# THE ROLE OF AI-POWERED FEEDBACK IN DEVELOPING EFL LEARNERS' SPEAKING ACCURACY

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**Abstract**. Artificial intelligence (AI) has rapidly expanded the possibilities for providing immediate, individualized, and repeatable feedback to learners of English as a foreign language (EFL). This paper examines how AI-powered feedback can contribute to speaking accuracy, understood as the appropriate and intelligible use of pronunciation, grammar, vocabulary, and form during oral production. Drawing on research on corrective feedback, automatic speech recognition (ASR), AI speech-evaluation systems, and generative AI, the paper argues that AI can strengthen the feedback cycle by increasing opportunities for noticing errors, comparing learner output with target forms, self-repairing, and repeating practice. Recent studies report improvements in pronunciation, fluency, grammar, vocabulary, and learner confidence when AI-supported speaking tools are used in structured tasks (1,2,3). However, automated feedback remains vulnerable to recognition errors, accent bias, limited pragmatic sensitivity, and over-reliance. Therefore, the most pedagogically sound model is not full automation but a complementary AI-plus-teacher approach in which technology provides rapid formative feedback while teachers validate difficult cases, support interactional competence, and connect practice to meaningful communication. The paper concludes with practical principles for integrating AI-powered feedback into EFL speaking instruction.

**Keywords:** artificial intelligence, EFL, speaking accuracy, corrective feedback, automatic speech recognition, pronunciation, self-repair.

## INTRODUCTION

Speaking accurately in a foreign language requires more than producing grammatically correct sentences. Learners must coordinate pronunciation, lexical selection, morphosyntactic form, stress and intonation, and the timing of speech while simultaneously responding to communicative demands. In many EFL contexts, this is difficult because learners receive limited exposure to English outside the classroom and teachers have insufficient time to provide individualized oral corrective feedback to every student. Corrective feedback is important because it draws learners' attention to mismatches between their production and the target language and can stimulate noticing, modified output, and self-repair (4,5).

The growth of AI-based language-learning tools has created new possibilities for addressing this feedback gap. Modern systems can capture spoken input through ASR, convert speech into text, identify selected pronunciation or grammatical problems, generate model forms, assign scores, and provide recommendations almost immediately. AI speaking-evaluation programs have been associated with improvements in pronunciation, fluency, grammar, and vocabulary, while learners often value the ability to practice privately and repeatedly (1,2). Generative AI with voice interaction further expands this function by allowing learners to conduct simulated conversations, request explanations, and receive feedback tailored to a specified rubric or speaking goal (3,6).

The educational significance of AI-powered feedback is not simply that it is fast. Its deeper value lies in the possibility of creating a high-frequency feedback loop. A learner can speak, receive a


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diagnosis, compare the original utterance with a suggested form, attempt a repair, and repeat the same task within a few minutes. This cycle is difficult to reproduce at the same scale in a teacher-fronted classroom. From a skill-acquisition perspective, repeated practice combined with informative feedback can gradually support more stable and automatic control of target forms (4,7).

At the same time, speaking accuracy should not be reduced to an automated score. Speech-recognition systems are probabilistic and may misrecognize non-native accents or background noise. Generative AI can provide plausible but inaccurate explanations, and machine feedback may overemphasize features that are easy to detect while underrepresenting pragmatics, discourse management, appropriateness, and interactional responsiveness. Recent reviews therefore suggest that AI-supported speaking is most effective when integrated into purposeful pedagogical design and supplemented by human interaction (8,9). The purpose of this paper is to analyse the mechanisms through which AI-powered feedback can develop EFL learners' speaking accuracy, identify its main benefits and limitations, and propose a practical model for classroom implementation.

**MAIN PART**

**1. Speaking Accuracy and the Pedagogical Function of Feedback**

In second-language pedagogy, accuracy generally refers to the extent to which learner production conforms to target-language norms. In speaking, this includes grammatical well-formedness, appropriate lexical choice, intelligible segmental and suprasegmental pronunciation, and sufficiently controlled delivery. Accuracy is related to, but distinct from, fluency and complexity. A learner may speak rapidly yet repeatedly produce tense, agreement, or pronunciation errors; another may be accurate but hesitant. Effective instruction therefore needs to help learners improve form without destroying communicative flow.

