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# AI Chatbots and Musical Intelligence as Pedagogical Tools: Enhancing English Speaking and Listening Skills in Higher Education

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## Abstract

*In today's competitive educational environment in India, English is a key factor in a student's success in their professional career, but many colleges or universities are unable to offer them real-life, individual speaking practice. This research aims to explore the synergistic effect of the Theory of Multiple Intelligences (TMI), which consists of musical-rhythmic intelligence, towards the improvement of speaking and listening skills of university students using an AI Chatbot. This study explores the possibilities of combining rhythmic and tonal aspects of music with the adaptive and interactive capabilities of generative AI to address some of the pedagogical challenges and to foster intrinsic motivation. The study was qualitative, involving 15 students who were interviewed using a semi-structured approach to obtain an understanding of the experiences they had with these digital and musical tools. Thematic analysis was used to analyze the data to identify patterns in skill acquisition, engagement, and emotional resilience. The findings indicate that by implementing music activities and effective filter lowering using AI chatbots, the learning atmosphere is low-anxiety and immersive, facilitating students to feel comfortable taking language risks. There were significant improvements in listening skills reported, and the use of chatbots offered a patient practice partner for listening in context and fluency. Besides, the music and activities related to rhythm learned from AI improved pronunciation and oral communication. The findings also highlight the need for overcoming multiple challenges, including the danger of over-automation, the emergence of "imposter syndrome" with AI, and the digital divide. The study finds that such emerging technologies are transformative, but there should be a balance in pedagogical approaches that would run on human mentorship, digital literacy, and human-centric communication that would result in the successful and ethical implementation.*

**Keywords:** AI Chatbots, Musical Intelligence, Indian Higher Education, English Language Teaching, Speaking and Listening Skills, Qualitative Research.

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## I. INTRODUCTION

In the current globalized economy, English is now the 'language of technology, business and international communication and exchange' (Zhou et al., 2025). The ability to speak English is increasingly being viewed as a key factor in both economic mobility and professional success, especially for those pursuing higher education in the fast-growing field of engineering and information technology (IT) in India (Rana, 2026; Shashidhara et al., 2026). However, there are several consistent problems, such as limited access to individualized learning, the absence of opportunities for students to interact with the language in a meaningful manner for speaking, and unequal teaching quality, which most higher education institutions in India encounter (Rana, 2026; Shashidhara et al., 2026).

To address these pedagogical gaps, teachers have begun using Howard Gardner's theory of multiple intelligences as a model for more inclusive and effective teaching. It assumes that students absorb knowledge through different channels, such as musical intelligence, which refers to sensitivity towards rhythm, pitch, and intonation (Dastidar & Choudhury, 2018; Viandi et al., 2025). With respect to English Language Teaching, music can be used as an effective mediational instrument, as music and popular culture can be incorporated in the ELT curriculum, which can boost the motivation of learners as well as enhance communication ability in the engineering colleges in India (Indira and Lakshmi, 2010; Vinodh and Kesari, 2021). Instructors can design more personalized and interesting learning activities by aligning students' primary intelligence types with instructional activities, such as music-assisted pronunciation training (Zhang et al., 2025).

Concurrently with the theoretical changes, Artificial Intelligence is rapidly becoming a game-changer in the field of education. For instance, AI-powered chatbots like ChatGPT have shown promise in serving as dynamic language practice partners that can give immediate feedback and facilitate continuous learning outside the confines of the classroom (Setyawan & Pramudita, 2025). The results of the study conducted by the author with undergraduates in India suggest that there is statistically significant improvement in all four language skills using AI in mobile learning. Empirical studies with students from Indian undergraduate classes show statistically significant improvements in all four language skills when using AI in mobile learning (Rana, 2026). In fact, in the Indian education sector, voice-based chatbots have been found to be in high demand because of their capability to boost the speaking confidence of students in an open-ended manner by conversing with them (Shashidhara et al., 2026).

