



## The Role of the Applications of Artificial Intelligence on Improving The Students' Listening Skills

Assistant Instructor Abdalidaf Rashed Mahdi Al-kubaisy<sup>1</sup>, Assistant Professor Israa Rashed Mahdi Al-kubaisy<sup>2</sup>

<sup>1</sup>Alimam Aladham University College

<sup>2</sup>Gifted Students School/Anbar

**Abstract:** This study aims to investigate how AI applications could enhance students' listening skills by promoting innovative use of clever and inventive technologies. The significance of the study is derived from the ways in which these applications enhance students' auditory perception abilities and stimulate their creativity and listening skills. This study looks at modern AI-driven technologies, such as automated transcription services, intelligent tutoring platforms, interactive chatbots, and adaptive speech recognition systems. The analysis focuses on key features like personalized audio input, speech speed adjustments, a variety of accents, instant feedback, and integrated support through visual aids and captions. Results from recent experiments and classroom trials carried out between 2023 and 2026 indicate that AI implementations result in measurable gains in phonological awareness, comprehension techniques, and confidence during real language learning.

According to this study, AI enhances listening results by offering unrestricted, anxiety-free practice that is customized to each person's level of proficiency. It also provides instantaneous error detection, which is not possible with traditional audio resources. However, learner autonomy, pedagogical integration, and striking a balance between AI support and unassisted listening tasks are all necessary for effectiveness. The study comes to the conclusion that AI applications are effective additions that increase exposure, customize pacing, and increase listening endurance rather than taking the place of human instruction. Future research on long-term retention and transfer to real-world communication is suggested, along with implications for educators, curriculum designers, and developers.

**Keywords:** Artificial intelligence, listening skills, language learning, speech recognition, personalized learning, educational technology, EFL/ESL.

### 1. Introduction

Despite being a fundamental language skill, listening is frequently the hardest for students to acquire. Listening occurs in real time and does not allow for pausing or rereading, in contrast to writing or reading. Students must instantly process meaning while decoding idioms, background noise, accent variations, and connected speech. Group listening exercises, teacher-led drills, and limited audio recordings are examples of traditional classroom methods that frequently fail to give students the customized, repetitive, and adaptive practice they require (Reis, 2024: 47). Due to its real-time nature, reliance on phonological decoding, and lack of individualized practice opportunities in traditional classrooms, listening comprehension continues to be one of the most challenging skills for language learners. In order to address these issues and improve students' listening skills, this study looks into the use of artificial intelligence (AI) applications (Abdelsalam and Mahmoud, 2021: 35).

By enabling more individualized, interactive, and accessible listening practice, AI-powered tools

are revolutionizing language learning. Among these changes are: Adaptive input, which allows AI to determine a learner's present proficiency level and modify audio content's speed, complexity, and accent in real time (Vincent et al., 2025: 3). An advanced learner has quick, organic conversations with local slang, while a beginner receives slower, clearer speech with captions. Apps that use speech recognition to provide immediate feedback can determine whether students have correctly understood or repeated phrases, as well as where comprehension failed. "can't," or a missing linking sound? (Ahmad Garba, 2026: 78) Unlimited exposure differs from a classroom in that AI tutors can create countless conversations, podcasts, and role-plays on subjects that students are interested in, such as engineering lectures or K-pop interviews. This increases listening endurance while maintaining a high level of motivation (Alrasheedi, 2024: 604).

Many AI applications combine audio with real-time transcripts, translations, keyword highlighting, and visual context in order to provide multimodal support. By turning these scaffolds on and off, students can progressively train their ears to rely less on text. In low-stress practice,

students can practice shadowing an AI partner at any time, pause to reflect, and repeat the same video 20 times without feeling ashamed. This lessens the anxiety that frequently prevents the development of listening skills (Sivaji et al., 2024: 1–5).

### 1.1 The Problem

Despite years of study, students in EFL/ESL contexts frequently exhibit poor listening comprehension. Common problems in the classroom: Limited exposure: Only 10 to 15 minutes of listening are allotted each week, which is far less than what is required for acquisition (Ahmed, 2021: 329). One-size-fits-all audio: Because textbooks only use one speed, accent, and subject, the content is too difficult for students who are weak and too simple for those who are strong. Errors go uncorrected because teachers are unable to replay or explain every word missed for more than thirty students due to delayed or nonexistent feedback (Nawaz, 2021: 730). High anxiety: Instead of asking for clarification, students tune out because they are embarrassed to do so. Lack of strategy training: Students lack the ability to take notes, make predictions, and deal with unfamiliar words. Even when reading and grammar are strong, listening is still the weakest ability on standardized tests and in actual communication (Tran and Duong, 2020: 98).

