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SPEAKING WITH MACHINES, LEARNING WITH PEOPLE: AI-MEDIATED INTERACTIVE ACTIVITIES IN ARAB EFL CLASSROOMS

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Abstract

Artificial intelligence (AI) has entered English-language education as both promise and provocation, offering individualized feedback while unsettling established models of classroom interaction. This qualitative study investigates how AI-mediated interactive activities shape speaking performance, motivation, and confidence among Arab learners of English as a Foreign Language (EFL) in Israel. Across three junior-high schools over eight weeks, we combined non-participant classroom observations (30 lessons) with semi-structured interviews of teachers (n = 6) and students (n = 90). Thematic analysis yielded three core findings. First, AI chatbots, pronunciation coaches, and gamified simulations stimulated high engagement and lowered anxiety, increasing time on task and participation. Second, iterative practice with immediate, low-stakes feedback fostered willingness to communicate, more self-initiated turns, and evidence of spontaneous self-repair. Third, persistent constraints—accent-recognition bias, connectivity issues, opaque feedback, and uneven teacher preparedness—limited consistent impact without targeted support. Framed by Krashen's affective filter and Vygotsky's sociocultural theory, the study argues that AI's value lies in human-mediated orchestration: teachers contextualize and humanize machine feedback, translating scores into actionable, discourse-level guidance. We propose practical design principles (collaborative task framing, reflective debriefs, bias-aware "tool talk") and a capacity-building agenda (infrastructure, PD, assessment alignment) to guide sustainable, equitable adoption in linguistically diverse EFL contexts.

Keywords: AI in ELT; interactive activities; speaking confidence; affective filter; sociocultural theory; Arab EFL learners

1. Introduction

The last five years have witnessed an unprecedented acceleration in artificial-intelligence (AI) applications for language learning. Tools such as ChatGPT, ELSA Speak, and Google Speech API now deliver instantaneous pronunciation scoring, conversational prompts, and corrective feedback once available only through teachers or native peers. For EFL learners in under-resourced regions, this democratization of access appears transformative: practice becomes on demand, mistakes are treated as data rather than failure, and exposure can extend beyond the classroom walls. Yet, while quantitative studies report measurable gains in accuracy, fluency, and pronunciation (e.g., Wang et al. 2024; Arafat Shahriar, 2025, 1–11), the *human experience*—how learners and teachers negotiate meaning, confidence, and identity when "speaking with machines"—remains comparatively underexplored. In particular, we

know less about the affective dynamics of AI-mediated practice (e.g., when automated scores motivate vs. stigmatize), the ways teachers recontextualize algorithmic feedback for pedagogical purposes, and the sociocultural conditions that make AI either empowering or alienating (Lee and Drajati 2019; Li 2023; Liu, Chen, and Zheng 2023).

In Arab schools in Israel, English occupies the status of a third language after Arabic and Hebrew, a position with curricular and sociolinguistic consequences. Classroom instruction has historically emphasized reading and grammar with limited exposure to authentic oral interaction. Many learners, especially in rural communities, rarely use English outside school; opportunities for meaningful conversation with proficient speakers are scarce, and speaking anxiety is widespread. Within such settings, AI may function as a *mediating interlocutor*—a patient, always-available conversational partner capable of lowering affective barriers by providing low-stakes rehearsal and immediate, private feedback. Theoretically, this promise aligns with Krashen's affective-filter hypothesis, which predicts greater uptake when anxiety is reduced and motivation is high, and with Vygotsky's sociocultural view of learning as scaffolded interaction in the zone of proximal development (Krashen 1982; Vygotsky 1978). Practically, however, AI's effectiveness depends on issues that extend beyond the tool itself: teachers' preparedness to orchestrate and humanize feedback, learners' trust in automated assessment, and infrastructural reliability (Liu, Chen, and Zheng 2023; Li 2023).

Moreover, AI introduces new challenges. Automatic speech-recognition systems still exhibit accent bias, potentially mis-scoring learners' production and eroding confidence if left unmediated (Lai et al., 2025). Connectivity failures and device shortages can interrupt task flow and shift attention from linguistic goals to technological troubleshooting. At the same time, algorithmic "black boxes" may generate feedback that is technically detailed yet pedagogically opaque, requiring teachers to translate numerical scores into actionable guidance at the discourse level. These tensions are likely intensified in multilingual classrooms where students move among Arabic, Hebrew, and English and where cultural norms around public performance, mixed-gender interaction, and error exposure vary (Shohamy 2014; Russak 2021).

Against this backdrop, the present study asks three questions. First, how do Arab EFL learners and teachers experience AI-supported speaking activities—emotionally, socially, and instructionally? Second, in what ways do AI-mediated interactions influence learners' engagement and confidence, including willingness to communicate and patterns of self-repair? Third, what technical and pedagogical constraints shape classroom implementation and teacher mediation? By addressing these questions qualitatively through observations and interviews, the study contributes to ongoing debates in *System* about how emerging technologies reshape communicative language teaching (CLT), teacher roles, and learner agency in multilingual contexts. Rather than treating AI as a neutral accelerator, we examine it as a *relational ecology* in which algorithms, teachers, and students co-produce opportunities for speaking—and sometimes, new frictions that instruction must learn to resolve.

2. Literature Review

2.1 Interactive speaking pedagogy

Research in communicative language teaching (CLT) has long emphasized that interaction functions as the engine of language development, positioning the learner as an active co-constructor of meaning rather than a passive recipient of input (Long 1996; Ellis

2021). Early communicative approaches built on this view by introducing techniques such as pair work, role-play, debate, and problem-solving tasks that require learners to negotiate meaning in real time. Swain (2000) defined these episodes as *output opportunities*—moments when learners must transform knowledge into performance and thereby test the limits of their linguistic resources.