Corrective feedback serves this goal by making errors perceptible and actionable. Classic interaction research distinguishes strategies such as explicit correction, recasts, clarification requests, metalinguistic feedback, elicitation, and repetition (5). Pronunciation-focused research likewise shows that feedback can contribute to L2 speech development, particularly when learners receive clear information and opportunities to modify their output (7,10). AI systems can operationalize several of these functions. For example, a pronunciation platform may highlight a mispronounced phoneme, replay a model, display a waveform or score, and invite another attempt; a conversational AI system may reformulate an ungrammatical sentence and explain the rule when requested.

The effectiveness of feedback depends on more than its existence. Feedback is useful when learners understand what is wrong, know what successful performance looks like, and can act on the information (11). For EFL speaking, this means that AI feedback should be specific enough to direct attention but not so overloaded that the learner cannot maintain a communicative focus. Prioritizing one or two high-value targets per speaking task is often more productive than correcting every possible deviation.

**2. Mechanisms of AI-Powered Feedback**

**AI-powered speaking feedback usually combines several technologies.**

ASR converts speech into a machine-readable representation; acoustic models estimate pronunciation-related features; natural language processing can inspect grammar and vocabulary; and generative AI can create explanations, examples, follow-up questions, or individualized practice. These components allow feedback to be delivered at several levels, from phoneme production to sentence form and discourse organization (1,3,6).


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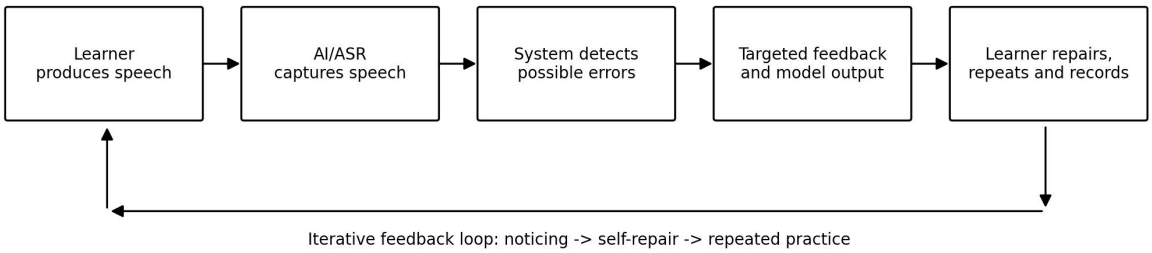



**Figure 1. Iterative AI-powered feedback cycle for EFL speaking practice.**

The central pedagogical mechanism is an iterative cycle of noticing and repair. When learners see that the system repeatedly misrecognizes a word or flags a sound, they are prompted to attend to a feature that may previously have gone unnoticed. A model pronunciation or reformulation then provides a comparison target. The learner's subsequent attempt becomes modified output, and the new result offers evidence about whether the repair was successful. This repeated loop is consistent with the idea that meaningful feedback should reduce the gap between current and desired performance (11).

**Table 1. Major types of AI-powered speaking feedback and their expected contribution to accuracy**

| Feedback type | Typical AI output | Targeted accuracy domain | Pedagogical value |
|---|---|---|---|
| Pronunciation | phoneme/word score, model audio, stress cue | segmentals, stress, intonation | supports focused repetition and intelligibility |
| Grammar | recast, corrected sentence, short explanation | morphology and syntax | helps learners notice recurrent form errors |
| Lexical | alternative word/phrase, collocation suggestion | word choice and collocation | improves precision and appropriateness |
| Fluency-related | pause/rate information, transcript review | timing, hesitations, repair patterns | supports monitoring of delivery without teacher delay |
| Task/rubric | criteria-based comments on response | integrated performance | connects language form to communicative task goals |


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**3. How AI Feedback Can Improve Speaking Accuracy**

First, AI increases the amount of corrective information available to each learner. In a conventional class, one teacher may hear only a small sample of each student's speech. With an AI tool, learners can complete multiple cycles of speaking and repair outside class. Zou et al. found significant pre- to post-test improvement in EFL learners' speaking performance after practice with AI speech-evaluation programs, with participants also reporting gains in pronunciation, fluency, grammar, and vocabulary (1). More recent ASR research similarly indicates that automated pronunciation feedback can support accuracy, particularly when combined with additional human or peer support (2).

Second, immediacy strengthens the connection between an error and its correction. Delayed feedback may be useful for reflection, but immediate feedback allows learners to remember the exact utterance that triggered the response. This is especially valuable for pronunciation, where subtle differences in sound production are difficult to reconstruct later. Computer-assisted pronunciation research suggests that even imperfect corrective feedback can support improvement when it is sufficiently reliable to guide learners toward more accurate production (12).