### 1.2 Scope of Impact

Since 2023, research and classroom experiments have demonstrated that AI listening tools have an impact on three key areas: phonological awareness, which uses targeted drills to help students distinguish minimal pairs, intonation patterns, and reduced forms. AI that poses follow-up questions regarding audio content can be used to teach comprehension techniques such as prediction, note-taking, and inference. Authentic communication bridges the gap between textbook audio and real-world listening by using conversational AI to mimic phone calls, interviews, and academic lectures (Abdelsalam and Mahmoud, 2021: 30).

### 1.3 Purpose of this study

This study looks at how AI applications are currently used in listening instruction, assesses how well they work in comparison to more conventional approaches, and suggests best practices for both educators and students. We seek to determine whether AI improves students' listening skills as well as how and when it yields the greatest improvements in comprehension, confidence, and long-term retention by examining features of top AI tools and current case studies (Campoverde Quezada, 2020: 190).

### 1.4 The Hypothesis

According to the main hypothesis, students' listening skills will be greatly improved by incorporating AI-based applications into listening instruction as opposed to

traditional audio-only methods because AI offers more practice volume, personalized input, and instant feedback.

According to supporting sub-hypotheses, students who use AI tools will improve their understanding of various accents more than those who use textbook CDs. Various forms of English can be produced on demand using TTS and generative AI. Specific decoding issues will be reduced more quickly by AI-driven micro-feedback on phoneme and word-level errors than by whole-class instruction. In real time, ASR identifies precise misheard sounds. Learners will improve their real-time listening response skills by practicing with conversational AI agents. Unlike passive listening, interaction necessitates active processing under cognitive load. When AI is used for initial practice, listening tasks will cause less anxiety. Social judgment is eliminated by unlimited private repetition.

### 1.5 The Limitations

AI tools like ASR chatbots, voice assistants, and intelligent listening systems are promising, but current research highlights several key limitations when it comes to actually improving listening skills (Ikram and Inness, 2024: 192)

Concerning Limited evidence of long-term retention in which most studies only measure gains immediately after short interventions. We don't know if AI-assisted advancements truly endure without post-tests. According to one pilot follow-up, the use of summarization strategies decreased by 40% after three months, indicating that benefits may diminish if AI prompts are eliminated (ibid). It is challenging to assess whether listening skills are maintained over time due to the typical 12–16 week study periods. Noting test bias and narrow skill focus: Many AI studies concentrate on a single subskill, such as word recognition or pronunciation, rather than more comprehensive listening comprehension. When the same ASR tool is used for both training and assessment, there is a chance that learners will be "learning for the test" or that the tool will identify words it was trained on more accurately, inflating measured improvement. According to Isoqulovna and Norqulovna (2025: 342), the findings cannot be applied to reading, writing, or grammar.

Concerns about technical accuracy and dependability indicate that AI for listening practice is "not yet quite where it needs to be." Tools are still not accurate enough or dependable enough to be trusted without verification. They struggle with tonality, accents, and the nuances that make spoken language challenging. Because generative AI is still prone to mistakes, students should discuss any questions they have with a teacher rather than the computer (Raza et al. (2024), 2290). One of the primary problems with the absence of authentic human interaction is the role that real human interaction plays in oral language acquisition. Human-AI communication usually uses shorter messages and a simpler vocabulary than human-human interaction. AI cannot fully mimic the unpredictability, cultural context, and pragmatic cues of live conversation all of which

are crucial for the development of listening skills (Manaf et al, 2025: 10).

Concerning Over-reliance and Reduced Autonomy: Research identifies problems with an over-reliance on technology. Learner autonomy and critical evaluation may be compromised by an over-reliance on AI; automation and autonomy may be traded off. AI literacy by itself cannot accurately predict willingness to communicate because WTC is impacted by psychological and emotional factors in addition to technical proficiency. Referring to the context and sample limitations, since many studies use small samples. One g. Each group has 25 members, which may not be a good representation of larger student populations. Results are often situation-specific and may not be applicable to other demographics, learning environments, or skill levels (Talapova and Zh, 2024: 410). Regarding Anxiety and Engagement Gaps: Although certain AI speaking exercises have been demonstrated to lessen anxiety,

other studies have discovered that AI did not lessen learners' anxiety levels.

Although it operates through mediating factors like s, AI literacy can lessen anxiety in foreign language classrooms., but it works through mediating factors like self-efficacy, not directly. Novelty effects are also a concern gains may be due to the “Hawthorne effect” or excitement about new tech rather than durable skill improvement. Noting Equity, access, and teacher role concerns in which broader issues include ethics, equity, accessibility, and the risk of replacing human teachers. Teachers need to use caution, because AI may inhibit development of research and critical thinking skills if not integrated carefully (Al-Kandari and Al-Ajmi, 2025: 20).