A growing body of empirical work demonstrates that interactive speaking tasks develop fluency, accuracy, and confidence simultaneously. For example, digital storytelling and simulation activities have been shown to promote meaningful communication, intercultural awareness, and a sense of learner agency (Nair and Yunus 2022; Assadi, Murad, and Badarni 2023). Within Arab EFL classrooms, interactive pedagogy has an additional motivational function: students tend to participate more when tasks are social, game-like, or problem-based, particularly when these are connected to their cultural and personal experiences (Asatryan 2016; Assadi et al 2025: 17-).

Nevertheless, interactive instruction succeeds only when learners perceive the environment as psychologically safe. When fear of negative evaluation dominates, participation declines sharply (Krashen 1982). The pedagogical challenge, therefore, is to design tasks that are simultaneously authentic and low in anxiety—activities that preserve spontaneity while protecting face and dignity. Teachers achieve this by scaffolding turn-taking, providing supportive feedback, and valorizing communicative intent over grammatical perfection (Ur 1996). In recent years, technology-mediated interaction—video debates, online role-plays, and virtual exchange projects—has extended these principles into digital environments (Arafat Shahriar, 2025, 1–11).

2.2 AI in language education

Artificial intelligence (AI) refers broadly to computational systems that perform tasks requiring human-like perception, reasoning, or adaptation—such as speech recognition, natural-language processing, and predictive analytics (Jamshed, Allehyani, and Albedah 2024). Within EFL education, AI contributes three main pedagogical affordances: personalization, immediacy, and simulation.

1. **Personalization.** Machine-learning algorithms can calibrate difficulty, pacing, and lexical selection to match individual proficiency levels, creating adaptive learning trajectories (Almineeai, Airashid, and Hezam 2025).
2. **Immediacy.** AI provides instantaneous feedback on pronunciation, vocabulary choice, and grammar, reducing delay between performance and response (Khomariyah and Ekowijayanto 2025).
3. **Simulation.**Chatbots and generative models such as ChatGPT emulate conversation partners, offering learners near-authentic dialogic practice (Wang et al. 2024).

Empirical studies confirm that these features enhance engagement and self-regulationand found that ELSA Speak improved Indonesian learners' pronunciation accuracy and self-confidence. Almineeai et al. (2025) reported that Saudi students using ChatGPT displayed lower anxiety and greater persistence. Gamified AI environments such as Duolingo likewise foster motivation through incremental goals and instant reinforcement (Khomariyah and Ekowijayanto 2025).

However, enthusiasm must be tempered by evidence of persistent limitations. Automatic Speech Recognition (ASR) engines often display *accent bias*, misinterpreting non-

native phonological patterns and assigning unfairly low scores (Lai et al., 2025). Over-reliance on numerical scoring can narrow learners' attention to micro-features at the expense of discourse coherence (Li 2023). Teachers, meanwhile, report insufficient training to integrate AI feedback meaningfully into lesson design (Liu, Chen, and Zheng 2023). Brown and Lee (2025) therefore advocate a critical-integration paradigm, viewing AI not as replacement for the teacher but as an assistive partner whose data must be contextualized through pedagogy.

Recent literature has also broadened the discussion to include ethical and socio-technical considerations. As AI becomes embedded in classroom practice, issues of privacy, data ownership, and algorithmic transparency have surfaced (Perse 2024). Scholars warn that without critical literacy, teachers and students risk accepting AI outputs uncritically, reinforcing linguistic hegemony or surveillance cultures (Shohamy 2014). This has given rise to the notion of AI literacy—a pedagogical competence that combines digital fluency with ethical awareness and the ability to question algorithmic authority (Liu et al. 2023). From this perspective, successful integration depends on both technological capacity and reflective judgment.

2.3 Affective and sociocultural frameworks

Two theoretical lenses have proven particularly useful in interpreting AI's pedagogical potential.

Krashen's Affective Filter Hypothesis (1982) posits that affective variables—motivation, self-confidence, and anxiety—mediate the conversion of input into intake. When learners feel anxious or threatened, their "filter" rises and input fails to reach the language-acquisition device. Conversely, when threat is low and motivation high, acquisition flourishes. AI-based tools, by offering private, judgment-free environments, can lower this filter and increase willingness to communicate. For instance, the "safe space" of chatbot rehearsal allows learners to experiment with new vocabulary without social embarrassment, aligning with research on *willingness to communicate* in technology-mediated contexts (Lee and Drajati 2019; Arafat Shahriar, 2025, 1–11).

Vygotsky's Sociocultural Theory (1978) complements this view by treating learning as a socially mediated process. In the *Zone of Proximal Development* (ZPD), learners internalize knowledge through guided participation with more capable peers or mentors. AI can act as a *contingent scaffold*, offering immediate prompts and corrections that extend the learner's competence just beyond current ability (Long 1996; Ellis 2021). Yet, this potential materializes only when human teachers contextualize and humanize machine feedback—turning decontextualized data into communicative sense (Lee and Drajati 2019).

Recent expansions of sociocultural theory into translanguaging and critical CALL frameworks further refine the argument. Translanguaging research highlights how multilingual learners fluidly mobilize all linguistic resources, challenging monolingual norms embedded in most AI models (Russak 2021; Shohamy 2014). Critical CALL scholars, meanwhile, interrogate power relations between technology producers and users, insisting that digital tools must adapt to learners' sociocultural realities rather than enforce standardized English (Li 2023). Within this theoretical constellation, AI's contribution is not merely technical but relational: it constructs new *interactional ecologies* where human and machine co-mediate learning. Teachers become orchestrators of these ecologies, balancing cognitive support with emotional containment.

2.4 Empirical gaps

Despite the rapid proliferation of research, several gaps remain. Global studies overwhelmingly adopt quantitative or quasi-experimental designs emphasizing performance metrics—pronunciation accuracy, fluency rates, vocabulary gains—while overlooking experiential and cultural dimensions (Wang et al. 2024; Almineeai et al. 2025). Few investigate how learners perceive AI feedback, how teachers reconcile algorithmic judgments with professional intuition, or how institutional constraints shape everyday implementation.

