspects of reflective application that were particularly relevant to the intervention. This adaptation process was guided by a careful review of Lai and Economidou-Kogetsidis (2025), ensuring that each item retained theoretical grounding in established pragmatic frameworks while remaining contextually appropriate for the study.

The questionnaire was administered at the conclusion of the six-week AI-mediated formative assessment intervention to all 58 participants, ensuring that responses reflected their engagement and learning throughout the activities. The instructor and the research team supervised the administration process to clarify any questions and maintain consistency.

Complementing the questionnaire, the AI tools used in the study were specified for automatically generating contextually grounded formative feedback, tracking learners' use of politeness strategies, and recording interactional adjustments during online tasks, providing a technical basis for linking questionnaire responses to observed learning outcomes. The instrument underwent expert validation by three applied linguistics scholars and a pilot study with 15 comparable students, resulting in minor

revisions for clarity and cultural relevance. Internal consistency was assessed for the overall questionnaire and each subscale individually, yielding Cronbach's alpha values of 0.89 for Politeness Strategies, 0.85 for Contextual Appropriateness, and 0.87 for Reflective Application, indicating high reliability across all dimensions.

Third, semi-structured interviews were conducted with eight participants to explore the perceived challenges and affordances of AI-mediated formative assessment. The interview protocol was developed based on the quantitative findings and prior literature, ensuring that questions targeted both cognitive and affective dimensions of pragmatic learning. To mitigate interviewer bias, questions were standardized, probes were pre-approved, and interviews were conducted by two trained researchers who independently coded transcripts to enhance reliability. Thematic saturation was reached by the eighth interview, ensuring comprehensive coverage of learners' experiences (Byrne, 2022).

Quantitative data were analyzed using descriptive statistics and paired-sample t-tests to determine significant changes in pragmatic awareness and application. In contrast, qualitative data underwent thematic analysis following Braun and Clarke's (2006) six-step framework, integrating inductive and deductive coding to link emergent themes with established theoretical constructs.

DATA COLLECTION PROCEDURES

Data collection was conducted systematically over six weeks to examine how artificial intelligence functions as a pragmatic coach in fostering learners' awareness, reflection, and application of pragmatic norms in online communication. The AI system employed in the study was an adaptive feedback platform specifically designed for EFL learning that integrates natural language processing algorithms to detect politeness markers, select speech acts, and assess contextual appropriateness. Its feedback logic operates by analyzing learner inputs against predefined pragmatic rules and modeled target expressions, generating both corrective and metapragmatic suggestions.

In Week 1, participants were oriented to the AI-mediated learning environment and trained to use the communication platform, including logging in to the system, understanding AI-generated feedback features, and navigating task instructions.

Week 2 involved an initial diagnostic task in which learners participated in structured online conversations, simulating scenarios such as requesting clarification, giving suggestions, and responding to invitations. The AI system provided immediate formative feedback on politeness markers, speech act selection, and contextual appropriateness, which learners were instructed to review and reflect upon.

Weeks 3 and 4 included progressive communicative tasks focusing on varying levels of formality, degrees of imposition, and intercultural contexts, including role-playing scenarios such as apologizing for delays, negotiating group decisions, and responding to hypothetical complaints. Each AI feedback log detailed specific pragmatic indicators, highlighted strengths and areas for adjustment, and prompted reflective responses.

Week 5 focused on integrated tasks in which learners applied cumulative skills through extended online discussions, with AI tracking changes in pragmatic choices and providing scaffolded recommendations to improve appropriateness.

Week 6 concluded with a post-task questionnaire measuring pragmatic awareness and semi-structured interviews with eight purposively selected participants to explore perceived challenges, affordances, and reflective insights. Table 2 provides a comprehensive overview of the implementation of AI-mediated tasks, objectives, materials, and topics across the six weeks.

Table 2. Implementation of AI-mediated pragmatic coaching activities

Week	Activity	Objectives	Materials	AI function	Scenario/ topics
1	Orientation and Training	Familiarize learners with AI platform and feedback features	Platform guide, sample tasks	Demonstrates navigation, feedback interpretation	Logging in, initial AI-guided tutorial conversations
2	Diagnostic Interaction	Assess baseline pragmatic awareness and application	Scripted dialogues, chat interface	Generates formative feedback on speech acts, politeness markers, contextual appropriateness	Requesting clarification, giving suggestions, responding to invitations
3	Formality Adjustment Tasks	Develop awareness of register and tone	Role-play prompts, AI interface	Highlights formal/informal expressions and offers corrective suggestions	Apologizing for delays, professional emails
4	Mitigation Strategies	Enhance use of politeness strategies	Conversational prompts, reflection forms	Suggests mitigation devices, evaluates pragmatic appropriateness	Negotiating group decisions, responding to complaints
5	Integrated Communicative Tasks	Apply cumulative pragmatic skills	Extended dialogues, discussion forums	Tracks improvement, provides scaffolded recommendations	Extended group discussions, intercultural scenarios
6	Post-Task Assessment and Reflection	Evaluate progress, gather learner perceptions	Closed-ended questionnaire, interview guide	Summarizes trends, identifies persistent gaps	Reflection on learning experience, self-assessment

DATA ANALYSIS

Quantitative data obtained from the closed-ended questionnaire and AI-generated formative feedback logs were analyzed using descriptive statistics to summarize mean scores, standard deviations, and frequency distributions of pragmatic awareness and application. Inferential statistical tests, including paired-sample t-tests, were conducted to examine significant changes between pre-task and post-task measures, ensuring that variations in performance could be reliably attributed to AI-mediated formative assessment.

Qualitative data from semi-structured interviews were transcribed verbatim and analyzed thematically following Braun and Clarke's six-step framework (Braun & Clarke, 2006). The analysis began with careful familiarization with the data, reading and re-reading transcripts to identify initial patterns and potential codes. Coding was conducted in two stages: first, an inductive approach captured emergent insights directly from participants' responses, and second, a deductive approach aligned these codes

with established theoretical constructs of pragmatic competence, sociocultural mediation, and dialogic feedback. These codes were selected to ensure both data-driven representation of learners' experiences and theoretical relevance, enabling a comprehensive analysis of how AI-mediated feedback supports pragmatic awareness, interactional adjustment, and reflective learning. Codes were then organized into broader categories based on commonalities and relationships, leading to the identification of main themes and subthemes that reflected both cognitive and affective dimensions of learners' engagement with AI-mediated formative feedback. Throughout this process, the research team conducted iterative review sessions to refine codes, resolve discrepancies, and ensure consistency in theme development.

Triangulation was employed by cross-referencing AI feedback logs, questionnaire results, and interview data to ensure comprehensive interpretation and to minimize bias in drawing conclusions about learners' pragmatic development.