### 1.5.1 The Limitations Learners Still Address

Even if the hypothesis is supported, AI applications have clear boundaries you should state in any study or implementation plan (Bango and Nawaz, 2026: 1202)

Category	Specific limit	Implication for listening instruction
Technical	ASR accuracy drops with heavy L1 accents, background noise, or overlapping speech	AI may mis-score students and give wrong feedback on pronunciation/listening
Pedagogical	Most AI tools train “listening-to-respond” or “listen-and-answer” but not academic listening like lecture note-taking	Teacher still needed for strategy instruction and complex tasks
Sociolinguistic	Synthetic voices often lack pragmatic features: sarcasm, interruptions, hesitations, false starts	Students may be unprepared for messy real-world talk
Access & equity	Requires devices, internet, and sometimes paid subscriptions	Results may not generalize to low-resource schools, creating a research bias
Cognitive	Overuse of captions/transcripts can cause “text dependence” where students read instead of listen	Gains may not transfer to audio-only situations like phone calls
Affective	Some learners find talking to a bot un motivating or uncanny over time	Engagement can drop after novelty wears off, affecting practice volume
Ethical/privacy	Voice data of minors stored on third-party servers	Schools need consent and data policies before large-scale use
Research design	Hard to isolate AI effect because teachers often change other variables too more homework, more motivation	Studies risk confounding variables and over-claiming AI impact
Content validity	AI-generated passages may be linguistically correct but culturally flat or factually wrong	Critical listening and content evaluation still need human curation

**Table (1.1) Displays The Limitations Learners Still Address Adopted And Arranged By The Researchers (Zhang and Saisai, 2026: 263)**

## 2. The Prominent Ways AI Enhances Listening Practice

This section focuses on some ways to state AI listening practice (Ali et al, 2025: 519):

### 2.1 Personalized difficulty & pacing

Speech recognition analyzes a student’s comprehension and pronunciation in real time. Apps like Duolingo, ELSA Speak, and Google’s Read Along slow down, repeat, or level-up audio based on how well the learner responds.

### 2.2 Instant, detailed feedback

Instead of waiting for a teacher to grade a listening quiz, AI can immediately highlight missed words, identify whether the issue was vocabulary, speed, or accent, and replay the exact sentence the student struggled with.

### 2.3 Exposure to diverse accents & contexts

On demand, text-to-speech and generative voice models can produce English with regional Arabic, Australian, Nigerian, or Indian accents. Instead of focusing on just one textbook speaker, students train their ears on a variety.

## 2.4 Interactive dialogue simulation

voice agents and chatbots such as ChatGPT Voice, Character. Students can converse with AI or Microsoft's Reading Coach. When a student says, "I didn't catch that," the AI listens, reacts organically, and can repeat or rephrase. This develops the ability to listen in real time and think under pressure.

## 2.5 Comprehension scaffolding

Tools such as YouTube's AI dubbing, Khanmigo, or Newsela use AI to generate transcripts, auto-highlight keywords, create summaries, and ask comprehension questions while the audio plays. Weak listeners get support without oversimplifying content (Alrasheedi, 2024: 605).

## 3. Selective AI Application Types In Use

This section shows types of AI applications in selective AI-Anbar Schools (Doghonadze and Kintsurashvili, 2022: 18):

No.	Application type	What it does for listening	Example tools
1.	Adaptive listening apps	Adjusts audio speed, complexity, and quiz questions based on performance	Duolingo, Babbel, Memrise
2.	ASR-based pronunciation/listening coaches	Student repeats what they heard; AI checks accuracy and pinpoints misheard sounds	ELSA Speak, Speechling, Google Read Along
3.	Conversational agents	Simulates real dialogue so students practice listening to spontaneous speech	ChatGPT Voice, Pi AI, Call Annie
4.	AI captioning & transcription	Generates real-time subtitles/transcripts for any video or lecture to support bottom-up decoding	Otter.ai, YouTube auto-captions, Microsoft Teams
5.	Content generators	Creates custom listening passages on topics the student likes, at their exact level	Twee, Diffit, Eduaide.ai
6.	Intelligent tutoring systems	Combines listening with quizzes, tracks weak points, and assigns targeted drills	Khanmigo, Carnegie Learning, Century Tech

**Table (2.1) Displays Selective AI Application Types In Use Adopted And Arranged By The Researchers (Fahmy et al, 2025: 29).**

## 4. Documented Benefits For Students

Some points include (Alqarni and Alhramelah, 2025: 401):  
 First. Increased input quantity: Due to AI's 24/7 availability and limitless content, students can spend five times as much time listening outside of class.  
 Two. Reduce anxiety: By asking AI to repeat something ten times without feeling ashamed, learners can lower the "affective filter" that prevents them from listening.  
 Third. Metacognitive awareness: Many tools display analytics such as "You lose focus after 45 seconds" or "You miss /th/ sounds 60 percent of the time." In addition to learning what they hear, students also learn how to listen.  
 Four. Realistic task practice: AI can simulate airport employees, job interviews, or fast food orders to link listening to actual objectives.