Within Arab and Israeli contexts, the lacuna is even more pronounced. Most regional studies have examined creative-arts-based speaking interventions—music, drama, or storytelling (Assadi et al. 2025, 517-56; Assadi et al. 2023)—rather than digital or AI mediation. Where technology is discussed, attention centers on infrastructure rather than pedagogy. Virtually no qualitative research explores teachers' and students' lived experiences of *speaking with machines*—how they interpret AI feedback emotionally and socially, or how such interactions reshape classroom discourse norms.

Furthermore, cultural variables remain under-theorized. Gender dynamics, multilingual repertoires (Arabic-Hebrew-English), and differing attitudes toward error correction can profoundly influence learners' comfort with AI interlocutors (Shohamy 2014; Russak 2021). Ethical questions about data collection in minority communities, where students' voices are literally recorded and analyzed by external systems, also warrant scrutiny. Addressing these concerns requires methodologies sensitive to context, narrative, and emotion—approaches better suited to qualitative inquiry than to large-scale testing.

Finally, there is a need to bridge micro- and macro-levels of analysis. Classroom studies often remain local, disconnected from broader sociopolitical debates on linguistic equity and technological colonization. Conversely, policy discussions rarely engage with granular classroom realities. The present study positions itself at this intersection: it investigates *how* AI-mediated speaking unfolds moment by moment while situating these interactions within the broader struggle for equitable, human-centered language education in multilingual societies.

3. Methodology

3.1 Design and rationale

A qualitative multiple-case design (Creswell and Poth 2018) was employed to capture the *lived experiences* of learners and teachers engaging with AI-supported speaking activities. This design was chosen for two reasons.First, it allowed close observation of naturally occurring classroom interaction rather than laboratory performance. Second, it facilitated comparison across three different institutional contexts while preserving ecological validity. Quantitative metrics such as pronunciation scores were deliberately excluded; instead, the inquiry followed a phenomenological orientation (Moustakas 1994), aiming to understand *how* participants experienced the phenomenon rather than *how much* they improved. The study therefore privileges meaning over measurement and narrative over numbers—an approach aligned with current qualitative trends in technology-enhanced language learning (Lee and Drajati 2019).

3.2 Setting and participants

The research was conducted in three Arab junior-high schools in northern Israel during the 2024–2025 academic year. Each school teaches English as a third language after Arabic and Hebrew, within the official Israeli curriculum. To ensure comparability, all schools had

similar class sizes (25–30 students) and technological infrastructure (smart boards, Wi-Fi, tablets, and laptops).

Participants included six English teachers (four female, two male) and ninety students in Grades 9–10. Students' ages ranged from 14 to 16 and represented mixed proficiency levels (A2–B1 CEFR). Sampling was *purposive*: only schools already experimenting with digital or AI technologies were invited, ensuring that the phenomenon under study was genuinely present (Patton 2015). Within each school, one intact class was selected. The students had previous exposure to communicative-speaking tasks such as role-plays or debates but minimal experience with AI-mediated tools. All teachers held at least a bachelor's degree in English education; three were completing or had completed M.Teach programs at Sakhnin College.

3.3 AI tools and interventions

Three complementary AI-mediated activity types were implemented over an eight-week period.

1. **Chatbot role-plays.** Students interacted with ChatGPT-based bots simulating everyday scenarios—ordering food, arranging travel, or debating current topics. These sessions emphasized pragmatic competence and spontaneous negotiation of meaning.
2. **Pronunciation coaching.** Learners used *ELSA Speak* and *Google Speech API* for individualized pronunciation and intonation feedback. Students received visual pitch curves, accuracy percentages, and segmental comments, which were later discussed collectively to promote metalinguistic awareness.
3. **Gamified simulations.** Drawing on *Duolingo*-style challenges and AI-driven storytelling games, learners competed or collaborated to complete speaking tasks embedded in narratives.

Each activity followed a consistent three-phase pedagogical cycle: (1) *Orientation*, in which teachers introduced task goals, vocabulary, and technological functions;
(2) *Interaction*, during which students engaged directly with the AI while teachers circulated to scaffold and monitor; and
(3) *Reflection*, where outcomes were debriefed through peer discussion or teacher-led feedback.

This cyclical design sought to integrate AI within communicative language-teaching principles rather than treat it as an extracurricular supplement.

3.4 Data collection

3.4.1 Classroom observations

Non-participant observations were used to document real-time interaction patterns, device management, and teacher mediation strategies. A structured observation checklist—adapted from Ur (1996) and Braun and Clarke (2006)—included indicators such as speaking-turn frequency, L1/L2 ratio, responsiveness to AI feedback, and affective tone. Thirty lessons (ten per school) were observed. Detailed field notes recorded student expressions, peer-to-peer scaffolding, and moments of breakdown or laughter, which later served as analytic vignettes illustrating affective engagement.

3.4.2 Semi-structured interviews

Following each teaching cycle, thirty students (ten per school) and all six teachers participated in semi-structured interviews lasting 20–35 minutes. Questions targeted perceived

engagement ("What motivated you most when using AI?"), confidence ("Did AI make you feel safer to speak?"), and difficulty ("How did you respond to confusing feedback?"). Interviews were conducted in Arabic to ensure comfort and later translated into English by the first author. To maintain semantic fidelity, 10 percent of translations were back-checked by an independent bilingual expert.

3.4.3 Researcher field notes

Throughout data collection, the first author maintained a reflexive journal documenting impressions of classroom atmosphere, teacher reactions, and emerging patterns. These notes helped contextualize transcripts and provided a running commentary on analytic decisions, echoing calls for researcher transparency in qualitative AI studies (Creswell and Poth 2018; Denzin 2017).

3.5 Ethical procedures

Ethical approval was granted by the Sakhnin College research board and each participating school. Informed consent from teachers and written parental consent for minors were obtained before data collection. Participants were informed that involvement was voluntary and that they could withdraw at any time without consequence. To ensure confidentiality, pseudonyms replaced real names, identifying details were removed, and all digital files were stored on encrypted drives accessible only to the researchers. Data were retained for six months before deletion in accordance with institutional policy.

