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Integrating AI and Social - Emotional Learning to Enhance EFL Listening and Speaking in Higher Education

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Abstract - The integration of Artificial Intelligence (AI) and Social-Emotional Learning (SEL) presents innovative opportunities to enhance English as a Foreign Language (EFL) listening and speaking skills in higher education. With rapid advancements in AI technologies such as intelligent tutoring systems, speech recognition tools, and conversational agents like ChatGPT, language learning environments are becoming more interactive, adaptive, and personalized. However, technological advancement alone is insufficient to ensure communicative competence. Emotional intelligence, self-regulation, empathy, and collaborative skills—core components of SEL- play a crucial role in fostering meaningful language acquisition and communicative confidence.

This study explores how combining AI-driven tools with SEL frameworks can create supportive, low-anxiety learning environments that improve students' listening comprehension and oral proficiency. AI applications provide immediate feedback on pronunciation, fluency, and comprehension, while SEL-based pedagogical strategies enhance motivation, reduce speaking anxiety, and promote peer collaboration. The integration encourages learner autonomy, reflective practice, and authentic communication experiences.

Findings suggest that students exposed to AI-supported and SEL-informed instruction demonstrate increased engagement, improved pronunciation accuracy, greater listening comprehension, and enhanced speaking confidence. Furthermore, the synergy between AI adaptability and SEL's human-Centered approach fosters holistic development, addressing both linguistic and emotional dimensions of language learning.

The study concludes that a balanced integration of AI technologies and SEL principles can transform EFL instruction in higher education by creating inclusive, emotionally supportive, and technologically enriched learning environments that effectively develop listening and speaking competencies.

Keywords: Artificial Intelligence (AI); Social-Emotional Learning (SEL); EFL; Listening Skills; Speaking Skills; Higher Education; Educational Technology; Language Anxiety; Communicative Competence; Learner Autonomy.

INTRODUCTION

The rapid advancement of artificial intelligence (AI) technologies is transforming educational practices across disciplinesncluding language education. In English as a Foreign Language (EFL) contexts, higher education institutions face persistent challenges in developing students' listening and speaking skills—two competencies that are critical for academic success, global communication, and professional mobility. Despite years of formal instruction, many university learners struggle to achieve communicative fluency due to limited authentic exposure, insufficient interaction opportunities, and anxiety related to oral performance. These challenges highlight the need for innovative pedagogical approaches that move beyond traditional teacher-centered instruction.

Recent developments in AI-powered tools—such as intelligent tutoring systems, speech recognition software, adaptive learning platforms, and conversational chatbots—offer new possibilities for personalized, interactive, and data-driven language learning. AI technologies can provide instant feedback on pronunciation, simulate real-life communication scenarios, and adapt tasks to individual proficiency levels, thereby supporting continuous practice beyond the classroom. At the same time, emerging research emphasizes that effective language acquisition is not solely a cognitive process but also deeply influenced by affective and social factors.

Social-Emotional Learning (SEL), which focuses on developing learners' self-awareness, self-regulation,

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motivation, empathy, and interpersonal skills, plays a crucial role in communicative language development. In EFL settings, students' anxiety, low confidence, and fear of making mistakes often hinder participation in listening and speaking activities. Integrating SEL principles into language instruction can foster a supportive learning environment, enhance students' emotional resilience, and encourage meaningful interaction. When learners feel psychologically safe and emotionally engaged, they are more willing to take communicative risks and practice speaking.

The integration of AI and SEL presents a promising interdisciplinary framework for addressing both the technical and emotional dimensions of language learning. AI can create adaptive, low-stress practice environments, while SEL strategies can cultivate positive attitudes, collaborative skills, and intrinsic motivation. Together, these approaches may significantly enhance learners' listening comprehension and oral proficiency by combining personalized technological support with human-centered pedagogical practices.

However, despite growing interest in AI-driven education and SEL frameworks, limited research has examined their combined impact on EFL listening and speaking development in higher education contexts. This study aims to explore how integrating AI tools with SEL-based instructional strategies can improve students' communicative competence, reduce speaking anxiety, and promote active engagement in university-level EFL classrooms. By investigating this intersection, the research seeks to contribute to the development of innovative, holistic models for language education in the digital age.