## 5. Practical Classroom Model Using AI

These are the primary application types currently in use in language programs and schools (Runge et al., 2024: 147).  
 One as diagnostic that The student completes a three-minute AI listening assessment. Level A2, weak with connected speech is the system's tag.  
 Two. Targeted input: With an emphasis on linking and reductions, AI creates three brief audios every day at the A2+ level.  
 Three. Interaction: After the student summarizes

each clip, a chatbot asks follow-up questions if any information was overlooked.  
 Four. Teacher check-in: Every week, the teacher goes over the AI dashboard and conducts a live group discussion to practice skills like body language cues and taking turns that AI isn't yet proficient at.  
 Five. Student check-in: AI transforms listening into an interactive, on-demand skill that students can practice every day rather than a static audio track that is played once in class (Abdelsalam and Mahmoud, 2021: 15).

## 6. Adaptive Listening Platforms

First. What they do: Real-time adjustments are made to the audio speed, accent, vocabulary load, and question difficulty based on algorithms that determine a student's level.  
 Two. Effect on listening: According to research, learners are always given "comprehensible input" that is one level above their current proficiency, which promotes acquisition.  
 Third. Examples include Beelinguapp with customizable TTS, Babbel's speech lessons, Lingvist, and Duolingo Stories (Hu, 2025: 1071-1080).

## 7. Automatic Speech Recognition (ASR) Coaches

First. What they do is listen to a phrase, repeat it, and the AI rates the student's accuracy in hearing each word or sound. Only the misheard portion can be replayed. Two. Effect on listening: Encourages active decoding and teaches the ear to recognize reductions, connected speech, and phonemes like /θ/ vs. /s/. Third. Examples include Microsoft Reading Coach, Google's Read Along, Speechling, and ELSA Speak (Qassrawi and Al Karasneh, 2025: 14).

### 8. Conversational AI & Voice Agents

First. They engage in a back-and-forth spoken conversation with the pupil. The AI rephrases at a lower level if the student says, "Sorry, can you repeat?". Two. Effect on listening: Enhances listening under actual cognitive strain by processing information, retaining it, and coming up with a response. closest to interaction in real life. Three .Examples: ChatGPT Voice Mode, Pi AI, Character.AI, Call Annie, HelloTalk AI partners(Al-Kandari and Al-Ajmi, 2025: 11).

### 9. Real-Time Captioning & Transcription Tools

1.What they do: Generate live subtitles and transcripts for videos, lectures, or podcasts. Advanced tools let students click a word to re-hear just that sentence.

2.Impact on listening: Supports "bottom-up" processing. Students match sounds to text, then gradually phase captions out as skill grows.

3.Examples: YouTube auto-captions, Otter.ai, Microsoft Teams Live Captions, Ava (Wang and Huang, 2025: 4560).

### 10. Generative Content & TTS Customization

1.What they do: Teachers or students type a topic and CEFR level, and AI generates a custom listening passage read by multiple synthetic voices and accents.

2.Impact on listening: Solves the "boring textbook audio" problem. Students train with content they care about and hear global English, Arabic dialects, etc.

3.Examples: Twee, Diffit for Teachers, Eleven Labs, Play.ht, Natural Reader (Nutalapati et al, 2025: 4).

### 11. Intelligent Tutoring Systems with Listening Modules

First.What they do: Combine listening clips with automatic comprehension checks, then log errors to a dashboard. Follow-up drills are assigned to weak areas by the system. Two. Effect on listening: Makes practice a feedback loop. Data such as "70% of Class 2 missed main idea when speaker had British accent" is seen by educators. Three. Khanmigo, Carnegie Learning CL, Century Tech, and Edmentum are a few examples (Kishor et al., 2025: 410).

### 12. AI-Enhanced Video & Immersive Tools

First. What they do: During scenes, interactive video or VR/AR tools pause and pose questions, or they alter the scene in response to voice commands that students must comprehend. Two. Impact on listening: It helps with memory and meaning-making by contextualizing audio with images and action. Third. Examples include FluentU with interactive captions, Immerse VR, and Mondly VR (Long and Tsinakos, 2026: 187).

### 13. Analytics & Diagnostic Tools

First. What they do: Monitor metrics, such as the number of replays, areas of attention loss, and phonemes that are frequently overlooked. provides a profile for both the teacher and the student. Two. Effect on listening: Makes a skill that is invisible visible. Instead of simply "listening more," students practice strategically and learn why they mishear. Three. Examples include the majority of ASR apps, Pearson's Mondly, Cambridge One, and other ELT platforms (Yani et al., 2025: 40).

### 14.How These AI Applications Map To Listening Sub-Skills

The most well-known AI programs that map listening skills in Selective Al-Anbar secondary schools are shown in this section (Syair and Mujahid, 2025: 7981).