Although the idea of using both musical intelligence-based pedagogy and AI-based tools is beneficial for music education, there is a lack of research that investigates the potential synergy between these approaches. This study seeks to close this gap by examining the integration of musical intelligence, specifically through the rhythmic and tonal qualities of language, with AI chatbot interactions and their specific impact on the speaking and listening skills of the students in the higher education system in India. This study aims to provide a framework that integrates musical intelligence and the interactive power of AI.

## II. LITERATURE REVIEW

### 2.1. Theoretical Foundation: What does Musical Intelligence in ELT mean?

The use of music in English Language Teaching is mainly attributed to Howard Gardner's Theory of Multiple Intelligences, which considers musical-rhythmic intelligence as a unique cognitive ability that includes processing rhythm, pitch, and timbre (Dastidar & Choudhury, 2018; Viandi et al., 2025). MI has been used as a mediating process in the Indian education system to transcend the 'English for Specific Purposes' and create intrinsic motivation (Indira & Lakshmi, 2010). Research in Indian engineering institutes suggests that using a musical approach (including the use of popular English culture and rhythmic patterns) has a significant impact on the speaking ability of students in multilingual class environments (Dastidar & Choudhury, 2018; Indira & Lakshmi, 2010). In addition, music is a multimodal method, where the combination of both audio and visual perceptions helps to improve pronunciation and vocabulary acquisition, and it is a "low-anxiety" teaching method suitable for both primary and tertiary students (Viandi et al., 2025; Vinodh & Kesari, 2021).

## 2.2. An overview of AI Chatbots in Higher Education in India

With the advent of Generative AI, new opportunities have arisen to solve some of India's biggest learning challenges, including the lack of personalised practice and teacher shortages (Rana, 2026). Recent research on UG students in India shows that:

- **Skill Acquisition:** Using AI-powered mobile learning and ChatGPT, the students' performance in all the major language learning skills improved significantly, with significant improvement observed in fluency and vocabulary (Rana, 2026; Roy & Swargiary, 2024).
- **AI Solutions:** AI applications such as ELSA Speak and ChatGPT helped engineering students improve their pronunciation accuracy and confidence in communicative skills, especially in rural environments (Subramaniyan & Asharudeen, 2025).
- **Voice-Based Interaction:** A voice-based chatbot with open-ended conversations is highly demanded in low-resource Indian schools, and in direct association with this, there is a significant boost in student speaking confidence (Shashidhara et al., 2026).

## 2.3 Impact of AI Chatbots on Speaking and Listening Skills

The literature highlights the effectiveness of AI chatbots for receptive and productive oral skills development. The interactive and adaptive qualities of AI offer students personalized feedback that may not be available in a traditional classroom setting (Setyawan & Pramudita, 2025; Zhou et al., 2025). AI is presented as a "flexible and user-friendly" tool, but scholars stress that it should not be used to the learners' detriment and that it should promote their autonomy in learning (Rana, 2026; Roy & Swargiary, 2024).

## 2.4 The convergence of AI and musical intelligence

One of the new and emerging practices in digital pedagogy is the application of AI in music generation and "singing AI" as a tool to foster a connection between musical intelligence and language development (Jamaludin et al., 2025). Educational songs engaging students in listening comprehension and improving vocabulary retention are produced by using different tools such as the Suno AI platform (Nuc & Klusáčková, 2026; Solehudin et al., 2025).

**AI-Supported Composition:** Learners can utilize AI to write meaningful lyrics and create music, which will enable them to practice their vocal clarity and correct vowel sounds by singing along with the guidance of AI (Jamaludin et al., 2025).

**Motivation and Engagement:** Experimental results indicate that students recall significantly more vocabulary in the subsequent tests after listening to a song created by AI rather than a traditional one (e.g., a mean score of 6.2 for vocabulary retention, while a mean score of 4.2 for the traditional method was obtained) (Nuc & Klusáčková, 2026).

