Chuyên đề:

USING AI APPS TO ASSIST TEACHERS IN DESIGNING LISTENING TASKS FOR GIFTED STUDENTS

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ABSTRACT

This research investigates the use of Artificial Intelligence (AI) to enhance listening comprehension lessons for gifted students. The study utilizes an AI personalization framework that increases task difficulty level of the lesson, fosters self-learning, and optimally engages students' attention, which AI actively supports self-directed learning. Several teaching strategies are suggested to enable advanced, differentiated instruction at scale and provide disproportionate, yet equitable, access to higher-order language learning opportunities. The conclusions have implications for teaching and future research.

KEYWORDS: *Artificial Intelligence, Listening, Gifted Students.*

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PART A: INTRODUCTION

1. Rationale of the study

Language acquisition in English may be impossible without listening, as it provides crucial input for second language students' development. (Darti & Asmawati, 2017; Gilakjani & Ahmadi, 2011). Due to its concentration requirements and inconsistent vocalizations of English, listening is often considered a challenging skill to master. (Abdalhamid, 2012; Darti & Asmawati, 2017; Gilakjani & Ahmadi, 2011; Sa'diyah, 2016). Gifted students who excel in English possess exceptional auditory processing abilities, enabling them to comprehend, analyze, and synthesize spoken language with remarkable proficiency. Their advanced listening skills involve higher-order cognitive functions such as critical thinking, inference, and contextual understanding, which allow them to decode complex narratives, interpret subtle nuances in language, and craft compelling responses—whether in a literature competition, a debate, or a national English Olympiad. Nonetheless, the competition among students during examinations for the gifted, particularly in English, is substantial. This is an environment populated by individuals possessing inherent talent. The determination of superiority is contingent upon ability and the learning environment. In addition to the fact that students with innate talent require a diverse and extensive source of learning materials, the exercises must be of an adequate degree of difficulty so as to motivate them to formulate ideas, use their intellectual capacity in an effort to replicate their understanding that they have accumulated, and demonstrate it in their academic assignments and standardized tests."Without appropriately challenging listening tasks, gifted students may become disengaged or underperform. Educators must provide advanced materials, such as complex speeches or literary analyses, to fully engage their auditory and cognitive abilities." – Tomlinson, C. A. (2001). How to Differentiate Instruction in Mixed-Ability Classrooms.

Accordingly, there is a demand for educators to invest a significant amount of time in conducting in-depth research with the intent to locate appropriate and essential educational materials that are tailored to the requirements of the gifted students. However, "Time constraints are a significant barrier to designing effective teaching activities. Teachers often report that they do not have enough time to create differentiated lessons, particularly for gifted students who require more complex and engaging tasks." –

Reis, S. M., & Renzulli, J. S. (1997). The Schoolwide Enrichment Model: A Comprehensive Plan for Educational Excellence. Creative Learning Press. Furthermore, there is a problem with limited sources of information, as the documents available are insufficiently diverse and do not meet specific requirements. "Teachers frequently report a lack of resources and professional development opportunities to support the design of effective teaching activities for gifted students. This gap often forces them to rely on generic materials that fail to address the unique needs of advanced learners." – Reis, S. M., & Renzulli, J. S. (2009). The Schoolwide Enrichment Model: A How-To Guide for Talent Development. Prufrock Press.

In recent years, the integration of Artificial Intelligence (AI) in education has emerged as a promising solution to these challenges. AI applications have the potential to revolutionize the way teachers design and deliver instructional content, offering personalized and adaptive learning experiences that can cater to the advanced needs of gifted students. "AI can assist teachers in designing advanced and challenging activities for gifted students by analyzing their learning patterns and suggesting tailored resources. This helps educators meet the unique needs of gifted students more effectively." – VanTassel-Baska, J. (2020). The Role of Technology in Gifted Education. Journal of Advanced Academics. Specifically, AI can assist teachers in creating listening tasks that are appropriately challenging and engaging, thereby fostering the intellectual growth and engagement of gifted students. Despite the potential benefits of incorporating artificial intelligence (AI) tools into educational practices, it also entails certain limitations when the use of AI in designing listening tasks for gifted students remains an underexplored area. For instance, "Many teachers lack the training and confidence to use AI apps effectively in designing listening activities. This gap in professional development limits their ability to leverage technology for enhancing listening instruction." – Hubbard, P. (2008). Computer-Assisted Language Learning: Critical Concepts in Linguistics. Routledge. Similarly, on the Struggle to Teach Listening Strategies with AI, "AI tools can help students practice listening, but they often fail to teach effective listening strategies, such as predicting content, identifying key ideas, and monitoring comprehension. Teachers must supplement these tools with additional instruction." – Field, J. (2008). Listening in the Language Classroom. Cambridge University Press.