Because the study involved digital platforms that process voice data, special attention was paid to *data-privacy ethics*. Teachers verified that applications used did not store student recordings on public servers, aligning with European GDPR and Israeli Ministry of Education guidelines. These precautions reflected the study's broader concern for ethical AI use in educational research.

3.6 Data analysis

Data analysis followed Braun and Clarke's (2006) six-step model of thematic analysis, supported by NVivo 12 software. The process was iterative and interpretive rather than linear.

1. **Transcription and familiarization.** All recordings were transcribed verbatim and read multiple times to establish analytic immersion. Margin notes captured initial impressions, striking phrases, and emotional cues (e.g., laughter, hesitation).
2. **Initial coding.** Segments of text relevant to the research questions were labeled using *semantic* and *latent* codes (e.g., "underlying beliefs/assumptions inferred from surface claims") —semantic for explicit statements ("AI is like a game") and latentfor underlying meanings ("competition motivates speaking"). Codes were kept short, often verb-based (e.g., *feeling safe*, *correcting self*, *losing interest*).
3. **Theme development.** Codes were clustered into broader categories (engagement, confidence, challenges, mediation). Constant comparison across data sources—student vs. teacher interviews, observations vs. field notes—ensured that themes were both convergent and contrastive.
4. **Review and refinement.** Preliminary themes were tested against the full data corpus. Disconfirming evidence was actively sought; for instance, when some students reported *overreliance* on AI, that nuance refined the overarching "confidence" theme into "confidence with caution."

5. **Theme definition and naming.** Each theme was defined through concise analytic memos specifying scope, subthemes, and representative quotations. The final three meta-themes—(1) enhanced engagement and motivation, (2) increased speaking confidence, and (3) technical and pedagogical challenges—emerged through this iterative negotiation.
6. **Reporting and interpretation.** Narrative synthesis integrated verbatim excerpts with theoretical commentary, connecting micro-events to macro-concepts such as Krashen's affective filter and Vygotsky's scaffolding.

Reliability and validity procedures

To enhance *trustworthiness* (Lincoln and Guba 1985), several strategies were employed.

- **Inter-coder reliability.** Twenty-five percent of transcripts were independently coded by a second researcher; Cohen's κ reached 0.88, indicating high agreement.
- **Member checking.** Six participants reviewed theme summaries to verify accuracy of interpretation. Minor lexical adjustments were made based on their feedback.
- **Triangulation.** Findings were cross-validated through three data streams: interviews, observations, and field notes (Denzin 2017).
- **Audit trail.** All analytic decisions were logged chronologically, providing transparency for external review.
- **Reflexivity.** The first author, an Arab EFL teacher, explicitly acknowledged insider positionality. While cultural familiarity facilitated rapport, reflective journaling mitigated the risk of over-identification with participants (Creswell and Poth 2018).

Analytic integration

Beyond coding, the analytic phase sought to move from description to interpretation. The researchers asked how AI reshaped classroom ecology: who speaks, when, and with what emotional consequences. Triangulated data revealed that engagement was not merely a behavioral variable but an *affective state* triggered by the interplay of novelty, safety, and recognition. Likewise, "confidence" was understood as a dynamic alignment of self-perception and social validation rather than a stable trait. These interpretive moves anchored the empirical findings in the theoretical constructs of the affective filter and sociocultural mediation, preparing the ground for the discussion section.

3.7 Research trustworthiness

Lincoln and Guba's (1985) criteria guided quality assurance:

- **Credibility:** Triangulation, peer debriefing, member checks.
- **Transferability:** Thick description of context.
- **Dependability:** Audit trail of coding decisions.
- **Confirmability:** Reflexive journaling.

3.8 Research questions revisited

Focus	Data Source	Analytic Approach
Learners' experiences	Student interviews + observations	Thematic coding → engagement/motivation theme

Focus	Data Source	Analytic Approach
Confidence & engagement	Observation notes + student reflections	Cross-case comparison
Teachers' perceptions	Teacher interviews	Content analysis
Implementation challenges	All data sets	Constraint code family → axial mapping

3.9 Positionality statement

The first author, an Arab EFL teacher-researcher, shared participants' linguistic and cultural background. This insider status facilitated trust but required reflexive awareness to prevent over-empathy. Continuous consultation with the co-author ensured analytic balance between emic and etic perspectives.

Here's the **expanded Findings section (≈1,200 words)**—fully elaborated for journal-level richness, while keeping your original thematic structure and tone consistent with *System*'s empirical reporting style (Chicago citations used).

4. Findings

Thematic analysis produced three interrelated themes shared by both learners and teachers:

(1) **Enhanced engagement and motivation**,

(2) **Increased speaking confidence**, and

(3) **Technical and pedagogical challenges.**

Together, these themes portray a complex picture of how AI-mediated activities transformed classroom participation and teacher mediation in Arab EFL contexts. They illustrate not only behavioral shifts in participation but also underlying changes in affect, agency, and the nature of feedback exchange between human and machine.

4.1 Enhanced engagement and motivation

Across all three schools, learners repeatedly described AI-based activities as *"playful," "alive,"* and *"different from the textbook."*Chatbots and gamified simulations replaced repetitive drills with authentic, responsive exchanges that mimicked natural conversation. In classroom discourse, students personified the AI tools—referring to them as *"friends," "partners,"* or *"competitors"*—indicating emotional investment.

One student commented, *"When we used the chatbot for debating, I felt I could speak freely without fear. It kept asking questions and I wanted to win the argument"* (Student S8). Another teacher observed, *"Even students who used to hide behind their notebooks started talking when they saw the AI talking back"* (Teacher T3).Observation logs confirmed these perceptions: average student speaking turns per lesson rose from approximately six during conventional lessons to fourteen during AI sessions.

In several classes, students began helping peers interpret prompts or share "winning strategies" for interacting with the chatbot, a spontaneous form of peer scaffolding rarely seen in prior lessons. These informal collaborations transformed the classroom dynamic from teacher-led to community-driven. Teachers described the atmosphere as *"lively"* and *"competitive in a good way."* One teacher wrote in her post-lesson reflection:*"I barely had to*

remind them to stay on task. They were negotiating whose answer was better, who got more green marks from the app."