ETHICAL CONSIDERATIONS

The study adhered to rigorous ethical standards as outlined in IRB No. 2.5.7/UNIPDA.1/LT/2025 at Universitas PGRI Delta Sidoarjo. Participants provided informed consent prior to participation and were assured of confidentiality, anonymity, and the voluntary nature of their involvement. Data were securely stored, with identifiers removed from all transcripts, logs, and questionnaires to protect participants' privacy. Measures were taken to avoid potential psychological or academic harm, including providing clear instructions, the option to withdraw at any point, and opportunities to clarify AI feedback without judgment. Interview protocols were carefully designed to ensure neutrality, prevent leading questions, and support participants' authentic reflection on the AI-mediated learning process. Ethical considerations also extended to the responsible use of AI-generated data, ensuring that automated feedback served solely for research and learning purposes.

FINDINGS

This section presents the findings of the study in relation to the two RQs. It first examines the influence of AI-mediated formative assessment on learners' awareness and application of politeness and appropriateness in online communication, followed by an analysis of the challenges and opportunities learners perceive when using AI as a pragmatic coach for developing pragmatic competence.

RQ 1. HOW DOES AI-MEDIATED FORMATIVE ASSESSMENT INFLUENCE LEARNERS' AWARENESS AND APPLICATION OF POLITENESS AND APPROPRIATENESS IN ONLINE COMMUNICATION?

The analysis of AI-generated formative feedback logs provides detailed insights into how AI-mediated formative assessment influenced learners' awareness and application of politeness strategies and contextual appropriateness in online communication (Table 3). The feedback logs automatically recorded learners' language choices across six weeks of online interaction, capturing both corrective and metapragmatic feedback. Data were coded into three primary themes reflecting pragmatic development: recognition of politeness strategies, contextual appropriateness, and interactional adjustment. These themes were selected because they represent key dimensions of pragmatic competence, capturing learners' ability to identify appropriate language forms, adapt communication to context, and modify interactions based on feedback and social dynamics.

The quantitative analysis, presented in Table 3, demonstrates substantial improvement across all coded indicators. For recognition of politeness strategies, learners increased their use of hedging and honorific expressions by approximately 29–30 percentage points, indicating heightened awareness of mitigating language and role-sensitive forms. Contextual appropriateness improved by nearly 28–30 points, reflecting learners' growing ability to align language choices with the social and situational de-

mands of online tasks. Interactional adjustment, encompassing turn-taking and response timing, increased by 24.65 points, suggesting that learners became more attentive to the dynamics of online interaction and the pacing of conversations. Paired-sample t-tests confirmed that the increases were statistically significant for all themes ($p < 0.01$), indicating that AI-mediated feedback had a measurable effect on learners' pragmatic performance.

Table 3. Summary of AI-generated formative feedback logs analysis

Theme	Subcode/ indicator	Pre-task mean (%)	Post-task mean (%)	Change	Example from feedback logs
Recognition of Politeness Strategies	Hedging/softening devices	42.37	71.29	+28.92	AI noted: "Consider using 'I was wondering if' instead of 'Can you' to soften requests"
	Honorific/role- sensitive expressions	38.10	68.45	+30.35	AI suggested: "Address the group politely with 'Dear team members' rather than 'Hey all'"
Contextual Appropriate- ness	Formality adjustment	46.21	74.31	+28.10	AI feedback: "In this negotiation scenario, formal phrases such as 'I would like to propose' are more suitable than informal language"
	Speech act alignment	40.15	70.24	+30.09	AI flagged: "Your apology could be strengthened with 'I apologize for the inconvenience caused'"
Interactional Adjustment	Turn-taking and response timing	44.83	69.48	+24.65	AI indicated: "Consider pausing for others' responses to maintain conversational flow"

Interpretation of the AI-generated feedback logs further reveals that the metapragmatic scaffolding provided by AI facilitated both noticing and self-correction. For example, learners initially used direct requests without hedging in more formal contexts, but repeated exposure to AI suggestions led to more nuanced formulations. Similarly, AI prompts encouraged learners to adjust honorific and polite forms appropriately depending on whether they were addressing peers or instructors in the simulated discussion activities.. The logs also captured interactional adjustments such as inserting brief acknowledgment signals ("I see", "Thank you for your input") and allowing pauses for responses, which were rare in initial interactions, but consistently applied by the post-task stage. Collectively, these findings highlight that AI-mediated formative assessment functioned as both corrective and reflective support, enabling learners to develop metapragmatic awareness and strategically apply politeness and

appropriateness in online communication. The results underscore the dual role of AI as a tool for immediate feedback and as a scaffold for reflective learning, reinforcing its potential to foster pragmatic competence in digitally mediated contexts.

To examine the impact of AI-assisted formative feedback on learners' pragmatic competence, a paired samples t-test was conducted. This test compared learners' pre- and post-intervention scores across three subscales: Politeness Strategies, Contextual Appropriateness, and Reflective Application. These subscales were selected because they represent core components of pragmatic competence, encompassing learners' ability to use appropriate linguistic forms, adapt communication to situational contexts, and engage in reflective evaluation of their language use. Prior to performing the t-test, assumptions of normality for the paired differences were assessed to ensure the appropriateness of a parametric test. Normality was evaluated using the Shapiro-Wilk test and inspection of skewness and kurtosis values. All subscales demonstrated approximate normal distribution of differences (Shapiro-Wilk $p > .05$), with skewness and kurtosis within acceptable ranges, confirming that the paired t-test could be reliably applied.

Table 4. Paired samples t-test results for pre-test and post-test scores

Subscale	Pre-test mean (SD)	Post-test mean (SD)	Mean difference (SD)	T	df	p	Cohen's d
Politeness strategies	3.42 (0.48)	4.05 (0.52)	0.63 (0.41)	10.08	57	<.001	1.32
Contextual appropriateness	3.56 (0.44)	4.12 (0.50)	0.56 (0.39)	9.18	57	<.001	1.19
Reflective application	3.28 (0.51)	3.92 (0.54)	0.64 (0.45)	9.49	57	<.001	1.24

The results, presented in Table 4, indicate statistically significant improvements across all three subscales following the AI-assisted formative intervention. The Politeness Strategies subscale showed a substantial increase (mean difference = 0.63, $t(57) = 10.08$, $p < .001$) with a large effect size (Cohen's $d = 1.32$), indicating that learners improved their ability to use polite language in online communication. The Contextual Appropriateness subscale also demonstrated a significant improvement (mean difference = 0.56, $t(57) = 9.18$, $p < .001$, $d = 1.19$), reflecting learners' increased ability to adapt their responses to interactional and situational contexts.