Third, AI can reduce the social cost of making errors. Speaking anxiety and fear of negative evaluation can cause learners to avoid oral participation. AI provides a low-stakes environment in which learners can rehearse before public performance. Voice-based generative AI has been proposed as a speaking partner that can provide pronunciation and presentation feedback while allowing students to practice privately and repeatedly (3). This lower-pressure environment may increase the volume of spoken practice, which indirectly supports accuracy by creating more opportunities for retrieval, monitoring, and repair.

Fourth, AI feedback can be personalized. Learners may request feedback only on grammar, only on pronunciation, or on a small set of rubric criteria. They can also ask for slower model speech, simpler explanations, minimal pairs, reformulations, or follow-up questions. Such adaptability is difficult to provide consistently in large classes. Importantly, personalization should be directed by clear learning objectives rather than by unrestricted interaction with the tool. Without a target, learners may receive verbose feedback that distracts from the most important errors.

Fifth, stored transcripts and score histories can make progress visible. When learners compare recordings across several weeks, recurrent errors become easier to identify. A teacher can use these traces diagnostically: for example, repeated article errors, consonant-cluster problems, or inaccurate word stress can be converted into short classroom mini-lessons. In this way, AI feedback becomes not only an individual practice mechanism but also a source of formative evidence for instructional planning.

**4. A Conceptual Pathway from AI Feedback to Accuracy**

The relationship between AI feedback and speaking accuracy is mediated by learner engagement. Technology does not produce improvement automatically. Learners must notice the feedback, understand it, attempt a repair, and transfer the repaired form to a new communicative situation. Proficiency level, motivation, anxiety, digital literacy, and beliefs about AI can all influence this process. Therefore, the same system can be effective for one learner and superficial for another.


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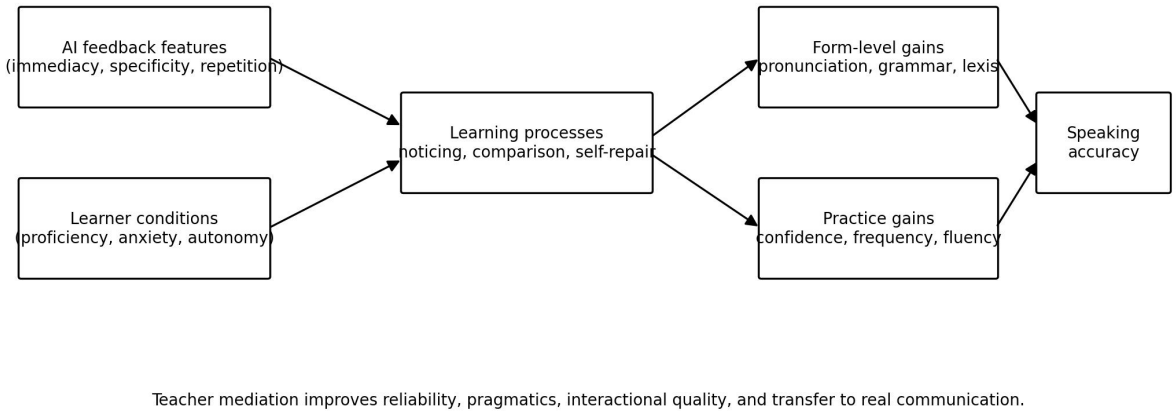



Figure 2. Conceptual pathway linking AI-powered feedback to speaking accuracy.

Figure 2 emphasizes that AI features such as immediacy and repetition are only the first stage. They create conditions for learning processes—especially noticing, comparison, and self-repair—which can then produce form-level gains. The pathway is strengthened when the learner is willing to repeat tasks and when teachers help interpret questionable feedback. It is weakened when students accept every machine correction uncritically or focus narrowly on scores rather than communicative success.

**5. Limitations and Risks**

Despite its pedagogical promise, AI-powered feedback has important limitations. The first is technical accuracy. ASR performance can vary according to accent, microphone quality, speech rate, noise, and the language model used. A misrecognition may be interpreted by the learner as a pronunciation error even when the utterance was understandable to a human listener. This can encourage unnecessary accent modification or frustration. Automated scoring should therefore be treated as evidence, not as an unquestionable judgment.

The second limitation concerns the scope of what AI can evaluate. Systems are generally strongest on features that can be represented computationally, such as pronunciation patterns, lexical choice, and sentence-level grammar. They are weaker at judging pragmatics, politeness, stance, cultural meaning, humor, turn-taking, audience awareness, and the subtle negotiation of meaning in real interaction. Systematic reviews of AI-supported speaking instruction note that higher-order interactional competence remains less consistently addressed than pronunciation, fluency, and confidence (8,9).