**Immersion Listening:** The studies have shown that AI-generated songs can provide an "emotionally rich language environment" that can stimulate interest in the target culture and systematically develop listening skills (Boguslavskaya & Khuong, 2026; Liu & Xu, 2025).

To conclude, literature indicates that the synergy of MI and AI has the potential to revolutionize ELT by fostering more inclusive, emotionally resonant, and scientific language acquisition (Boguslavskaya & Khuong, 2026; Jamaludin et al., 2025).

## III. RESEARCH OBJECTIVES AND QUESTIONS

The primary aim of this study is to explore the pedagogical synergy between Howard Gardner's Theory of Multiple Intelligences, specifically musical-rhythmic intelligence, and Artificial Intelligence chatbots in enhancing the English speaking and listening competencies of students in Indian higher education. By integrating AI, the research seeks to develop a holistic framework for language acquisition in competitive academic environments.

### 3.1. Research Objectives

To achieve this primary aim, the study addresses the following specific objectives:

1. To study the impact of combining musical-rhythmic activities and AI chatbot interactions on the development of receptive (listening) and productive (speaking) skills
2. To examine the role of MI-AI integration in fostering emotional resilience and creating a "low-anxiety" learning environment
3. To identify the perceived benefits and challenges of using AI-generated music and conversational agents.
4. To propose a pedagogical framework with educational theories to address the unique needs of Indian English Language Teaching

### 3.2. Research Questions

Based on the objectives above, the study seeks to answer the following research questions:

1. How does the integrated use of musical intelligence activities and AI chatbots influence the perceived development of English speaking and listening skills among university students in India?
2. In what ways does the convergence of music and AI technology contribute to reducing the "affective filter" and enhancing students' emotional resilience during language practice?
3. What are the primary pedagogical and technical challenges students face when engaging with an AI-MI supported language learning model?
4. To what extent do students perceive the use of AI-generated music and lyrics as an effective mediational tool for vocabulary acquisition and pronunciation?

## IV. METHODOLOGY

The study adopts a qualitative research design to examine the area of English Language Teaching convergence of the domains of Musical Intelligence and Artificial Intelligence. This is chosen because it offers students a level of insight into their perceptions, experiences, and "truths" of using digital and musical tools in their interactions with one another (Dewi et al., 2020; Mahmudova, 2026). This approach emphasizes the learners' lived experiences to capture the multifaceted emotional and cognitive changes that occur when AI and MI (Melisa et al., 2022; Wang, 2024) are integrated into traditional language learning.

### 4.1 Participants

Purposive sampling is used to select 15 students from MIT Art, Design and Technology University, Pune, India. The limited number of respondents in this sample size enables qualitative discussion of different viewpoints and keeps the data volume manageable for thematic extraction (Mahmudova, 2026; Wang, 2024).

### 4.2 Data Collection: Semi-Structured Interviews

The main data collection tool is a semi-structured interview, which is a flexible yet focused tool, allowing participants to share information on their learning experiences (Karataş et al., 2024; Wei, 2023).

**Structure and Flexibility:** The interviews are built on the themes of the impact of AI application, advantages, disadvantages, and the effectiveness of music-integrated activities (Karataş et al., 2024; Wang, 2024).

**Conduct and Context:** Each interview was conducted for about 15-20 minutes and was carried out in a comfortable setting to ensure that the responses are clear and deep (Guan et al., 2024; Karataş et al., 2024).

**Thematic Focus:** Students' attitudes towards AI-assisted feedback, their levels of motivation in relation to MI activities (e.g., singing, rhythmic activities), as well as their confidence in speaking and listening (Melisa et al., 2022; Wei, 2023) are explored through open-ended interview questions.

### 4.3 Data Analysis

The qualitative data obtained from the interviews were analyzed by thematic analysis. The analysis follows the frameworks developed by Braun and Clarke or Creswell, and includes the following steps:

**Data Familiarization:** Rewriting and reading the interview transcripts several times (Guan et al., 2024; Melisa et al., 2022).