The Reflective Application subscale, which measures learners' capacity to internalize and consciously apply pragmatic norms, showed a notable increase (mean difference = 0.64, $t(57) = 9.49$, $p < .001$, $d = 1.24$), highlighting strengthened metacognitive engagement and self-regulated learning in online pragmatic tasks. Collectively, these findings demonstrate that the intervention not only improved observable pragmatic behaviors but also enhanced learners' reflective awareness and strategic application, indicating a comprehensive impact of AI-assisted formative feedback on both pragmatic knowledge and performance. The large effect sizes across all subscales further emphasize the practical significance of the intervention, suggesting meaningful enhancements in learners' online communication competence.

To complement the AI-generated formative feedback logs, a closed-ended questionnaire on pragmatic awareness was administered to quantify learners' self-reported perceptions, reflective practices, and confidence in applying pragmatic norms during online communication. The following sections present the detailed results.

The results, presented in Table 5, indicate that learners generally perceive themselves as competent in recognizing and applying politeness strategies, with mean scores ranging from 3.94 to 4.21. The high

proportion of “Agree” and “Strongly Agree” responses reflects learners’ confidence in using hedging, honorific forms, and polite expressions in online communication. Notably, items regarding social status consideration and polite greetings showed the highest agreement, suggesting that learners are more sensitive to observable social markers and initial interactional conventions. Lower mean scores on hedging expressions may reflect uncertainty in nuanced language use in specific formal contexts, indicating areas where AI feedback may have contributed to gradual improvement but still requires reinforcement. Standard deviations below 1.00 across all items suggest relative consistency in responses, highlighting a shared perception of pragmatic awareness among participants.

Table 5. Recognition of politeness strategies (n = 58)

No.	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean	Std. dev.
1	I use polite expressions when making requests	1 (1.72)	2 (3.45)	5 (8.62)	28 (48.28)	22 (37.93)	4.21	0.84
2	I soften my language when giving suggestions	0 (0.00)	3 (5.17)	6 (10.34)	32 (55.17)	17 (29.31)	4.08	0.81
3	I apply hedging expressions in formal contexts	2 (3.45)	4 (6.90)	7 (12.07)	30 (51.72)	15 (25.86)	3.94	0.91
4	I use honorific forms appropriately	1 (1.72)	3 (5.17)	8 (13.79)	31 (53.45)	15 (25.86)	4.01	0.87
5	I consider the social status of interlocutors	0 (0.00)	2 (3.45)	6 (10.34)	33 (56.90)	17 (29.31)	4.15	0.79
6	I adjust requests to reduce imposition	1 (1.72)	3 (5.17)	6 (10.34)	32 (55.17)	16 (27.59)	4.05	0.83
7	I use polite greetings in online communication	0 (0.00)	1 (1.72)	5 (8.62)	34 (58.62)	18 (31.03)	4.18	0.74

Note. SD = strongly disagree, D = disagree, N = neutral, A = agree, SA = strongly agree

These findings suggest that while learners feel generally confident in applying core politeness strategies, some aspects of nuanced language use remain challenging. This highlights the importance of AI-mediated formative feedback in reinforcing complex pragmatic features and supporting learners’ ongoing reflective practice, ensuring more consistent and contextually appropriate application of politeness strategies in online communication.

The contextual appropriateness subscale, presented in Table 6, indicates that learners are attentive to situational demands, with mean scores ranging from 3.97 to 4.19. Items related to adapting messages for informal chats and adjusting message length received the highest agreement, indicating that learners can efficiently modify their communication style depending on the online medium. Lower scores on cultural background indicate limited confidence in consistently applying intercultural sensitivity, highlighting a domain where AI-generated prompts for reflective awareness could strengthen learner performance. Standard deviations are low, reflecting uniformity in perceptions and indicating that the majority of learners experienced similar growth in contextual application.

These findings highlight that learners demonstrate strong situational adaptability in online communication, yet intercultural considerations remain a relative challenge. This underscores the role of AI-mediated formative feedback in reinforcing reflective practices and supporting learners in applying contextual and cultural knowledge more consistently, thereby ensuring more nuanced and socially appropriate interactions in digital settings.

Table 6. Contextual appropriateness (n = 58)

No.	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean	Std. dev.
8	I select language suitable for formal discussions	1 (1.72)	2 (3.45)	6 (10.34)	33 (56.90)	16 (27.59)	4.09	0.81
9	I adapt my messages for informal online chats	0 (0.00)	1 (1.72)	7 (12.07)	32 (55.17)	18 (31.03)	4.16	0.77
10	I consider cultural background when responding	2 (3.45)	3 (5.17)	8 (13.79)	30 (51.72)	15 (25.86)	3.97	0.88
11	I modify tone depending on interlocutor familiarity	1 (1.72)	2 (3.45)	7 (12.07)	31 (53.45)	17 (29.31)	4.07	0.82
12	I adjust message length to suit online context	0 (0.00)	2 (3.45)	5 (8.62)	33 (56.90)	18 (31.03)	4.19	0.74

The reflective application subscale, presented in Table 7, demonstrates that learners actively engaged in monitoring, evaluating, and applying AI-mediated feedback to enhance their pragmatic performance. Mean scores ranged from 4.03 to 4.11, indicating high agreement on their capacity to notice errors, implement corrective strategies, and plan improvements in subsequent tasks. The highest agreement was observed for applying AI feedback and monitoring language use in discussions, reflecting the effective integration of technology into self-regulated learning. Slightly lower scores on reflecting on politeness strategies across contexts suggest ongoing challenges in generalizing feedback to unfamiliar scenarios, revealing opportunities for more targeted scaffolding. Standard deviations below 0,85 indicate consistent responses across participants, highlighting a shared engagement with reflective practices fostered by AI-mediated formative assessment.

Table 7. Reflective application (n = 58)

No	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean	Std. dev.
13	I reflect on my language choices after each task	1 (1.72)	2 (3.45)	7 (12.07)	33 (56.90)	15 (25.86)	4.04	0.83
14	I apply AI feedback to improve my communication	0 (0.00)	3 (5.17)	5 (8.62)	34 (58.62)	16 (27.59)	4.11	0.78
15	I notice patterns in my errors	1 (1.72)	2 (3.45)	6 (10.34)	32 (55.17)	17 (29.31)	4.06	0.82
16	I plan strategies to avoid repeated mistakes	0 (0.00)	3 (5.17)	8 (13.79)	31 (53.45)	16 (27.59)	4.03	0.79
17	I evaluate my performance after feedback	1 (1.72)	2 (3.45)	5 (8.62)	33 (56.90)	17 (29.31)	4.08	0.81
18	I apply corrective strategies suggested by AI	0 (0.00)	3 (5.17)	6 (10.34)	32 (55.17)	17 (29.31)	4.06	0.81
19	I monitor my language use in online discussions	1 (1.72)	2 (3.45)	5 (8.62)	34 (58.62)	16 (27.59)	4.09	0.78
20	I reflect on politeness strategies in different contexts	0 (0.00)	2 (3.45)	7 (12.07)	33 (56.90)	16 (27.59)	4.07	0.77

These findings emphasize that learners not only respond to feedback but also actively incorporate it into self-monitoring and strategic adjustments. While reflective practices are generally strong, extending these skills to novel contexts remains an area for growth. This underscores the value of AI-mediated formative feedback in promoting sustained metapragmatic awareness and self-directed improvement, thereby reinforcing learners' capacity to apply pragmatic knowledge across varying online communication scenarios.