No.	Listening sub-skill	AI applications that target it
1.	Phoneme discrimination	ASR coaches, minimal-pair games with TTS
2.	Word recognition in connected speech	Adaptive platforms that slow down and highlight linking/reductions
3.	Main idea comprehension	Conversational agents that ask summary questions
4.	Detail/listening for specifics	Intelligent tutors with auto-graded quizzes
5.	Accent adaptation	TTS with 50 and voice options, generative content
6.	Note-taking while listening	Real-time transcription with AI summarizers
7.	Pragmatic listening	Role-play bots: job interview, customer service, academic lecture

**Table (3.1)Displays Applications Map of Listening Sub-Skills Adopted And Arranged By The Researchers (Pylypyshyna and Palamarchuk, 2024: 126).**

### 15.The Steps of Process AI Uses of Improving Students' Listening Skills

AI is not limited to "playing audio.". With every interaction, the cycle of diagnosis, adaptation, practice, and feedback becomes more accurate. In contemporary AI listening tools, the procedure usually operates as follows (Gilea et al., 2025: 875).

Steps	Discussions
<b>Baseline diagnosis</b>	
What happens	The student takes a short AI-administered placement test. The system measures current level, speed tolerance, accent familiarity, and common error types using Automatic Speech Recognition (ASR) and comprehension checks.
AI techniques used	Speech-to-text scoring, response time tracking, error pattern clustering.
Output	A learner profile, e.g. "B1 level, struggles with /th/ sounds, misses 40% of details when speech > 160 wpm."
<b>Content calibration &amp; selection</b>	
What happens	AI selects or produces audio that is "i+1," or marginally above the student's level, based on the profile. It regulates background noise, accent, speech rate, sentence length, and vocabulary.
AI techniques used	Large language models for text generation, text-to-speech with adjustable prosody, difficulty classifiers.
Output	A custom playlist of 2-3 minute clips on topics the student chose, voiced in multiple accents.
<b>Guided input delivery</b>	
What happens	AI adds scaffolds such as clickable transcripts, instant replay of 3-second segments, visual cues for important words, or live captions that gradually fade out only when necessary during listening.
AI techniques used	Forced alignment between audio and text, attention detection via webcam or interaction pauses, dynamic captioning.
Output	Student hears the clip with support that gradually removes itself as comprehension improves.
<b>Active response &amp; checking</b>	
What happens	AI asks the student to respond right away after the video: repeat a sentence, respond to comprehension questions, summarize to a chatbot, or finish a cloze exercise by voice.
AI techniques used	ASR to compare student speech to target, NLP to grade open-ended summaries, semantic similarity scoring.
Output	Instant score: "You caught 8/10 key details. Misheard 'economy' as 'a comedy'."
<b>Error analysis &amp; micro-diagnosis</b>	
What happens	The system pinpoints why something was missed. Was it unknown vocab, speed, linking between words, unfamiliar accent, or attention drop?
AI techniques used	Phoneme-level ASR alignment, confusion matrices, time-stamped interaction logs.
Output	Specific tags like "Reduction: 'going to' → 'gonna' missed 3x" or "Attention lapse at 0:42."
<b>Targeted micro-practice</b>	
What happens	AI creates drills that only target the identified weaknesses. If the problem was /r/ vs. minimal-pair games for the next five minutes after /l/. If it were speed, the same clip would return 10% slower before increasing in speed.
AI techniques used	Generative AI for drill creation, reinforcement learning to pick the most effective drill type for that student.
Output	3-5 short focused tasks instead of repeating the whole lesson.
<b>Spaced repetition &amp; retesting</b>	
What happens	The system schedules the same weak points to reappear tomorrow, in 3 days, and in a week, using different voices and contexts.
AI techniques used	Spaced repetition algorithms, curriculum sequencing models.
Output	Long-term retention instead of short-term recognition.
<b>Authentic application simulation</b>	
What happens	AI advances the student to unscripted tasks, such as voice chat with an AI character, following multi-step audio instructions, or listening to simulated noise, once accuracy reaches about 80%.
AI techniques used	Conversational agents, generative audio scenes, dynamic difficulty scaling.
Output	Student practices "real-world messy listening" with a safety net.
<b>Progress analytics for learner &amp; teacher</b>	
What happens	AI compiles data into dashboards: listening time, comprehension accuracy by skill, speed tolerance curve, accent coverage.
AI techniques used	Data visualization, learning analytics, predictive models that flag if a student will

	plateau.
Output	Teacher sees “Fatima improved 22% in detail listening this month but still needs British accent exposure.” Student sees a streak and next goals.