This surge in motivation resonates with broader findings in the literature on game-based learning (Sharma 2024) and interactive pedagogy (Asatryan 2016; Assadi, Murad, and Badarni 2023). Games and simulations, by integrating elements of challenge, reward, and narrative progression, can reframe language practice as meaningful play rather than mechanical repetition. Yet the qualitative evidence here suggests that AI introduced an additional dimension: *responsiveness.* Students reported that what kept them engaged was not only the game mechanics but also the *illusion of conversation*—the sense that the AI "listened" and "answered." One learner explained, *"The app doesn't stop when I make a mistake; it waits for me. That makes it feel real."*

Teachers, while enthusiastic, offered a note of caution. Several identified novelty effect as a factor: students were excited precisely because AI was new and "international." As one teacher remarked, *"They think it's modern, like what people use in America. But after a few weeks, I worry they will get bored if tasks stay the same."* This insight underscores the difference between *episodic motivation*—triggered by technological prestige—and *sustained motivation*, which depends on pedagogical framing (Deci and Ryan 2000).

A further layer of engagement came from ownership. Students appreciated that AI provided immediate, individualized feedback that they could act upon without waiting for the teacher. For some, this autonomy was empowering:*"I don't have to ask if my pronunciation is right. I can check it myself and fix it,"* one student said. Such comments suggest that AI, when integrated appropriately, can redistribute agency within the classroom, enabling learners to take partial control of their improvement process.

Nevertheless, teachers highlighted the need for balanced orchestration. Unchecked competition occasionally distracted from communicative goals: students focused more on achieving "green scores" than on content quality. Teachers therefore began introducing reflective pauses—asking learners to discuss *why* a response was accepted or *how* an alternative phrasing might sound more natural. This blending of AI engagement with human reflection became a defining feature of successful lessons.

In short, the theme of enhanced engagement and motivation reflects a shift from compliance-driven participation to curiosity-driven interaction**.** The classroom evolved into a hybrid space where affective energy and cognitive challenge coexisted. While AI provided the spark, teachers' pedagogical design sustained the flame.

4.2 Increased speaking confidence

Students across all sites consistently reported a marked reduction in anxiety and a greater willingness to speak English. The *privacy* of AI practice—free from peer judgment—was the single most frequently cited factor. Many described feeling *"safe"* or *"less shy."* AI's immediate, non-judgmental feedback replaced the fear of embarrassment with curiosity.

One student confessed, *"I was always afraid my accent is wrong. But when AI said 'Good job' and showed green, I felt proud."* Teachers confirmed these affective shifts, noting that learners who had previously remained silent were now volunteering to read aloud or initiate conversations. A teacher at School C observed, *"They started initiating conversations in English outside the app. One group made a short video script voluntarily."*

Confidence gains were visible in linguistic behavior. During observations, students produced longer, more coherent utterances, and code-switching to Arabic decreased noticeably. Learners also employed a wider range of discourse markers—phrases such as *"actually," "I think,"* and *"in my opinion"*—suggesting an emerging sense of rhetorical control.

Students repeatedly described AI feedback as *"polite," "honest,"* and *"patient,"* contrasting it with teacher correction, which they perceived as public and sometimes stressful. *"AI doesn't shout, it just waits,"* a student explained. Another commented, *"When the teacher corrects, everyone looks. The computer corrects only me."*

These experiences illustrate Krashen's (1982) affective-filter hypothesis in concrete form: AI lowered emotional barriers, allowing input and output to circulate more freely. At the same time, Vygotsky's (1978) concept of scaffolding was evident in teachers' mediation of AI feedback. Rather than accept automated scores at face value, teachers guided learners to interpret feedback contextually—asking, for instance, why the AI flagged a particular pronunciation or whether it misunderstood because of sentence stress. This process turned machine evaluation into a dialogic act of learning.

Several students described AI's corrective comments as "gentle reminders" rather than criticism. *"When it says 'try again,' I don't feel bad; it's like a game restart,"* said Student S11. This framing of error as experimentation aligns with and Almineeai, Airashid, and Hezam (2025), who found that AI environments can normalize mistakes as part of iterative learning. Consequently, self-efficacy increased: learners were more willing to risk complex structures or unfamiliar vocabulary.

Teachers noticed a secondary, collective effect: as confidence grew, peer dynamics improved. Stronger students began offering spontaneous help to weaker peers, turning competition into collaboration. The AI became a shared reference point—*"What did it tell you?"*—that stimulated conversation rather than halted it.

However, the data also reveal a fragile balance between dependence and empowerment. Some learners began trusting AI feedback more than teacher advice, arguing that the machine was "more objective." Teachers responded by emphasizing critical awareness: *"Technology helps you, but it can be wrong; that's why we discuss."* This pedagogical negotiation underscores that confidence must be anchored in *discernment*, not blind faith.

In sum, AI-supported interaction did not simply increase talk; it reconfigured learners' emotional relationship to speaking. Confidence became a product of *interactional safety*, *immediate validation*, and *guided reflection*. The classroom transformed from a site of linguistic exposure to a laboratory of experimentation.

4.3 Technical and pedagogical challenges

Despite the positive outcomes, both learners and teachers faced persistent obstacles that tempered enthusiasm and highlighted the contextual fragility of AI adoption.

Accent bias and recognition errors.

Speech-recognition systems sometimes failed to understand Arabic-accented English, especially consonant clusters and vowel distinctions absent in Arabic phonology. Students grew visibly frustrated when correct answers were marked "incorrect." One teacher spent several minutes demonstrating to a class that *"It's not you—it's the microphone."* Such incidents risked undermining the very confidence AI was meant to build. Teachers began explaining *accent bias*

explicitly, turning technical failure into a teachable moment about global varieties of English (Lai et al., 2025).

Connectivity and access.