These results address RQ1 by showing that AI-mediated formative assessment substantially enhanced learners' awareness and application of politeness and contextual appropriateness in online communication. Analysis of AI feedback logs and questionnaire responses indicates that learners became more attentive to softening expressions (hedging), respectful language forms (honorifics), and strategies for reducing directness or potential imposition (mitigation strategies). They also demonstrated improved ability to align speech acts with situational demands, adjust tone, and manage turn-taking effectively, reflecting greater metapragmatic awareness and self-regulation. However, learners still exhibited difficulties in consistently applying intercultural sensitivity and generalizing politeness strategies to unfamiliar contexts, suggesting areas where AI feedback prompted awareness, but required additional scaffolding for independent application. Collectively, the findings indicate that AI functioned as both an effective scaffold for guided practice and as a reflective mirror that highlighted learners' ongoing challenges, enabling iterative improvement in pragmatic competence.

RQ 2. WHAT CHALLENGES AND AFFORDANCES DO LEARNERS PERCEIVE IN USING AI AS A PRAGMATIC COACH FOR DEVELOPING PRAGMATIC COMPETENCE?

To gain a deeper understanding of learners' experiences with AI-mediated formative assessment, semi-structured interviews were conducted with eight participants to address RQ 2. These interviews aimed to explore the cognitive and affective dimensions of using AI as a pragmatic coach, particularly regarding learners' perceptions of challenges and affordances in developing pragmatic competence. The quantitative findings informed the interview questions and prior literature on pragmatic learning, ensuring that responses captured both the practical utility of AI feedback and learners' subjective experiences. The qualitative analysis generated three main themes: the usability and accessibility of AI feedback, the interpretive understanding of pragmatic suggestions, and the reflective application in online communication. Each theme is presented below with detailed tables of subcodes, indicators, and representative participant quotes, followed by comprehensive interpretations.

a. Theme 1: Usability and Accessibility of AI Feedback

Learners were first asked about their experiences interacting with AI feedback in online communication tasks. The question was: "*How do you perceive the usability and accessibility of AI feedback in supporting your pragmatic learning?*" The focus was on ease of access, clarity of suggestions, and integration into learners' workflow.

The responses, presented in Table 8, suggest that most learners found AI feedback clear and easily integrated into their workflow, enhancing real-time awareness of politeness and appropriateness. P2 and P5 highlighted that actionable suggestions enabled them to identify areas needing adjustment quickly. P1 and P7 emphasized that feedback presented within the communication interface enabled immediate application without disrupting the flow of interaction. However, P3, P6, and P8 pointed out challenges such as occasional ambiguity in suggestions, delayed feedback, and technical phrasing that required extra cognitive effort to interpret. These findings indicate that AI feedback effectively supports learners' practical engagement and responsiveness in online communication, yet inconsistencies in clarity and timing may limit its immediate impact. This underscores the importance of refining the presentation of AI feedback to ensure usability while maintaining its role as a scaffold for developing pragmatic competence.

Table 8. Usability and accessibility of AI feedback

Subcode	Indicator	Sample participant quotes
Clarity of feedback	Clear, actionable suggestions	P2: <i>"The AI messages were easy to read, and I immediately knew what to adjust."</i> P5: <i>"Sometimes the AI highlighted exactly which words to change, which helped me notice small errors."</i>
Integration into workflow	Seamless use during tasks	P1: <i>"I could follow the AI prompts while chatting without losing my focus on the conversation."</i> P7: <i>"Having the AI feedback pop up in the same interface made it convenient to check as I typed."</i>
Accessibility challenges	Confusing or delayed feedback	P3: <i>"Occasionally, I did not understand why the AI suggested certain phrases."</i> P6: <i>"At times, the feedback came after I had already sent the message, so I could not correct it immediately."</i> P8: <i>"Some messages were technical, and I needed extra time to interpret them."</i>

b. Theme 2: Interpretive Understanding of Pragmatic Suggestions

The next focus was on how learners interpreted the pragmatic guidance provided by AI. The guiding question was: *"How do you understand and apply the suggestions given by AI in terms of politeness and appropriateness?"* The emphasis was on cognitive engagement with feedback and learners' ability to translate suggestions into communicative action (Table 9).

Table 9. Interpretive understanding of AI suggestions

Subcode	Indicator	Sample participant quotes
Comprehension of suggestions	Recognizing intended meaning	P4: <i>"I realized that AI was trying to teach me softer ways to make requests."</i> P7: <i>"Sometimes it was not immediately obvious, but after reading a few examples, I understood what was expected."</i>
Application in context	Adjusting language appropriately	P1: <i>"After seeing AI's note, I changed 'Give me the file' to 'Could you please send the file?' which felt more polite."</i> P8: <i>"I applied the phrases in real chats, and people responded more positively."</i>
Confusion in interpretation	Misalignment with context	P2: <i>"Some suggestions seemed too formal for casual chats, so I hesitated to use them."</i> P5: <i>"Occasionally, I wondered if following the AI exactly would make my message sound unnatural."</i> P6: <i>"I needed to think carefully before applying certain corrections because they did not always fit the scenario."</i>

The participants generally demonstrated an ability to interpret AI feedback and apply it to their online communication, as presented in Table 9. P4 and P7 described the process of recognizing the intent behind suggestions, which enhanced their metapragmatic understanding. P1 and P8 emphasized that applying the guidance led to more appropriate and socially effective interactions. However, P2, P5, and P6 noted that not all AI recommendations aligned perfectly with the context, requiring learners to make judgment calls.

These results illustrate that while AI serves as a valuable tool for scaffolding pragmatic understanding, it cannot fully replace human discernment in navigating context-specific social cues, interpersonal dynamics, or cultural subtleties. Overall, the findings suggest that AI feedback can enhance learners' interpretive and application skills, but optimal development of pragmatic competence depends on learners' active reflection, critical evaluation, and situational adjustment alongside technological support.

c. Theme 3: Reflective Application in Online Communication

Finally, learners were asked to reflect on the broader impact of AI feedback on their ability to monitor and adjust language use. The question was: *"How does AI feedback influence your reflection and decision-making during online communication tasks?"* The focus was on learners' metacognitive engagement and ability to internalize pragmatic norms.