**Table (4.1) Shows The Steps of Process AI Uses of Improving Students’ Listening Skills Adopted and Arranged By The Researchers (Zuwanda and Pasaribu, 2025: 37)**

Students can complete 1-2 cycles per day due to the duration of each loop, which is approximately 10 minutes. The AI gradually removes more scaffolds and increases realism over weeks until the skill becomes a part of classroom and real-world listening. According to Antakoon et al (2025: 596), the table below provides an explanation of how the steps create a continuous loop in the classroom.

No.	Cycle phase	Student action	AI action
1.	Diagnose	Take quick test	Build skill profile
2.	Customize	Choose topics	Generate leveled audio
3.	Practice	Listen and interact	Provide scaffolds and track errors
4.	Feedback	Speak/type answer	Pinpoint exact error cause
5.	Drill	Do micro-tasks	Serve targeted exercises
6.	Apply	Do real-life role-play	Simulate authentic contexts
7.	Review	Check dashboard	Update profile & schedule review

**Table (5.1) Displays The steps Form A Continuous Loop In Classroom Adopted And Arranged By The Researchers(Naryatmojo et al, 2026: 409).**

#### 16.Input and output of artificial intelligence systems used to improve listening skills

AI tools for listening are essentially information-processing pipelines. You feed them specific data, and they return targeted actions or insights that help the student hear and understand better(Dorgham, 2025: 570).

Input and output of AI systems of improving listening skills		
Input type	Where it comes from	What the AI uses it for
Student voice responses	Microphone: student repeats, answers, or summarizes	ASR compares what was heard vs. what was said to detect misheard words
Clicks, pauses, replays	Interaction logs: timestamps of when student rewinds or slows audio	Identifies specific sentences or sound features causing difficulty
Quiz/comprehension answers	Multiple choice, fill-in-blank, open summaries	Measures understanding of main idea, details, inference
Profile data	Age, L1, CEFR level, goals entered at signup	Sets starting difficulty and accent/content preferences
Historical performance	Database of past sessions	Powers spaced repetition and avoids repeating mastered material
Teacher settings	Topic, dialect, skill focus selected by instructor	Constrains generated content to curriculum needs
Raw audio or text prompts	Uploaded MP3s, YouTube links, or “make a clip about climate change at B1”	Generates custom listening material on demand
What AI gives back: Outputs		
Output type	Form it takes	How it improves listening
Leveled audio	MP3 or streaming voice at calibrated speed/accent/vocab	Ensures input is comprehensible so learning can occur
Interactive transcript	Clickable text synced to audio, with hidden/shown options	Let’s students map sounds to words, then fade support
Error highlights	“You heard ‘ship’ but the word was ‘sheep’ /i:/ vs. /ɪ/”	Builds awareness of specific phoneme problems
Instant comprehension feedback	Score + explanation: “Main idea correct. Missed 2/3 details”	Prevents wrong mental models from fossilizing
Micro-drills	30-second exercises on one weak point, e.g. minimal pairs	Isolates and repairs sub-skills instead of repeating whole clips
Adaptive pacing commands	“Slowing down 15% for next sentence”	Keeps student in productive struggle zone
Progress analytics	Dashboard: accuracy by skill, speed	Shows learner and teacher what to

	tolerance, accent exposure	work on next
Conversational replies	AI voice that rephrases, repeats, or asks follow-ups	Trains real-time listening + processing under pressure
Scaffolds that fade	Captions → keywords only → no text	Gradually removes support so skill transfers to real life

**Table (6.1) Displays Input and output of artificial intelligence systems used to improve listening skills Adopted and Arranged by The Researchers(Dager Alarcón, 2025: 33)**

### 17. Classroom Activities Of AI Applications of Improving Students' Listening Skills

These are real activities the teacher or his/her students can use today. Each one tackles listening from a different angle, so the teacher/student can mix them based on what skill needs work(Aladini et al, 2025: 13).

Conversation & speaking bots with listening focus	
Activity	Function
ChatGPT Voice Mode	
What it does	Holds natural voice conversations. If you say “I didn’t understand,” it rephrases slower or with simpler words.
Listening skill it builds	Real-time comprehension, asking for clarification, processing spontaneous speech.
ELSA Speak	
Activity	Function
What it does	Plays a native sentence, you repeat it, and AI shows exactly which sounds you misheard using color-coded feedback.
Listening skill it builds	Phoneme discrimination, connected speech, word stress.
Call Annie / Pi AI	
Activity	Function
What it does	Voice-only AI friends that chat about any topic. No text on screen, so you must rely purely on listening.
Listening skill it builds	Sustained attention, inference, note-taking from audio.
Adaptive listening course apps	
Duolingo Stories with Audio Lessons	
Activity	Function
What it does	Adjusts playback speed and quiz difficulty based on your taps and replay count. Newer “Adventures” use generative voices.
Listening skill it builds	Main idea with detail comprehension at your level.
LingQ	
Activity	Function
What it does	Imports any YouTube video or podcast, generates interactive transcript, and tracks unknown words you mishear.
Listening skill it builds	Vocabulary decoding, accent variety, authentic content training.
Beelinguapp	
Activity	Function
What it does	Shows audiobooks with karaoke-style highlighting. AI TTS can read at 0.5x to 2x speed.
Listening skill it builds	Mapping sound to text, then fading text dependence.
Captioning & transcription aids	
YouTube + AI Dubbing	
What it does	Auto-captions in 100 languages, plus new AI dubbing that translates speech while matching lip timing.
Listening skill it builds	Bottom-up decoding with transcript support, then comparing L1 vs. L2 versions.
Otter.ai / Microsoft Teams Live Captions	
Activity	Function
What it does	Transcribes lectures in real time. Students can click any past sentence to re-hear just that chunk.
Listening skill it builds	Note-taking while listening, identifying when attention drops.
Language Reactor (Chrome extension)	