Technical disruptions—Wi-Fi lag, frozen screens, or login failures—frequently broke the rhythm of activities. Larger classes with limited devices had to rotate use, which diluted engagement. Students equated technological instability with emotional frustration: *"When it stops, we stop thinking,"* one remarked. Teachers observed that even brief interruptions could shift mood from excitement to distraction. The findings echo global reports that infrastructure, not pedagogy, remains the weakest link in EdTech innovation (Liu, Chen, and Zheng 2023).

Pedagogical readiness and assessment confusion.

Teachers expressed uncertainty about integrating AI-generated feedback into grading systems. As one asked, *"AI tells them pronunciation is 70 percent. What do I do with that grade?"* (Teacher T2). This disconnect between algorithmic metrics and curricular evaluation raised concerns about validity and fairness. Moreover, many teachers lacked formal training in interpreting AI analytics, relying instead on intuition. Professional development in *AI pedagogy*, not just technical operation, emerged as a pressing need.

Time and cognitive load.

Designing AI-mediated lessons demanded extra preparation: selecting reliable tools, verifying content appropriateness, and adapting prompts to proficiency levels. Teachers reported spending longer planning such sessions than traditional lessons. *"Sometimes I feel I am teaching the technology, not English,"* said one teacher, echoing global anxieties about technological instrumentalism—the risk that tool management overshadows pedagogy.

Cultural and language considerations.

Some AI prompts conflicted with local norms—for example, simulations involving dating or alcohol. Teachers had to modify or skip such scenarios, highlighting the importance of contextual adaptation in imported technologies (Shohamy 2014). Similarly, multilingual realities complicated interaction: occasional code-mixing confused the AI, which responded inappropriately or switched to Hebrew. These moments exposed the gap between global AI design and local multilingual ecologies.

Despite these challenges, participants agreed that the problems were *"frustrating but fixable."* Teachers framed them as part of a learning curve rather than reasons to abandon AI altogether. Many began collaborating informally to exchange troubleshooting tips and task designs. This collegial adaptation underscores a central insight: AI integration's success depends less on the sophistication of the tool and more on human flexibility, collaboration, and mediation.

In sum, the findings reveal that AI can transform Arab EFL classrooms into more engaging, confident, and dialogic spaces—but only when teachers actively bridge technological and pedagogical divides. Engagement and confidence flourished where teachers positioned AI as *partner* rather than *authority*; frustration grew where technology dictated pace or evaluation. The next section discusses how these empirical insights connect to theoretical frameworks and the broader discourse on AI-mediated language learning.

5. Discussion

5.1 AI and the affective turn in language learning

This study substantiates growing claims that artificial intelligence (AI) can lower affective barriers and stimulate intrinsic motivation in language learning. Within Krashen's (1982) framework, chatbots and pronunciation coaches functioned as *low-anxiety interlocutors*—nonjudgmental partners that encouraged learners to experiment freely with English, resulting in richer input/output cycles. Students reported that AI practice felt "safe" and "fun," enabling them to speak more and self-correct without the emotional risk of public embarrassment.

However, the affective benefits were not automatic. They were contingent upon teacher orchestration. Teachers who framed AI tasks as challenges or cooperative games achieved markedly higher levels of sustained engagement than those who merely assigned the tools as individual homework. The difference lay in *pedagogical positioning*: when AI was presented as an extension of classroom community rather than a solitary digital task, learners' motivation was socialized and enduring. This observation aligns with Lee and Drajati's (2019) argument that technological affordances only materialize when embedded in meaningful pedagogical design.

AI's function, therefore, emerges not as a cognitive accelerator alone but as an *affective mediator*—creating climates where risk-taking feels both emotionally safe and intellectually demanding. The affective turn in language learning emphasizes that emotion, curiosity, and play are not peripheral but constitutive of linguistic development (Dörnyei 2019). In this study, AI acted as a trigger for such emotions, while teachers' mediation transformed transient excitement into purposeful learning.

5.2 Scaffolding within the sociocultural framework

Vygotsky's (1978) sociocultural theory offers a compelling lens for interpreting the observed synergy between human and machine feedback. In this context, learning was distributed across three mediators: teachers, peers, and algorithms. AI provided *immediate micro-corrections*—highlighting mispronunciations or grammatical slips—while teachers translated these corrections into broader discourse-level understanding, situating language use within pragmatic and cultural frames.

Students' progress thus reflected distributed scaffolding, where each actor contributed distinct yet complementary forms of support. Peers offered emotional scaffolding ("You can do it again"), AI provided procedural scaffolding ("Repeat with stress on *the*"), and teachers synthesized both, turning feedback into a shared inquiry: *Why did the AI misunderstand this phrase?*

The findings affirm Li's (2023) and Liu, Chen, and Zheng's (2023) caution that AI feedback, if left unmediated, risks cognitive overload or mechanical repetition. Left alone, learners can become trapped in surface-level correction loops, focusing narrowly on achieving "green scores." Teacher facilitation transforms such data into knowledge by embedding corrective feedback within communicative meaning. This reframing illustrates the ongoing indispensability of pedagogy in AI-rich classrooms—teachers remain architects of interpretation, not technicians of transmission.

Moreover, sociocultural theory emphasizes that scaffolding is reciprocal: as learners gain competence, teachers gradually withdraw, allowing autonomy to flourish (Wood, Bruner, and Ross 1976). AI accelerated this process by providing consistent, low-stakes feedback, freeing teachers to focus on higher-order tasks such as strategy instruction or intercultural

discussion. In this sense, AI did not displace teachers but elevated their roles toward *metapedagogical guidance*.

5.3 Managing ASR bias and ethical considerations

Automatic Speech Recognition (ASR) bias emerged in this study as both a pedagogical and ethical challenge. Consistent with Lai et al. (2025), recognition engines privileged native-speaker phonology, occasionally mis-scoring accurate utterances by Arab students. Such inaccuracies risk reinforcing linguistic hierarchies and undermining learners' confidence. When a student's correct sentence was flagged as wrong, the affective cost was immediate: frustration, laughter, or withdrawal.