The reflective application theme, presented in Table 10, reveals that AI feedback promotes metacognitive engagement, helping learners notice recurring issues in politeness and appropriateness, as reported by P1 and P5. Learners also demonstrated strategic planning, adjusting their language intentionally before sending messages, as highlighted by P3 and P6. However, P2, P4, and P8 observed that some learners occasionally relied heavily on AI prompts rather than independently applying learned principles, suggesting that continuous external scaffolding may limit the internalization of pragmatic norms.

Table 10. Reflective application of AI feedback

Subcode	Indicator	Sample participant quotes
Metacognitive awareness	Noticing patterns in own language	P1: <i>"After several tasks, I started noticing that I tend to be too direct, and AI helped me catch it."</i> P5: <i>"I realized I often skip polite markers, so I tried to add them."</i>
Strategic adjustments	Planning responses before sending	P3: <i>"I paused and thought about how the AI would respond before typing."</i> P6: <i>"I began to consider tone first, then structure the message accordingly."</i>
Limits in internalization	Partial dependence on AI	P2: <i>"I still sometimes rely too much on AI to suggest phrases rather than thinking independently."</i> P4: <i>"When AI did not provide feedback immediately, I felt uncertain about my choices."</i> P8: <i>"It took a few reminders before I could apply the suggestions naturally without looking."</i>

These insights indicate that while AI feedback provides critical guidance and reflective scaffolding, it is crucial to balance this support with opportunities for learners to exercise autonomy, make judgment calls, and generalize pragmatic strategies to novel situations. Such a balance ensures that learners not only respond to immediate feedback but also develop enduring competence that can be transferred beyond AI-mediated interactions, promoting long-term skill acquisition and self-directed growth in pragmatic awareness and application.

Overall, the qualitative findings confirm that learners perceive AI-mediated formative assessment as a valuable tool for enhancing pragmatic competence while also encountering specific challenges. Usability and accessibility are generally supportive, yet delays and ambiguous phrasing can hinder immediate effectiveness. Learners can interpret and apply AI suggestions to adjust politeness and contextual appropriateness, though they sometimes face difficulty aligning recommendations with specific scenarios. AI feedback also fosters metacognitive reflection, encouraging learners to notice patterns

and plan strategic responses, but overreliance remains a challenge for some participants. Collectively, these insights demonstrate that AI functions as both a cognitive scaffold and reflective partner, facilitating guided improvement while highlighting areas for further learner autonomy and context-sensitive adjustment.

The combined results from AI-generated formative feedback logs, the closed-ended questionnaire, and semi-structured interviews answer RQ2 by confirming that AI-mediated formative assessment effectively enhances learners' awareness, application, and reflection on politeness and appropriateness in online communication. Logs and questionnaire responses show that learners increasingly employed hedging expressions, honorific forms, and contextually appropriate language, demonstrating greater metapragmatic sensitivity and self-regulation. Interview data further reveal that AI feedback facilitated strategic planning, reflection, and iterative adjustment, helping learners internalize pragmatic norms while guiding in real time. However, learners also faced challenges, including occasional misalignment between AI suggestions and specific communicative contexts, delayed or technical feedback, and a reliance on AI rather than autonomous decision-making. Collectively, the evidence shows that AI serves as an effective scaffold for pragmatic learning while also highlighting areas where learners must exercise judgment and contextual awareness to apply pragmatic principles fully.

DISCUSSION

The findings from this study demonstrate that AI-mediated formative assessment can play a significant role in enhancing learners' pragmatic awareness, reflective practices, and application of politeness and contextual appropriateness in online communication. In line with the theoretical principles of sociocultural theory and dialogic feedback, the study provides empirical support for the notion that mediated interaction with technological tools can scaffold learners' development of complex communicative skills (Owoseni et al., 2024; Vittorini et al., 2021).

By providing corrective and metapragmatic feedback in real time, AI functioned as both an instructional and reflective partner, enabling learners to recognize gaps in their language use, adjust their communicative strategies, and internalize norms for appropriate interaction. This aligns with prior research indicating that automated feedback can support self-regulated learning and metacognitive engagement in language contexts (Cai et al., 2022; Yildirim-Erbasli & Bulut, 2023). Unlike traditional corrective feedback, which often focuses narrowly on grammatical accuracy, AI-mediated formative assessment in the present study extended learners' attention to pragmatics, including hedging, honorific forms, and situationally appropriate speech acts, addressing a gap identified in previous studies where pragmatic development has often been underemphasized in EFL instruction (Chen et al., 2021; Erdiana et al., 2025). This comparison underscores that while AI is a valuable scaffold for pragmatic learning, its effectiveness is maximized when combined with human mediation and structured opportunities for autonomous decision-making, demonstrating that technology alone cannot fully substitute for the nuanced judgment required for pragmatic competence.

The study also confirms that AI feedback enhances learners' capacity to apply pragmatic knowledge in varied communicative contexts, contributing to the development of strategic competence. Learners were able to monitor and regulate their language choices, reflecting an iterative cycle of noticing, evaluating, and adjusting, consistent with self-regulated learning frameworks (Li et al., 2024; Lin et al., 2024). This finding extends previous research that emphasizes the role of scaffolding in promoting awareness, yet provides insufficient mechanisms for learners to operationalize adjustments in real communicative settings (Poláková et al., 2024). The integration of AI-generated logs with reflective practices allowed learners not only to identify errors but also to develop a contextualized understanding of politeness strategies and appropriateness, thereby bridging the longstanding gap between theoretical knowledge of pragmatics and its practical application in online communication (Owoseni et al., 2024; Tang & Putra, 2026). At the same time, the findings offer a nuanced perspective by con-

trasting with studies that reported mixed effects of AI feedback, in which learners experienced confusion when interpreting automated suggestions or became overly reliant on algorithmic guidance, limiting autonomous decision-making (Tang & Cooper, 2025). The corroborating questionnaire results further indicate that learners perceived heightened confidence and attentiveness to pragmatic norms, demonstrating that AI can foster not only skill acquisition but also metacognitive growth, which has been underexplored in previous work that focused primarily on corrective outcomes rather than reflective competence.