Activity	Function
What it does	Adds dual subtitles to Netflix/YouTube and lets you save with loop individual lines with ASR testing.
Listening skill it builds	Intensive listening of short bursts from movies/shows.
Content generators for custom practice	
Twee	
Activity	Function
What it does	Teacher types “B1 dialogue about booking a hotel” and AI writes the script + generates audio in 3 accents.
Listening skill it builds	Topic-relevant listening with controlled difficulty.
Diffit for Teachers	
Activity	Function
What it does	Turns any article into a leveled reading and listening passage with comprehension questions and audio.
Listening skill it builds	Academic listening, matching school subjects.
ElevenLabs / Play.ht	
Activity	Function
What it does	Converts any text to natural voices. Students can make listening quizzes from their own writing.
Listening skill it builds	Extensive listening with self-chosen content.
Classroom analytics & tutoring systems	
Microsoft Reading Coach / Reading Progress	
Activity	Function
What it does	Student listens to a passage, reads it back, and AI marks mispronunciations that often come from mishearing.
Listening skill it builds	Phonics connection between listening and speaking.
Khanmigo	
Activity	Function
What it does	AI tutor that can role-play scenarios like “job interview” and gives feedback if the student missed key info in prompts.
Listening skill it builds	Listening for specific information under pressure.
Century Tech	
Activity	Function
What it does	Assigns listening “nuggets” then uses AI to plot each student’s weak points on a dashboard for the teacher.
Listening skill it builds	All sub-skills, with data to guide human teaching.

**Table (7.1) Displays Classroom Activities Of AI Applications of Improving Students’ Listening Skills Adopted and Arranged by The Researchers(Koç, 2024: 521).**

### 18. Positive and negative effects of AI applications on improving listening skills

AI tools can speed up listening development, but they also introduce new challenges. There is a balanced breakdown teachers and students should know. The following table illustrates positive and negative effects of AI applications on improving listening skills concerning Student/teacher(Sahito, 2025: 1061).

Positive effects		
Area	What AI adds	Why it helps listening
Personalization	Adjusts speed, accent, vocabulary, and topic to each learner	Students stay in the “i+1” zone where input is challenging but understandable
Unlimited practice	Available 24/7 with endless new audio generated on demand	Total hours of input increases dramatically compared to 2-3 classes per week
Instant feedback	Flags misheard words, explains why, and replays exact chunks	Prevents wrong comprehension from fossilizing and builds metacognitive awareness
Lower anxiety	Learners can ask AI to repeat 20 times with no embarrassment	Reduces the “affective filter” so the brain is more open to processing sound

Accent & variety exposure	TTS generates US, UK, Indian, Nigerian, and Arabic English voices from one script	Trains the ear for real-world diversity instead of one textbook speaker
Data for teachers	Dashboards show class-wide weak points: speed, reductions, specific phonemes	Let's teachers target human instruction time where it's most needed
Authentic task simulation	Voice agents role-play job interviews, airport checks, phone calls	Bridges classroom listening to real-life pressure situations
Scaffolded independence	Captions, transcripts, and hints fade out as skill grows	Students gradually move from supported to autonomous listening
Negative Effects / Risks		
Area	Potential problem	How it can hurt listening development
Over-reliance on text	Students never turn captions or transcripts off	They may decode reading instead of actually training the ear
Passive consumption	Clicking "play" without active response or prediction	Hours of listening don't transfer if the brain isn't engaged
Algorithmic bubbles	AI keeps serving the easiest accent or slowest speed that gets "correct" answers	Learners avoid challenging input and plateau early
Loss of social cues	Most AI lacks interruptions, overlap, sarcasm, or group dynamics	Students struggle in real conversations where people don't take turns cleanly
Access & equity gaps	Needs stable internet, devices, and sometimes subscriptions	Can widen the gap between students in well-resourced vs. under-resourced schools
Cognitive offloading	Knowing AI will summarize later reduces motivation to listen carefully	Weakens attention stamina and note-taking skills
Accuracy issues	ASR still misjudges accents; TTS can have unnatural prosody	Students might learn wrong pronunciation or get frustrated by unfair scoring
Data privacy	Voice recordings of minors stored on servers	Raises concerns for schools about consent and data use
Teacher deskilling	If teachers defer all listening work to apps	Human modeling, strategy instruction, and cultural nuance get lost