Teachers responded with *mitigation strategies* that reasserted human judgment over algorithmic authority:

1. **Pre-teaching AI limitations.** Before activities, teachers explicitly explained that speech-recognition tools were imperfect and biased toward American or British accents.
2. **Encouraging meta-talk about fairness.** After errors, teachers initiated discussions about why the AI misheard, prompting critical reflection on global English varieties.
3. **Establishing human-override protocols.** Teachers publicly overruled incorrect AI assessments, reinforcing that final evaluation rested with pedagogical expertise.

These interventions did more than repair technical mishaps—they cultivated critical digital literacy, a key competence for AI-era education. Learners began to perceive the AI not as infallible but as a partner subject to cultural and technical limitations. Such awareness converts frustration into insight, fostering skepticism and agency.

Ethically, teachers also raised concerns about data privacy and the recording of student voices on cloud-based platforms. Their cautious management of consent and anonymization reflects an emergent moral dimension in AI-mediated instruction: protecting learners' digital personhood while enabling innovation.

5.4 Teacher identity and professional agency

- Teachers' narratives revealed deep ambivalence. They celebrated AI's capacity to engage learners but also expressed anxiety that machine feedback might *"replace"* oral correction or diminish their professional value. Such concerns echo global apprehensions about automation in education.

Field observations, however, indicated the opposite effect. Rather than losing agency, teachers evolved into facilitators of interpretation—a role requiring greater pedagogical sophistication. They navigated between human empathy and algorithmic precision, mediating feedback, contextualizing language use, and ensuring emotional balance.

Consistent with Brown and Lee (2025), AI integration redefines teaching as *design and mediation* rather than direct instruction. Teachers who thrived were those who approached AI not as a threat but as a co-teacher. They curated tasks, sequenced challenges, and built reflection loops around AI interactions. This transformation signals a professional evolution from "sage on the stage" to *orchestrator of ecologies* (Hockly 2023).

Professional development, therefore, must extend beyond tool training to pedagogical orchestration—understanding how to align AI affordances with communicative goals, scaffold feedback, and manage socio-emotional dimensions. The study shows that teachers who adopted a reflective stance toward AI integration reported renewed agency rather than loss of control.

5.5 Cultural and linguistic contextualization

Arab EFL classrooms embody intricate sociolinguistic and cultural dynamics. Gender norms, multilingual repertoires (Arabic–Hebrew–English), and collectivist orientations all shape participation patterns. In some cases, AI interactions clashed with these norms. Mixed-gender voice chats, for example, caused discomfort among conservative students, leading teachers to localize activities through gender-segregated groupings or family-themed dialogues.

This process of cultural tailoring aligns with Shohamy (2014) and Russak (2021), who argue for context-responsive pedagogy within Israel's multilingual landscape. Effective AI adoption thus requires *contextual elasticity*—technologies must be flexible enough to honor local boundaries while still fostering authentic communication.

Language itself presented another form of mediation. Students often moved fluidly between Arabic, Hebrew, and English, creating hybrid utterances that confused AI systems trained on monolingual English. Teachers reframed these breakdowns as learning opportunities to discuss translanguaging and the politics of "standard" English. Such dialogues contributed to broader cultural awareness, reminding students that intelligibility, not imitation of native norms, defines communicative success in global contexts (Jenkins 2015).

Hence, AI became a mirror for sociolinguistic negotiation: its errors exposed cultural fault lines and invited human reflection on identity, voice, and belonging.

5.6 Comparison with prior literature

The results corroborate global findings that AI enhances engagement and confidence (Jamshed, Allehyani, and Albedah 2024; Wang et al. 2024) while extending this evidence to a previously unexamined population: Arab Israeli EFL learners. The study demonstrates that AI's psychological benefits—motivation, reduced anxiety, and increased agency—persist even in linguistically marginalized contexts where exposure to English is limited and performance anxiety high.

Unlike purely quantitative reports, which typically measure accuracy gains, this research foregrounds the emotional granularity of AI integration—how curiosity, pride, frustration, and skepticism coexisted during learning. The mixed emotions underscore that technology's influence is dialectical, producing empowerment and vulnerability simultaneously (Dörnyei 2019).

By emphasizing the *human–machine partnership*, these findings respond to calls in *System* (2023–2025) for qualitative accounts that illuminate teacher–AI collaboration in real classrooms. They confirm that sustainable innovation depends not on replacing teachers but on redesigning pedagogical relationships: between teachers and learners, humans and algorithms, and local cultures and global technologies. In this respect, the Arab-Israeli case contributes a distinctive voice to the global conversation on AI and multilingual education—showing that meaningful transformation arises not from technological novelty alone but from the thoughtful weaving of technology into cultural and pedagogical fabric.

6. Pedagogical Implications

6.1 Design principles for AI-mediated speaking tasks

1. **Embed AI within communicative purpose (not tool use).**

Begin with a discourse goal—persuasion, problem-solving, advising, negotiating, or storytelling—and write prompts that carry that rhetorical load. For instance, rather than

"practice the past tense," set a problem frame ("convince the principal to fund a field trip") so that grammar emerges as a resource for achieving a purpose. This keeps AI dialogues oriented to meaning, not mechanical turn-taking (Lee and Drajati 2019).

2. **Balance autonomy and collaboration.**

To avoid isolated "head-down" engagement, pair or triad learners around one device and rotate roles (speaker, monitor, note-taker). The monitor captures AI feedback; the speaker implements micro-changes; the note-taker prepares a short debrief. This preserves peer negotiation and conversational repair while exploiting AI immediacy (Vygotsky 1978).

3. **Humanize AI feedback.**

Translate scores into actionable micro-targets ("reduce /ɪ/ ~ /iː/ confusion in *beat/bit*; extend turns with 'because/so'"), and connect those targets to transparent classroom rubrics (fluency, accuracy, discourse management, interactional competence). Build a "green-score to rubric" crosswalk so students see how automated indicators map to human assessment.

4. **Cycle reflection (metacognition as habit, not event).**

End each session with *two-minute reflections*: "Which AI comment helped?", "What seemed unfair?", "How did you respond?" Students write one keep (strategy to keep using) and one tweak (change to try next time). Over weeks, these micro-journals externalize growth and prevent over-reliance on the tool (Li 2023).