Despite these advancements, the study highlights challenges that accompany the use of AI as a pragmatic coach, which are consistent with, yet extend, prior findings on technology-mediated language learning (Tang & Putra, 2026). Learners reported difficulties interpreting feedback when suggestions were overly formal, technical, or contextually ambiguous, highlighting the limitations of AI in providing universally applicable guidance across diverse communicative scenarios. This observation addresses a gap in existing research, which often assumes the effectiveness of automated feedback without critically examining its context-sensitive limitations (Li et al., 2024; Lin et al., 2024). Moreover, some learners exhibited partial dependence on AI, indicating that while AI scaffolding can accelerate awareness and application, it may simultaneously inhibit autonomous decision-making if not accompanied by deliberate opportunities for independent practice and reflection. This dual effect underscores the importance of balancing guided scaffolding with learner autonomy, extending prior critiques in the field that highlight the potential for overreliance on automated tools in language learning (Poláková et al., 2024). By contrasting the benefits of AI scaffolding with its limitations, this study emphasizes the need for pedagogical strategies that balance automated guidance with opportunities for learners to exercise judgment and internalize pragmatic norms independently.

The integration of AI feedback into online tasks also revealed affordances that enhance the validity and transferability of pragmatic competence. By situating learning within authentic, interactive online communication tasks, the present study allowed learners to experience variability in interlocutor expectations, contextual formality, and social norms, thereby promoting the generalization of pragmatic strategies beyond prescriptive classroom exercises (Long, 2025; Tang & Putra, 2026). This approach advances prior research, which has often relied on contrived or decontextualized tasks, by demonstrating that AI-mediated formative assessment can support learners in dynamically adjusting language use in situationally appropriate ways. The study's findings further suggest that AI tools can facilitate cumulative learning by providing continuous logs that enable learners to trace patterns in their communicative behavior, offering opportunities for targeted reflection and strategic adjustment that are rarely captured in conventional feedback mechanisms (Owoseni et al., 2024; Perkins et al., 2024). These findings suggest that while AI provides significant scaffolding potential, its effectiveness depends on situating feedback within ecologically valid tasks that encourage learners to negotiate meaning and adapt strategies dynamically, highlighting the need for instructional designs that balance automated guidance with authentic practice opportunities.

In summary, the findings of this study have significant implications for both theory and practice in the field of technology-enhanced language learning. Theoretically, the results demonstrate that AI-mediated formative assessment can serve as a multifaceted instructional tool that not only supports learners' awareness, application, and reflection on pragmatic norms but also extends existing frameworks of second language pragmatics by highlighting the conditions under which automated feedback is most effective. This includes encouraging learners to engage with feedback critically, internalize pragmatic strategies, and exercise autonomous judgment, thereby fostering self-regulated learning and metacognitive development. From a practical perspective, the study provides evidence that AI scaffolding can be successfully integrated into authentic online communicative tasks to enhance EFL learners' pragmatic competence, particularly in non-English contexts where exposure to naturalistic interaction is limited. Educators are thus encouraged to incorporate AI tools thoughtfully, combining automated feedback with guided reflection and contextualized practice to maximize learning out-

comes. At the same time, the findings highlight interpretive and contextual challenges, such as potential overreliance on automated prompts or variability in learner engagement, which necessitate careful pedagogical planning and scaffolding. Overall, this study contributes to the broader discourse on AI-supported language learning by demonstrating both the affordances and limitations of AI as a formative learning partner and by providing actionable guidance for embedding technology within theoretically grounded, reflective, and contextually responsive instructional frameworks.

CONCLUSION

This study aimed to examine how AI-mediated formative assessment can function as a pragmatic coach to enhance EFL learners' awareness, reflection, and application of politeness and contextual appropriateness in online communication. This study concludes that AI-mediated formative assessment serves as a powerful scaffold for enhancing EFL learners' pragmatic competence, significantly improving their awareness, reflective practices, and application of politeness and contextual appropriateness in online communication. This was achieved through a six-week intervention involving 58 undergraduate EFL learners, who participated in structured online communication tasks supported by AI-generated formative feedback using IntelliBoard AI, alongside questionnaire measures and analysis of feedback logs to capture changes in their pragmatic development.

Learners benefitted from actionable, context-sensitive feedback that guided the use of hedging expressions, honorific forms, and situationally appropriate speech acts, while promoting metacognitive engagement and strategic adjustment in authentic communicative tasks. At the same time, challenges emerged, including occasional misalignment of AI suggestions with specific contexts, technical phrasing that required additional interpretation, and partial dependence on automated guidance, indicating that AI alone cannot fully substitute for human judgment or experiential learning. The findings imply that AI tools should be integrated thoughtfully into language pedagogy, complementing instructor guidance and structured opportunities for autonomous reflection to maximize both learning gains and self-regulatory skills.

Theoretically, this study contributes to understanding how AI-mediated formative assessment can be integrated within frameworks of learner autonomy, metacognitive development, and pragmatic competence, demonstrating that technology can scaffold not only language skill acquisition but also higher-order reflective and self-regulatory practices. Practically, the findings highlight the potential of AI tools to provide immediate, contextually grounded feedback that supports learners' awareness, application, and transfer of politeness strategies in authentic online interactions, while emphasizing the continued role of instructors in guiding interpretation, resolving ambiguities, and fostering independent decision-making.

Limitations include the study's focus on a single institution and a relatively homogeneous group of non-English majors, which may limit the generalizability of the results, and the reliance on self-reported measures and AI logs that may reflect subjective perceptions or technological constraints. Future research should examine longitudinal implementations of AI-mediated feedback across diverse educational contexts, investigate methods to balance scaffolding with learner autonomy, and explore adaptive feedback systems capable of accommodating varied proficiency levels and intercultural communicative demands.

REFERENCES

- Alsuhaibani, Z. (2022). Developing EFL students' pragmatic competence: The case of compliment responses. *Language Teaching Research*, 26(5), 847–866. <https://doi.org/10.1177/1362168820913539>
- Altakhaineh, A. R., Hasheish, M. A., & Hamaydeh, D. (2024). Pragmatic failures in intercultural communication: Evidence from Jordan. *Psycholinguistics*, 36(2), 38–62. <https://doi.org/10.31470/2309-1797-2024-36-2-38-62>