A third concern is over-reliance. Learners may begin to optimize their speech for machine recognition rather than for human communication, or they may accept generated corrections without checking whether the suggested expression is natural in context. Generative AI can also produce inconsistent explanations. Critical digital literacy is therefore part of effective AI-assisted language learning. Students need to understand that feedback can be fallible and should be compared with dictionaries, corpora, teacher guidance, and communicative evidence when necessary (3,6).

Finally, ethical and access issues must be considered. Speech data may contain personal information, and platforms differ in how recordings are stored or processed. Teachers should use institutionally appropriate tools, avoid unnecessary collection of personal data, and ensure that students who lack stable


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devices or internet access are not disadvantaged. These concerns do not eliminate the value of AI feedback, but they require responsible implementation.

**6. Practical Model for EFL Classroom Implementation**

A balanced classroom model combines automated formative practice with teacher-mediated validation and communicative transfer. AI is particularly suitable for high-frequency rehearsal before or after class, while classroom time can be reserved for interaction, feedback on meaning, and difficult errors that require human judgment. The following model can be adapted to university EFL courses.

**Table 2. Suggested AI-assisted speaking accuracy cycle**

| Stage | Learner activity | AI role | Teacher role / evidence |
|---|---|---|---|
| 1. Baseline | record a 1–2 minute response | generate transcript / preliminary analysis | identify 1–2 priority targets |
| 2. Focused practice | repeat selected sentences or mini-task | provide model, correction, examples | check whether feedback is linguistically appropriate |
| 3. Repair | re-record after feedback | compare attempts / flag change | encourage self-explanation of correction |
| 4. Transfer | perform a new task on a related topic | offer limited delayed feedback | assess whether accuracy transfers beyond rehearsal |
| 5. Reflection | review errors and progress | summarize patterns if available | set next target and prevent score-only learning |

This cycle keeps AI feedback subordinate to instructional objectives. A useful principle is 'focus, repair, transfer.' First, learners focus on a small number of salient errors; second, they repair them through repeated attempts; third, they use the improved forms in a new communicative task. Transfer is essential because accurate repetition of a model does not necessarily mean that the learner can use the same feature spontaneously in conversation.

Teachers can also improve feedback quality by giving students prompt templates. For example, a learner can instruct a voice-enabled AI system to listen to a one-minute response and identify no more than three recurrent grammar or pronunciation problems, explain each problem briefly, provide a corrected example, and then ask the learner to try again. Limiting the feedback prevents cognitive overload and encourages action. The teacher can periodically audit the generated feedback and discuss cases in which AI and human judgments differ.

Assessment should remain multidimensional. Automated scores may be useful for self-monitoring, but formal evaluation should include human judgments of intelligibility, communicative effectiveness, interaction, and appropriateness. This approach protects learners from the false assumption that a high


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machine score equals complete speaking competence. It also maintains the central role of human communication as the final purpose of language learning.

**CONCLUSION**

AI-powered feedback can make an important contribution to the development of EFL learners' speaking accuracy because it expands access to immediate, individualized, and repeatable corrective information. When learners speak, inspect feedback, compare their output with a target, self-repair, and repeat the task, they engage in a learning cycle that is difficult to sustain through teacher feedback alone. Empirical work on AI speech-evaluation and ASR-based practice has reported gains in pronunciation and broader speaking performance, while voice-enabled generative AI offers additional opportunities for personalized rehearsal and feedback (1,2,3).

Nevertheless, AI should not be treated as an autonomous authority. Recognition errors, accent-related bias, limited pragmatic sensitivity, and the possibility of inaccurate generative explanations mean that machine feedback requires critical interpretation. The most defensible instructional approach is a complementary model: AI handles frequent low-stakes practice and rapid formative feedback, while teachers validate uncertain cases, prioritize errors, support interactional competence, and ensure transfer to authentic communication. In this model, technology increases the quantity and timeliness of feedback without replacing the pedagogical and interpersonal functions of the teacher.

For EFL programs, the practical implication is clear: AI-powered feedback is most effective when it is embedded in structured tasks, restricted to meaningful learning targets, followed by learner self-repair, and connected to teacher-guided communicative practice. Future research should examine long-term retention, transfer from rehearsed to spontaneous speaking, fairness across accents and proficiency levels, and the comparative effects of different feedback designs. Such work will help move AI-supported speaking instruction from novelty toward evidence-based pedagogy.

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