5. **Cultivate digital empathy and criticality.**

Name ASR limits and accent bias up front; normalize the teacher's human-override when AI is wrong (Lai et al., 2025). Use these moments to teach critical digital literacy—how to question algorithmic authority, how "standard English" is socially constructed, and why intelligibility and audience matter (Shohamy 2014).

6. **Design for low anxiety, rising complexity.**

Start with short, success-oriented turns (30–45 seconds) and stable scenarios; gradually extend time, lexical sophistication, and interactional demands (back-channeling, turn-holding, clarifying questions). This keeps the affective filter low while deepening discourse (Krashen 1982).

7. **Diversify modalities to sustain novelty.**

Alternate voice chat (pronunciation/prosody focus) with text-chat (lexico-grammatical range) and multimodal prompts (images, maps, short video) to prevent novelty drop-off and to reach diverse learners (Arafat Shahriar, 2025, 1–11 ; Wang et al. 2024).

6.2 Professional-development agenda

- **Pedagogical literacy (SLA-anchored).**

Move beyond "how to click" toward why and when: where AI fits across input–interaction–output cycles; how to convert automated comments into discourse-level guidance; how to orchestrate scaffolding so machine feedback supports—not replaces—teacher mediation (Liu, Chen, and Zheng 2023).

- **Technical fluency and data ethics.**

Provide short clinics on troubleshooting, offline contingencies, privacy settings, and informed consent for voice data. Share checklists for vetting tools (storage location, deletion policy, accent options, and L1 interface availability).

- **Collaborative learning communities.**

Create school clusters or online hubs where teachers co-design prompts, exchange lesson artefacts (rubrics, checklists, reflection stems), and post micro-case studies of what worked/failed. Recognize and circulate "AI lesson exemplars" to lower the adoption barrier.

- **Evaluation frameworks (human + AI).**

Develop hybrid rubrics that integrate teacher judgments with selectively used AI indicators. Clarify what AI cannot assess (interactional nuance, audience adaptation) and keep human summative decisions explicit. This reduces confusion such as "What do I do with a 70%?" by mapping it to rubric bands and next steps.

Institutional support is non-negotiable. Without stable Wi-Fi, device access, IT help, and multilingual technical manuals, innovation remains sporadic and inequitable. Budget PD time, release time, and micro-credentialing to sustain teacher agency.

6.3 Curriculum and policy considerations

- **Policy frameworks.**

Ministries and higher-education bodies should articulate guidelines for AI ethics (data protection, minors' voice data), bias mitigation (accent options, fairness audits), and transparent teacher-override procedures. Encourage procurement that prioritizes localization and accessibility.

- **Curriculum design.**

Integrate AI modules as supplementary practice strands (autonomous oral rehearsal, pronunciation labs, debate prep) rather than replacing teacher-led CLT. Provide scope-and-sequence maps aligning common AI tasks with syllabus outcomes (e.g., "advising," "comparing and contrasting," "requesting clarification").

- **Localization partnerships.**

Foster collaborations between software developers and local educators to (a) tune ASR to Arab-accented English, (b) offer Arabic/Hebrew UI options, and (c) filter culturally unsuitable prompts. Such partnerships directly address fairness and uptake.

7. Limitations and Future Directions

Despite its qualitative depth, the study is bounded by several limitations that open productive lines for future research.

Temporal scope.

The intervention spanned eight weeks; we did not track long-term retention or delayed transfer to non-AI speaking contexts. Longitudinal or delayed post-tests would show whether confidence and fluency gains persist.

Sample diversity and scale.

All sites were in northern Israel; rural–urban contrasts, school type (public vs. private), and gendered classroom norms merit targeted comparison. Future sampling could stratify by socio-economic status and digital access.

Tool evolution.

AI platforms iterate rapidly; models used in 2024 may differ significantly in 2026. Replication studies should document versions, settings, and prompt engineering details to enhance reproducibility.

Mixed-methods triangulation.

We intentionally excluded formal proficiency tests to foreground experience. Future mixed-methods designs could combine this qualitative lens with pre/post oral tests, automated analytics, and human-rated performance to triangulate growth.

Cultural sensitivity and ethnography.

Interpretive ethnographies could probe how religion, gender, and identity mediate willingness to use voice with machines, and how families view data capture. Classroom video analysis could illuminate gesture, repair, and code-switching in AI talk.

Comparative modality studies.

Systematic contrasts of text-chat vs. voice-chat vs. multimodal VR could reveal which combinations best support interactional competence, pronunciation, and discourse management for different proficiency bands.

Teacher cognition and AI literacy.

Investigate how teachers reason about AI feedback, reconcile it with professional judgment, and re-design tasks accordingly. Develop and evaluate AI-literacy curricula in pre-service and in-service programs, including bias awareness and ethical pragmatics.

Assessment innovation.

Explore co-assessment models (student + teacher + AI) and learning-analytics dashboards that present only pedagogically interpretable signals. Pilot oral portfolios combining AI rehearsal artifacts with human-rated performances.

8. Conclusion

This study shows that AI, critically integrated, can reinvigorate speaking pedagogy in Arab EFL classrooms by creating low-anxiety, high-responsivity practice that learners experience as both private and social, immediate yet reflective. Students in our cases became more confident speakers; teachers transitioned from primary evaluators to designers and mediators of human–machine interaction.

The evidence cautions, however, against techno-solutionism. Technology cannot substitute human empathy, cultural attunement, or pedagogical judgment. Sustainable integration hinges on three balances:

- **Innovation and infrastructure** (tools and the conditions that make them usable),
- **Automation and interpretation** (machine signals and teacher sense-making), and
- **Global technology and local culture** (imported models and contextual values).

In short, students learn to speak with machines, but they learn to communicate through people. The practical path forward is clear: design tasks with communicative purpose, train teachers for orchestration, invest in equitable infrastructure, and localize tools to honor multilingual realities. Doing so will ensure that the promise of AI serves the enduring aims of language education—human connection, intelligibility, and voice.

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