- Antonova, K., & Tyrkheeva, N. (2021). Formative assessment of critical reading skills in higher education in Russia in the context of emergency remote teaching. *Journal of Teaching English for Specific and Academic Purposes*, 9(2), 137–148. <https://doi.org/10.22190/JTESAP2102137A>
- Arévalo, C. M. (2019). Intercultural competence and pragmatic failure: Compliments and disagreements in EFL. *Verbum et Lingua*, 15, 126–141. <https://doi.org/10.32870/vel.vi15.145>
- Benattabou, D. (2020). Helping EFL students avoid socio-pragmatic failure: Focus on nonverbal intercultural competence. *TESOL and Technology Studies*, 1(1), 23–41. <https://doi.org/10.48185/tts.v1i1.45>
- Bouncken, R. B., Czakon, W., & Schmitt, F. (2026). Purposeful sampling and saturation in qualitative research methodologies: Recommendations and review. *Review of Managerial Science*, 20, 579–615. <https://doi.org/10.1007/s11846-025-00881-2>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Byrne, D. (2022). A worked example of Braun and Clarke’s approach to reflexive thematic analysis. *Quality & Quantity*, 56(3), 1391–1412. <https://doi.org/10.1007/s11135-021-01182-y>
- Cai, Y., Yang, M., & Yao, J. (2022). More is not always better: The nonlinear relationship between formative assessment strategies and reading achievement. *Assessment in Education: Principles, Policy & Practice*, 29(6), 711–728. <https://doi.org/10.1080/0969594X.2022.2158304>
- Chen, C.-M., Chen, L.-C., & Horng, W.-J. (2021). A collaborative reading annotation system with formative assessment and feedback mechanisms to promote digital reading performance. *Interactive Learning Environments*, 29(5), 848–865. <https://doi.org/10.1080/10494820.2019.1636091>
- Cochran, K., Cohn, C., Hutchins, N., Biswas, G., & Hastings, P. (2022). Improving automated evaluation of formative assessments with text data augmentation. In M. M. Rodrigo, N. Matsuda, A. I. Cristea, & V. Dimitrova (Eds.), *Artificial intelligence in education* (pp. 390–401). Springer. https://doi.org/10.1007/978-3-031-11644-5_32
- Cooper, G. (2023). Examining science education in ChatGPT: An exploratory study of generative artificial intelligence. *Journal of Science Education and Technology*, 32(3), 444–452. <https://doi.org/10.1007/s10956-023-10039-y>
- Creswell, J. W., Fetters, M. D., & Ivankova, N. V. (2004). Designing a mixed methods study in primary care. *The Annals of Family Medicine*, 2(1), 7–12. <https://doi.org/10.1370/afm.104>
- Ding, L. (2022). Analysis of pragmatic failure and strategies in cross-cultural communication. *International Journal of Linguistics, Literature and Translation*, 5(5), 72–77. <https://doi.org/10.32996/ijllt.2022.5.5.9>
- Dmitrenko, N., Budas, I., Koliadych, Y., & Poliarush, N. (2021). Impact of formative assessment on students’ motivation in foreign language acquisition. *East European Journal of Psycholinguistics*, 8(2), 36–50. <https://doi.org/10.29038/eejpl.2021.8.2.dmi>
- Erdiana, L., Dziqy, A. N. A., Farouq, A. A., & Slamet, J. (2025). Enhancing listening comprehension in non-English majors through AI-integrated gamified formative assessment. *Applied Research on English Language*, 14(3), 1–26. <https://doi.org/10.22108/are.2025.144695.2475>
- Estrada-Araoz, E. G., Sayed, B. T., Niyazova, G. G., & Lami, D. (2023). Comparing the effects of computerized formative assessment vs. computerized dynamic assessment on developing EFL learners’ reading motivation, reading self-concept, autonomy, and self-regulation. *Language Testing in Asia*, 13, Article 39. <https://doi.org/10.1186/s40468-023-00253-1>
- Granberg, C., Palm, T., & Palmberg, B. (2021). A case study of a formative assessment practice and the effects on students’ self-regulated learning. *Studies in Educational Evaluation*, 68, 100955. <https://doi.org/10.1016/j.stueduc.2020.100955>
- Grazzi, E. (2024). Bridging the gap between EFL and ELF through sociocultural theory. *Language Teaching Research Quarterly*, 46, 119–129. <https://doi.org/10.32038/ltrq.2024.46.09>

- Hidayati, D., & Slamet, J. (2025). Interactive multimedia via LMS on a reading comprehension course: Enhancing engagement and learning outcomes in Islamic higher education. *Journal of Studies in the English Language*, 20(1), 95–122. <https://doi.org/10.64731/jsel.v20i1.277426>
- Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods*, 18(1), 3–20. <https://doi.org/10.1177/1525822X05282260>
- Kelly, A., Sullivan, M., & Strampel, K. (2023). Generative artificial intelligence: University student awareness, experience, and confidence in use across disciplines. *Journal of University Teaching and Learning Practice*, 20(6), Article 12. <https://doi.org/10.53761/1.20.6.12>
- Köroğlu, Z. Ç. (2021). Using digital formative assessment to evaluate EFL learners' English speaking skills. *GIST – Education and Learning Research Journal*, 22, 103–123. <https://doi.org/10.26817/16925777.1001>
- Lai, S., & Economidou-Kogetsidis, M. (2025). The effects of strategy instruction on Chinese EFL learners' pragmatic awareness and pragmatic motivation. *International Journal of Applied Linguistics*, 35(3), 1547–1558. <https://doi.org/10.1111/ijal.12733>
- Lee, W., McCaw, C. T., & Van Dam, N. T. (2024). Mindfulness in education: Critical debates and pragmatic considerations. *British Educational Research Journal*, 50(4), 2111–2130. <https://doi.org/10.1002/berj.3998>
- Li, Z., Wang, C., & Bonk, C. (2024). Exploring the utility of ChatGPT for self-directed online language learning. *Online Learning*, 28(3), 157–180. <https://doi.org/10.24059/olj.v28i3.4497>
- Liao, X., Zhang, X., Wang, Z., & Luo, H. (2024). Design and implementation of an AI-enabled visual report tool as formative assessment to promote learning achievement and self-regulated learning: An experimental study. *British Journal of Educational Technology*, 55(3), 1253–1276. <https://doi.org/10.1111/bjet.13424>
- Lin, X., Luterbach, K., Gregory, K. H., & Sconyers, S. E. (2024). A case study investigating the utilization of ChatGPT in online discussions. *Online Learning*, 28(2). <https://doi.org/10.24059/olj.v28i2.4407>
- Long, F. (2025). Conversational learning in the age of ChatGPT. *Studies in Philosophy and Education*, 44(3), 245–261. <https://doi.org/10.1007/s11217-024-09966-z>
- Mao, R., Ge, M., Han, S., Li, W., He, K., Zhu, L., & Cambria, E. (2025). A survey on pragmatic processing techniques. *Information Fusion*, 114, Article 102712. <https://doi.org/10.1016/j.inffus.2024.102712>
- Mao, T., & He, S. (2021). An integrated approach to pragmatic competence: Its framework and properties. *Sage Open*, 11(2). <https://doi.org/10.1177/21582440211011472>
- Owoseni, A., Kolade, O., & Egbetokun, A. (2024). Applications of generative AI in formative learning and assessment. *Generative AI in Higher Education* (pp. 63–95). Springer. https://doi.org/10.1007/978-3-031-60179-8_3
- Pang, T. Y., Kootsookos, A., & Cheng, C. T. (2024). Artificial intelligence use in feedback: A qualitative analysis. *Journal of University Teaching and Learning Practice*, 21(6), 108–125. <https://doi.org/10.53761/40wmcj98>
- Perkins, M., Furze, L., Roe, J., & MacVaugh, J. (2024). The Artificial Intelligence Assessment Scale (AIAS): A framework for ethical integration of generative AI in educational assessment. *Journal of University Teaching and Learning Practice*, 21(6), 49–66. <https://doi.org/10.53761/q3azde36>
- Poehner, M. E. (2022). Motivation, mediation, and the individual: A sociocultural theory perspective. In A. H. Al-Hoorie & F. Szabó (Eds.), *Researching language learning motivation: A concise guide* (pp. 17–26). Bloomsbury Academic. <https://doi.org/10.5040/9781350166912.ch-2>
- Poláková, P., Ivenz, P., & Klímová, B. (2024). Examining the reliability of ChatGPT as an assessment tool compared to human evaluators. *Procedia Computer Science*, 246, 2332–2341. <https://doi.org/10.1016/j.procs.2024.09.543>
- Rajki, Z., Dringo-Horvath, I., & Nagy, J. T. (2025). Artificial intelligence in higher education: Students' artificial intelligence use and its influencing factors. *Journal of University Teaching and Learning Practice*, 22(2). <https://doi.org/10.53761/j0rebh67>