**Coding:** Coding main parts of the text (Guan et al., 2024; Melisa et al., 2022).

**Theme Identification:** Aggregating codes into more general themes in terms of the experiences of the participants with AI and MI (Guan et al., 2024; Melisa et al., 2022).

The qualitative model allows the study to go beyond skill assessment, revealing the mechanisms and reasons behind the effect of these new technologies and theories on the whole learner (Guan et al., 2024; Mahmudova, 2026).

## V. RESULTS

Thematic analysis of semi-structured interviews with 15 students gave insights into the role of Musical Intelligence and AI chatbots in English speaking and listening skills. The outcomes are grouped into four main themes, which represent the variety of learning experiences of the participants.

### 5.1 Student Engagement in AI-Assisted Learning

The introduction of AI chatbots was called a "refreshing and captivating" experience, transforming traditional learning into an interactive adventure, by participants (Wei, 2023).

**Immersive Atmosphere:** Students observed that the dynamic experience of AI exercises and the instant feedback were more effective at keeping their attention than the traditional format, which they described as creating an "immersive atmosphere" (Wei, 2023).

**Engagement Through Challenges:** The interviewees described interactive AI tasks as "puzzles they wanted to solve," which demonstrated a move towards active engagement in learning (Wei, 2023).

### 5.2 The impact on Receptive and Productive Skills

The interviews were detailed examples of how AI-based teaching specifically addressed speaking and listening skills.

**Listening Skill Improvement:** Students noted that they could "take in the main ideas better" and "use language in a contextually appropriate manner". The chatbot was frequently characterized as a "practice partner with enduring patience," providing a consistent model for listening practice

**Contextual Vocabulary and Fluency:** Participants valued the ability to utilize resources like ChatGPT for "contextual vocabulary learning" and for "immediate feedback on word usage," which directly aided in their communicative fluency.

**Pronunciation and Accuracy:** A significant number of students reported that they noticed a great improvement in pronunciation and accuracy of their speech, citing the flexibility and interactivity of the digital tools as a key part of this.

### 5.3 Emotional Resilience and "Low-Anxiety" Environment

One of the main findings was the considerable decrease in the affective filter. AI-based teaching was a springboard to create a "positive and supportive learning environment" (Wei, 2023).

**Risk-Taking:** Students indicated that they felt more comfortable with taking risks and making mistakes, creating a growth mindset.

AI Chatbots helped students at all levels of achievement to become more engaged and build confidence. One student explicitly mentioned the process brought him/her a "sense of hope" about his/her academic development.

#### 5.4 Challenges and Human-centric concerns

Although the digital pedagogies appeared positive, the qualitative data revealed critical issues that affect the overall effectiveness of digital pedagogy:

**Language Barriers for LAs:** Some LAs struggled to keep up with the speed of AI speech, causing them to sometimes feel "frustrated" and "demotivated".

Both teachers and students reported issues of "over-reliance on technology" and the potential for technology to reduce the human element in learning, such as the "cultural nuances".

The participants also expressed that self-directed learning demands require "strengthened self-directed learning skills" for successful integration, while some students suffered from being "distracted" or practicing "unrelated practices" without pedagogical guidance

Overall, the interviews indicate that the introduction of AI and MI tools is a 'transformative' experience in terms of engagement and skills development, but does require a human hand to interpret the cultural and conversational nuances and is dependent on digital literacy levels. To sum up, the in-use of AI/MI tools is a 'transformative' experience in terms of engagement and skill acquisition; however, the success of their use requires the continued presence of a human element to interpret the cultural and conversational nuances and digital literacy levels.

### VI. DISCUSSION

The qualitative interview analysis is synthesized with the existing academic research, which shows that the blending of the concepts of 'Musical Intelligence' and 'Artificial Intelligence' in English Language Teaching can make a difference. The following discussion deepens the themes emerging from the results, based on the affordances and risks that are identified in recent scholarly work.