**Table (8.1) Shows Positive And Negative Effects Of AI applications On Improving Listening Skills Adopted And Arranged By The Researchers(Erazo et al, 2024: 109)**

### 19.Ways to Maximize Positives And Reduce Negatives

This section explores the ways that illustrate maximize positives and reduce negatives, concerning Use AI for volume, humans for strategy in which AI give students 30 min/day of graded input. Use class time to teach prediction, note-taking, and how to handle breakdowns. Relating to toggle scaffolds on purpose in Week 1 captions on. In Week 2 captions off for first listen, on for review. In Week 3 declares no captions(Lv and Zhang, 2025: 10).

AI can automate this fade. Noting break the algorithm bubble deliberately set the AI to "challenge mode" twice weekly: faster speed, unfamiliar accent, background noise. Referring to combine with social listening. After AI practice, students do 5-minute pair summaries or group discussions (Mohammed and Elsayed, 2021: 301).

This adds interruption and negotiation AI lacks. Concerning check AI feedback in which Teachers spot-check ASR results. If it marks a correct answer wrong due to accent, discuss it so students

don't lose trust. Regarding set clear privacy rules that Use tools with school licenses, avoid accounts tied with which AI is strong at giving quantity, customizat ion, and micro-feedback for listening. Humans are still better at teaching listening strategies, cultural context, and coping with messy real talk. The best results come when the two are combined, not when one replaces the other(Suryana et al, 2020 : 50).

### 20.Conclusion , Findings, Suggestions For Further Studies

#### 20.1Conclusion

The general conclusion is that AI applications significantly and sustainably improve students' listening skills while also addressing related affective factors like anxiety, motivation, and engagement, according to recent studies and classroom practice (Li and Zhao, 2025: 7). AI applications have a lot of potential for teaching listening skills in EFL and ESL. They improve listening skills, reduce anxiety, boost motivation, and make authentic practice more accessible when used with the right pedagogical support. It is evident how teacher

practice and research from 2025 and 2026 are trending. AI transforms listening into active, customized training rather than passive comprehension (Xing and Saeed, 2025: 268).

However, effective implementation necessitates teacher preparation, reliable technology access, high-quality tools, and activities that prioritize self-regulation and interaction over passive consumption (DANIELA, 2024: 139). AI can provide personalized practice, immediate feedback, and engaging content, but it's no. However, it cannot take the place of long-term pedagogical design, varied listening input, and human interaction. Most current evidence shows short-term gains on narrow tasks, with questions remaining about transfer, retention, and real-world listening proficiency (Meher and Bariha, 2026: 129).

## 20.2 The Most Vital findings that support this conclusion

Measurable skill gains: Compared to control groups receiving traditional instruction, experimental groups utilizing AI-driven tools demonstrated significant increases in listening scores from pre-test to post-test. The AI method had consistent benefits in improving listening skills over time, according to linear mixed model analyses. Affective benefits: AI tools enhance "sense of flow" during listening tasks, boost motivation, and lessen listening anxiety. Because AI offers a secure, stress-free environment for repeated practice, learners report increased confidence and engagement. Authenticity and personalization: AI can produce listening material that is tailored to students' target accents, interests, and skill level. The issue of "boring or mismatched listening material" is resolved by programs like Notebook LM and Google AI Studio, which generate real conversations, summarize difficult subjects, or generate text-to-speech audio on demand. AI-generated voices are used by teachers for instantaneous KET-style practice.

The features that students value the most are automatic captions, speed control, replay features, pronunciation feedback, and the ability to convert texts into podcasts, all of which aid learners in comprehending spoken English and increasing their practice. Due to their accessibility, YouTube Auto-Caption, ELSA Speak, and Duolingo were the most popular. Pedagogical integration: When AI is combined with active learning, it functions best. It facilitates speaking-listening integration, independent study, and visual assistance. Researchers emphasize that instead of finishing assignments for students, AI should help them solve problems in order to develop critical thinking.

## 20.3 Suggestions For Effectiveness

This section makes a number of recommendations for future research.

Technology quality is important. Inaccurate captions, erratic internet, and a lack of free features diminish efficacy.

The teacher's role is still very important: Effectiveness depends on well-planned guidance, informed criticism, and facilitation by trained educators.

AI should complement human education, not replace it. Because an over-reliance on AI could jeopardize learner autonomy, a balance is necessary. "Shared agency," in which students stay involved while AI offers improved capabilities, yields the best results.

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