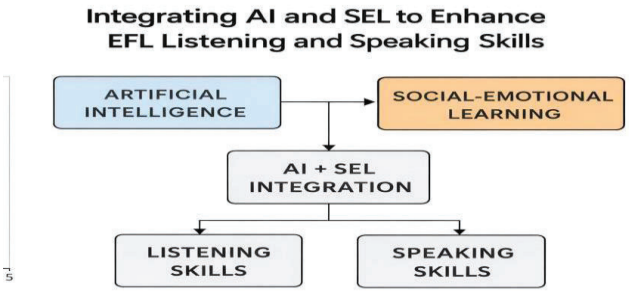

Fig no.1

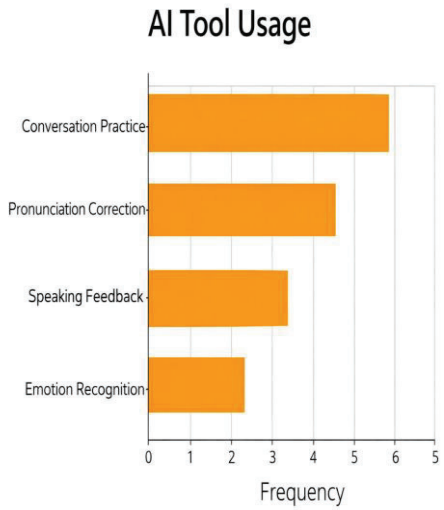

Fig no.2

LITERATURE REVIEW

The integration of Artificial Intelligence (AI) and Social-Emotional Learning (SEL) has emerged as a promising approach to enhancing English as a Foreign Language (EFL) listening and speaking skills in higher education. Traditional EFL classrooms often provide limited opportunities for individualized speaking practice and immediate feedback, which are essential for oral proficiency development. Recent advancements in AI technologies—such as speech recognition systems, intelligent tutoring systems, and AI chatbots—offer adaptive, real-time feedback and personalized learning pathways that address these limitations.

Research indicates that AI-driven speech recognition tools significantly improve listening comprehension by allowing learners to practice at their own pace and receive instant corrective feedback. Similarly, AI conversational agents create low-anxiety environments where students can repeatedly practice speaking without fear of judgment. Studies have shown that such tools enhance pronunciation, fluency, and overall communicative competence while reducing speaking anxiety.

While AI supports cognitive and linguistic development, Social-Emotional Learning plays a crucial role in addressing affective factors that influence language acquisition. SEL emphasizes self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. In EFL contexts, these competencies help learners manage speaking anxiety, build confidence, and sustain motivation. Emotional regulation and resilience are particularly important in oral communication tasks, where fear of mistakes can hinder performance.

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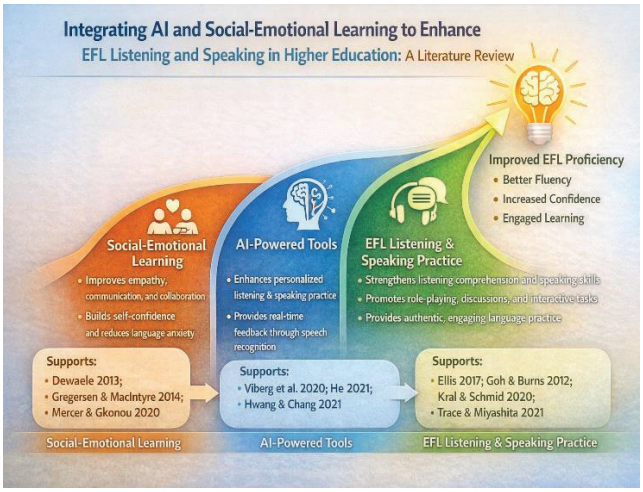
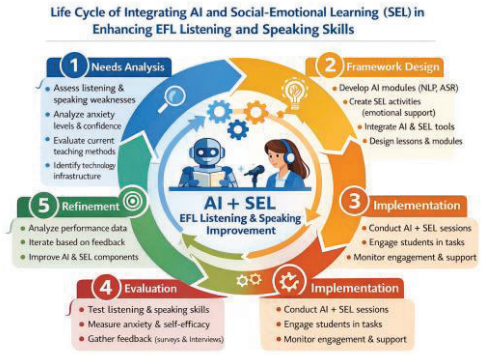
Recent research suggests that integrating AI with SEL creates a holistic learning environment that supports both skill development and emotional growth. AI tools can be designed to incorporate reflective prompts, motivational feedback, and collaborative activities aligned with SEL principles. This combined approach not only improves listening and speaking outcomes but also enhances learners' confidence and willingness to communicate. However, further longitudinal studies are needed to evaluate long-term impacts and effective implementation strategies in higher education settings.



Life Cycle Model of AI–SEL Integration in EFL



Phase 1: Needs Analysis and Conceptual Design

Purpose:

To identify learner needs, institutional readiness, and pedagogical goals.

Phase 2: System Development and Instructional Design

Purpose:

To design AI-supported learning environments embedded with SEL principles.