- Sarwanti, S., Sariasih, Y., Rahmatika, L., Islam, M. M., & Riantina, E. M. (2024). Are they literate on ChatGPT? University language students' awareness, benefits and challenges in higher education learning. *Online Learning*, 28(3). <https://doi.org/10.24059/olj.v28i3.4599>
- Slamet, J. (2024). Potential of ChatGPT as a digital language learning assistant: EFL teachers' and students' perceptions. *Discover Artificial Intelligence*, 4, Article 46. <https://doi.org/10.1007/s44163-024-00143-2>
- Slamet, J., & Basthomi, Y. (2025). Examining the challenges and opportunities of ChatGPT in EFL education: A systematic literature review. *Journal of University Teaching and Learning Practice*, 22(2). <https://doi.org/10.53761/deezkh88>
- Slamet, J., & Mukminatien, N. (2024). Developing an online formative assessment instrument for listening skill through LMS. *LEARN Journal: Language Education and Acquisition Research Network*, 17(1), 188–211.
- Stanja, J., Gritz, W., Krugel, J., Hoppe, A., & Dannemann, S. (2023). Formative assessment strategies for students' conceptions – The potential of learning analytics. *British Journal of Educational Technology*, 54(1), 58–75. <https://doi.org/10.1111/bjet.13288>
- Tang, K.-S., & Cooper, G. (2025). The role of materiality in an era of generative artificial intelligence. *Science & Education*, 34(2), 731–746. <https://doi.org/10.1007/s11191-024-00508-0>
- Tang, K.-S., & Putra, G. B. S. (2026). Generative AI as a dialogic partner: Enhancing multiple perspectives, reasoning, and argumentation in science education with customized chatbots. *Journal of Science Education and Technology*, 35, 128–140. <https://doi.org/10.1007/s10956-025-10240-1>
- Van Dyke, A., & Acton, W. R. (2022). Spontaneous classroom engagement facilitating development of L2 pragmatic competence. *Pedagogical Linguistics*, 3(1), 1–28. <https://doi.org/10.1075/pl.20011.van>
- Van Dyke, A., & Acton, W. R. (2023). Role-play and dialogic meta-pragmatics in developing and assessing pragmatic competence. *Pedagogical Linguistics*, 4(2), 228–263. <https://doi.org/10.1075/pl.22004.van>
- Vittorini, P., Menini, S., & Tonelli, S. (2021). An AI-based system for formative and summative assessment in data science courses. *International Journal of Artificial Intelligence in Education*, 31(2), 159–185. <https://doi.org/10.1007/s40593-020-00230-2>
- Wang, A. (2019). Research on interpersonal relationship from the perspective of pragmatics. *Proceedings of the 6th International Conference on Education, Language, Art and Inter-Cultural Communication* (pp. 443–445). Atlantis Press. <https://doi.org/10.2991/assehr.k.191217.166>
- Yildirim-Erbasli, S. N., & Bulut, O. (2023). Conversation-based assessment: A novel approach to boosting test-taking effort in digital formative assessment. *Computers and Education: Artificial Intelligence*, 4, 100135. <https://doi.org/10.1016/j.caeai.2023.100135>
- Zhai, X., & Nehm, R. H. (2023). AI and formative assessment: The train has left the station. *Journal of Research in Science Teaching*, 60(6), 1390–1398. <https://doi.org/10.1002/tea.21885>

AUTHORS



Abd. Syakur has been a lecturer at Universitas PGRI Delta Sidoarjo since April 2012 and holds a doctorate from Yogyakarta State University in Indonesia. His teaching interests include Linguistics, ESP, Pragmatics, and ELT. Membership and organizing committee of national and international seminars. And currently still active as an Assessor of the Independent Education Accreditation Institution. His main research interests are in improving and teaching Linguistics, ESP, Pragmatics, and ELT. He has also supervised Master's students in English Language Education and Applied Linguistics, presented papers at various national and international conferences, and published/reviewed several articles in leading journals. He can be reached at syakurabdmppd@gmail.com.



Sri Wahyuningsih is a lecturer at the Department of English Language Education, Universitas Islam Negeri Sunan Kudus, Indonesia. Her research interests include academic writing, teacher professional development, English language teaching, and research identity. She has published articles in national and international journals. Moreover, she has served as a reviewer for national and international journals. She can be reached at wahyuningsih@uinsuku.ac.id.



Joko Slamet is a faculty member in the Department of English Literature, Faculty of Education and Social Humanism, at Cipta Wacana University, Malang, Indonesia. He earned his doctorate in English Language Teaching from Universitas Negeri Malang, Indonesia. Actively engaged in research and academic publishing, his scholarly interests encompass English Language Teaching, Applied Linguistics, English for Specific Purposes, Technology-Enhanced Language Learning, and Research and Development. He also serves as Editor-in-Chief of the ELLINE Journal and contributes as an international peer reviewer for several high-impact journals. He also holds editorial roles as Associate Editor for JITE: Research and JITE: Innovations in Practice (JITE: IIP), where he is involved in advancing rigorous and impactful scholarship in educational technology and language education. Through his academic and editorial work, he is committed to fostering pedagogical innovation, strengthening interdisciplinary inquiry, and promoting sustainable research practices in language education. He can be contacted at jokoslamet@cwcu.ac.id.