#### 6.1 The positive synergy in receptive and productive skills

The use of AI in music education directly supports aspects of core language learning, as well as offering a multimodal approach to learning. The results of this study are compatible with the studies that found that AI-aided music education can be a worthwhile way to develop vocabulary, practice grammar, and enhance pronunciation (Jamaludin et al., 2025). Through the use of AI for lyric writing and directed singing, students have the opportunity to experience accurate English vowels and pronunciation while developing both their musical and language skills (Jamaludin et al., 2025).

Moreover, the learning of listening skills is the focus of AI chatbots, a key component of linguistic interaction that is likely best learnt through repeated interactions in natural, informal settings (Zhou et al., 2025). Data indicate that more effective and efficient learning environments can be created using interactive AI-based learning rather than lecture-based instruction, enabling students to learn new content faster and to stay more engaged with content (Yin & Guo, 2024). These AI tools can be particularly helpful for students from overseas or multilingual students who might find classroom difficulties more challenging in their native languages than in English (Al-Shallakh, 2024).

#### 6.2 Emotional Dimensions and Psychological Safety

One of the most important results that emerged from one of the themes was the decrease in anxiety on the part of students and the building of confidence. Music and AI's cross-disciplinary nature create a space that is inclusive and enjoyable for all students, whether they have previous musical experience or not (Jamaludin et al., 2025). The challenges of moving to AI-driven teaching, though, add a complicated emotional dynamic. While AI tools can be linguistic aids and academic productivity, they also carry emotional risks such as dependency and what Domingo (2025) calls "AI-Induced Impostor Syndrome" (AI-I-I), which is the sense that students are not self-authentic.

To address these dangers, teachers need to incorporate SEL into their discussions and use of AI, focusing on reflection, discussion, and mentorship (Domingo, 2025). Moreover, the literature indicates that direct contact is still crucial even when employing advanced AI-assisted virtual artists, as students can feel tired and lose focus if they are not able to interact with them in person (Yin & Guo, 2024).

### 6.3 The proposed MI-AI Pedagogical Framework for ELT in Indian Higher Education

This study is based on the findings and supported by literature; it is proposed that English Language Teaching in Indian higher education should be based on the Musical Intelligence – Artificial Intelligence (MI-AI) Integrated Framework. The framework combines Gardner's theory of multiple intelligences, Communicative Language Teaching, Sociocultural Theory, and Krashen's Affective Filter Hypothesis with the new AI technologies. It demonstrates the synergy of musical-rhythmic activities and AI-based language learning tools in cooperative learning to manage learner anxiety, boost learner autonomy, and strengthen the learner's speaking and listening skills, while maintaining ethical and human-centered pedagogical practices.



Fig.1. MI-AI Integrated Framework for English Language Teaching

English language teaching in higher education in India is put forward in the form of the MI-AI Integrated Framework as depicted in Figure 1. The framework is designed to promote learner autonomy, to motivate learners to speak and listen through interactive practice, personalized feedback, and music-related learning experiences. Ethical application of AI and teacher guidance are key components to effective and responsible implementation.

### 6.4 Ethical integration and academic integrity

The issues mentioned in the study on over-reliance and digital literacy are echoed in other educational discussions about the ethical use of AI in higher education. With the increasing integration of these tools into teaching and learning, there are many challenges to deal with, specifically in terms of academic integrity and the prospect of critical thinking skills being undermined (Arkharova, 2026).

**Digital and AI literacy:** The need for 'AI literacy' to tackle complex issues of plagiarism, copyright, and unethical use of multimedia resources (Bran & Grosseck, 2024).

**Balanced Pedagogy:** It is crucial to adopt a sociocultural and critical pedagogy approach that encompasses AI as a "cultural agent" (Sultana et al., 2026). Teachers should strive to be balanced in the teaching-learning process that fosters process-based learning and morals-based cooperation between disciplines (Sultana et al., 2026).