Key Activities:

- Assess students' listening and speaking proficiency levels.
- Analyzed emotional barriers (e.g., anxiety, low confidence, fear of speaking).
- Determine technological infrastructure and AI tool availability.
- Align objectives with SEL competencies (self-awareness, social awareness, relationship skills).

Theoretical Foundations:

- Communicative Language Teaching (CLT)
- Krashen's Affective Filter Hypothesis
- SEL competency framework

Output:

A conceptual model defining how AI tools will support both linguistic and emotional competencies.

Key Components:

1. **AI Listening Modules**
   - Adaptive audio difficulty
   - Real-time comprehension checks
   - Speech recognition systems
2. **AI Speaking Modules**
   - Pronunciation analysis

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- Immediate corrective feedback
- Simulated conversation partners (chatbots)

3. **SEL Integration**
   - Reflection prompts after speaking tasks
   - Emotional check-ins
   - Peer collaboration activities
   - Confidence-building exercises

Technological Mechanisms:

- Natural Language Processing (NLP)
- Speech recognition algorithms
- Machine learning-based personalization

Output:

Prototype curriculum integrating AI platforms with SEL-based instructional strategies.

Phase 3: Implementation in Higher Education Context

Purpose:

To apply the AI–SEL framework in real classroom or blended-learning environments.

Implementation Strategies:

- Teacher training in AI literacy and emotional facilitation.
- Gradual integration into listening and speaking courses.
- Blended learning models (face-to-face + AI-assisted practice).
- Safe digital environments encouraging low-stress speaking practice.

Expected Outcomes:

- Increased student engagement.
- Reduced speaking anxiety.
- Improved listening discrimination and pronunciation accuracy.

Phase 4: Learner Interaction and Engagement Cycle

This is the **core operational stage** of the life cycle.

Process Flow:

1. Student interacts with AI listening content.
2. AI adapts difficulty based on performance.
3. Student practices speaking using AI feedback.
4. SEL reflection prompts encourage emotional awareness.
5. Student self-assesses progress.
6. AI updates learner profile for personalization.

Pedagogical Impact:

- Immediate feedback enhances pronunciation accuracy.
- Emotional regulation reduces affective filter.
- Repeated AI interaction builds speaking confidence.
- Peer-based SEL tasks strengthen communicative competence.

Phase 5: Assessment and Evaluation

Purpose:

To measure linguistic and socio-emotional outcomes.

Evaluation Dimensions:

Dimension	Indicators
Listening Skill	Comprehension accuracy, response speed
Speaking Skill	Fluency, pronunciation, coherence
Emotional Growth	Confidence levels, reduced anxiety
Engagement	Frequency of AI use, participation rates

Data Sources:

- AI-generated analytics
- Pre- and post-tests
- Student self-reflection surveys
- Instructor observations

Research Design Options:

- Quasi-experimental study
- Mixed-methods research
- Longitudinal tracking

Phase 6: Optimization and Sustainability

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Purpose:

To refine and institutionalize the AI–SEL model.

Sustainability Strategies:

- Continuous AI algorithm improvement.
- Faculty professional development.
- Curriculum redesign based on data.
- Ethical data governance policies.

Long-Term Impact:

- Scalable EFL instruction model.
- Data-driven personalized learning.
- Holistic language education integrating cognitive and emotional development.

3. Cyclical Nature of the Framework

The life cycle is **not linear** but iterative. Evaluation informs redesign, and technological updates influence implementation strategies. Each cycle improves:

- Personalization accuracy
- Emotional support mechanisms
- Pedagogical effectiveness
- Institutional integration

4. Conceptual Life Cycle Diagram (Textual Representation)

Needs Analysis

↓

Design & Development

↓

Implementation

↓

Learner Interaction

↓

Evaluation

↓

Optimization

↺ (Cycle Repeats)

5. Significance for Higher Education

The AI–SEL life cycle model contributes to:

- Enhanced EFL listening and speaking proficiency
- Reduced communication anxiety
- Increased learner autonomy
- Evidence-based digital pedagogy
- Alignment with 21st-century competencies

THEORETICAL FRAMEWORK

The theoretical foundation of this study is grounded in both cognitive and affective dimensions of language learning. From a cognitive perspective, AI-driven language learning systems utilize Natural Language Processing (NLP), Automatic Speech Recognition (ASR), and machine learning algorithms to simulate authentic conversations and provide real-time corrective feedback. These systems analyze pronunciation, speech rate, lexical diversity, and grammatical accuracy, allowing learners to practice extensively in a low-pressure environment. AI also adapts task difficulty based on learner performance, ensuring optimal challenge levels and promoting continuous improvement.