To conclude, while AI and Musical Intelligence are considered “transformative” in enhancing engagement and skill development, their application should be handled with ethical awareness, and the human touch remains essential to handle cultural and conversational nuances (Al-Shallakh, 2024; Domingo, 2025; Sultana et al., 2026).

## VII. LIMITATIONS OF THE STUDY

The use of Music and Artificial Intelligence in ELT is a good pedagogical opportunity, and there is limited research done in this area in the context of Higher education in India. While the positive effect of MI activities on engineering students has been reported earlier (Dastidar & Choudhury, 2018; Indira & Lakshmi, 2010), and the positive effect of AI chatbots on improving students' speaking and listening skills has been proven (Setyawan & Pramudita, 2025; Zhou et al., 2025), the application of both methods in one study has not been attempted before. Researchers tend to consider these interventions in isolation without appreciating the value of the rhythmic and tonal features of music for helping generative AI (Jamaludin et al., 2025; Nuc & Klusáčková, 2026) to interact adaptively and conversationally. There are some caveats to this information, however. The study is qualitative in nature, and the number of participants (n=15) is small, which limits the generalizability of the study findings (Mahmudova, 2026; Wang, 2024). Since the data used in this study are qualitative, they are the students' perceptions of the gains made rather than empirical and objective values (Karataş et al., 2024; Wei, 2023). Further, the study was conducted in only one university, which might not represent the diverse socio-economic and technological situations of the Indian educational landscape (Javed, 2024).

In addition, students' digital literacy was not uniform, making it challenging to apply AI tools consistently, and this could significantly impact the effectiveness of the intervention on students. Furthermore, the study provides insights into possible long-term implications, such as AI-induced impostor syndrome and reliance on automated feedback, which could impact learners' autonomy (Domingo, 2025; Sultana et al., 2026). Lastly, given the lack of a control group and longitudinal data, it is challenging to separate out the long-term effect of the MI-AI integration from other factors of instruction that were taking place at the same time. Future research should provide further validation of the results of this preliminary study using mixed-methods and multi-institution cohorts.

## VIII. CONCLUSION

The integration of Musical Intelligence and Artificial Intelligence is important for English Language Teaching in Higher Education in India. The study has demonstrated that the rhythm and tone of music, merged with the adaptive and interactive nature of AI, may provide feasible solutions to resolve the issues of English speaking and listening skills. This change from traditional to interactive to digitalized environments opens new opportunities and ensures a student-centered and personalized learning experience.

This study's results highlight the impact music and AI have on the emotional experience of the classroom, beyond just their role in teaching skills. AI compositions and voice-recognized chatbots foster a "low-anxiety" learning atmosphere that allows students to take the linguistic risks necessary to develop confidence in their language usage, as they repeat their ideas in real, spoken language. These tools provide an effective, scalable answer to communicative fluency in the environment of competitive academic study, especially for Engineering students.

The journey to effective digital pedagogies, however, is not a smooth one. This study has shed light on the challenges associated with the digital divide, the potential for excessive dependence on automated systems, and the psychological effects of AI-driven feedback. The digital divide, the risk of relying too heavily on automated systems, and the psychological impact of the feedback provided by AI are all important considerations that require careful management. As technology advances, questions of data privacy and the importance of preserving human-centric mentorship hold a central place in ensuring that innovation doesn't diminish the pedagogical integrity or cultural nuances of teaching.

In conclusion, the future of English language education in India hinges on a balanced blend of technological innovation and robust educational principles. If the Educator can see AI and Musical Intelligence as partners rather

than a replacement for teaching, he will have a framework for Language Learning for a sustainable future that is engaging and highly effective. Embracing technology and opportunities to make these tools a learning asset, not a liability, is essential as we move into the digital age, and we should still be focused on not just language, but emotional and cognitive resilience in a learner's ability to succeed throughout life.

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