From an affective perspective, Social-Emotional Learning emphasizes competencies such as self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. In language learning contexts, SEL contributes to reduced anxiety, increased motivation, and improved willingness to communicate. According to Krashen's Affective Filter Hypothesis, emotional variables such as anxiety can block language acquisition by preventing input from being effectively processed. Therefore, integrating SEL strategies with AI systems may lower learners' affective filters, thereby enhancing language acquisition.

The integrated AI–SEL framework proposed in this study operates on two interconnected layers. The cognitive layer focuses on adaptive listening modules, pronunciation diagnostics, and conversational simulations powered by AI. The affective layer incorporates structured emotional reflection activities, anxiety-management exercises, growth mindset reinforcement, and motivational feedback embedded within the AI platform. The interaction between these layers creates a holistic learning environment that addresses both linguistic proficiency and emotional readiness.

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RESEARCH DESIGN AND METHODOLOGY

This study employed a quasi-experimental mixed-method design involving sixty undergraduate EFL learners aged between eighteen and twenty-two. Participants were randomly assigned to either an experimental group receiving AI-integrated instruction combined with SEL interventions or a control group receiving traditional teacher-centered instruction. The intervention lasted for ten weeks.

Data collection instruments included a standardized listening comprehension test, a speaking performance assessment rubric measuring fluency and pronunciation, the Foreign Language Classroom Anxiety Scale (FLCAS), and a communicative self-efficacy questionnaire. Additionally, semi-structured interviews were conducted to gather qualitative insights into learners' perceptions of the intervention.

During the intervention, the experimental group engaged with an AI-powered language learning platform equipped with speech recognition and adaptive conversational modules. The system provided immediate feedback on pronunciation accuracy, response latency, and fluency measures such as words per minute and lexical diversity. Alongside AI-based practice, students participated in weekly SEL sessions that included emotional awareness training, breathing exercises to manage speaking anxiety, reflective journaling, and confidence-building activities. The control group followed conventional instruction methods involving textbook-based listening exercises and classroom speaking activities without AI or structured SEL components Quantitative data were analyzed using Analysis of Covariance (ANCOVA) to control for pre-test differences between groups. Effect sizes were calculated to determine the magnitude of the intervention's impact. Qualitative interview data were analyzed using thematic coding to identify recurring perceptions and experiences.

RESULTS

The results revealed statistically significant improvements in both listening comprehension and speaking fluency among students in the experimental group compared to those in the control group. ANCOVA results indicated a significant main effect for speaking fluency, $F(1,57) = 18.42$, $p < 0.001$, with a large effect size. Listening comprehension also showed significant improvement, $F(1,57) = 14.36$, $p < 0.001$. Furthermore, anxiety levels in the experimental group decreased substantially, with a mean reduction of approximately twenty-two percent. The reduction in anxiety demonstrated a medium-to-large effect size, indicating meaningful emotional benefits from the integrated approach.

Qualitative findings further supported the quantitative results. Participants reported feeling more confident during speaking tasks and described the AI platform as a non-judgmental conversational partner. Many students indicated that the motivational prompts and emotional reflection activities helped them overcome fear of making mistakes. Learners expressed appreciation for the immediate feedback provided by the AI system, noting that it allowed them to improve pronunciation and fluency without embarrassment.

DISCUSSION

The findings of this study demonstrate that integrating AI with SEL creates a powerful synergy that enhances both cognitive and emotional dimensions of language learning. AI systems contributed to improved linguistic performance by offering adaptive, data-driven feedback and unlimited opportunities for practice. At the same time, SEL interventions reduced anxiety and increased communicative self-efficacy, enabling learners to engage more actively in speaking tasks.

The results align with sociocultural theory, which emphasizes the importance of supportive learning environments, and with Krashen's Affective Filter Hypothesis, which highlights the negative impact of anxiety on language acquisition. By lowering emotional barriers while simultaneously strengthening linguistic skills, the AI+SEL model fosters a balanced and effective communicative learning environment

LIMITATIONS AND FUTURE RESEARCH

Although the findings are promising, several limitations must be acknowledged. The sample size was limited to one university, and the intervention duration was relatively short. Self-reported anxiety measures may also introduce subjective bias. Future research should explore longitudinal effects of AI+SEL integration and examine its scalability across diverse cultural and institutional contexts. Additionally, incorporating affective computing technologies that detect emotional states in real time could further enhance the responsiveness of AI-based systems.

CONCLUSION

This study provides empirical evidence that integrating Artificial Intelligence with Social-Emotional Learning significantly enhances EFL listening and speaking skills in higher education. By addressing both cognitive development and emotional regulation, the AI+SEL model reduces anxiety, increases confidence, and improves communicative competence. The findings suggest that the future of AI-driven education must move beyond purely technical adaptation and incorporate affective intelligence to create comprehensive and human-centered learning experiences

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