Therefore, this study investigates the effectiveness of using AI tools to develop

advanced listening comprehension classes for brilliant students. The study concurrently intends to propose several applications alongside suitable strategies for creating effective listening tasks for gifted students, thereby enhancing their learning experiences and outcomes.

2. Aim and objectives of the study

The primary aim of this study is to investigate the potential of artificial intelligence applications to aid teachers in the process of developing beneficial listening activities for gifted students. This overarching aim can be delineated into the subsequent objectives:

– To ascertain the distinctive requirements of gifted students in terms of practicing listening skills.

– To identify how Artificial Intelligence can be used to design listening tasks that align with the cognitive and affective needs of gifted students.

– To examine the perceived benefits and challenges of using AI-enhanced listening tasks.

– To furnish practical recommendations for teachers.

3. Scope of the study

This study looks at how artificial intelligence can help teachers design and run listening activities for gifted students, those students who need harder challenges and richer language in order to grow. By zeroing in on AI-driven personalization, the project asks whether smart tools can make classroom listening tasks more genuine, flexible, and suited to each student's level.

To keep findings grounded in real teaching, the study takes sample exercises from the National English Competition (NEC) and IELTS and reworks them with AI programs. The revised tasks show clear gains, proving that technology can breathe new life into standard materials and match them much more closely to what high-flying pupils can do. A simple grading guide is also offered so that teachers can judge AI tasks quickly, laying the groundwork for listening courses that stretch, motivate, and truly support gifted children.

4. Significance of the Study

This study holds significance on multiple levels. For educators and curriculum developers, it provides practical insights into how AI can be harnessed to create more

engaging, challenging, and personalized listening tasks for gifted students. For researchers, the study contributes to the growing body of literature at the intersection of EdTech, language acquisition, and gifted education—fields that often remain siloed despite their overlapping concerns.

The findings have implications for educational policy, particularly in contexts where gifted education is under-resourced or unevenly distributed. By demonstrating how AI can democratize access to advanced listening instruction, the study advocates for more equitable and inclusive educational systems.

Furthermore, the research responds to calls for innovation in assessment practices. Traditional listening tests often fail to capture the full range of skills that gifted students possess. AI-powered assessment tools, with their ability to analyze nuanced student data, offer the potential for more holistic and formative evaluation methods.

In the broader context of lifelong learning and global citizenship, developing strong listening skills is essential. For gifted students, who are often future leaders, innovators, and communicators, the ability to critically engage with spoken information is not just an academic skill—it is a foundational competence for participation in a complex, interconnected world.

PART B: LITERATURE REVIEW

1. Introduction to listening comprehension in language learning

Listening is one of the foundational macro-skills in second language acquisition (SLA) and has long been recognized as critical to both receptive and productive language development (Brown, 2007; Rost, 2011). It is the primary channel through which language input is received, especially in the early stages of acquisition (Krashen, 1985). As a skill, listening is inherently complex, involving simultaneous operations of perception, parsing, and interpretation (Field, 2008). It demands the integration of phonological, lexical, syntactic, and pragmatic knowledge, making it a multidimensional and cognitively demanding process (Vandergrift & Goh, 2012).

Field (2008) categorizes listening into bottom-up and top-down processes. Bottom-up processing refers to the decoding of acoustic signals, identifying phonemes, syllables, words, and syntactic patterns. In contrast, top-down processing leverages listeners' background knowledge, situational context, and expectations to construct meaning. Anderson (1995) suggests that successful listening comprehension relies on the dynamic interaction between these two types of processing. However, traditional pedagogical approaches often overemphasize bottom-up activities, such as identifying specific details or matching words, which may not reflect the real-world demands of listening (Wilson, 2008).

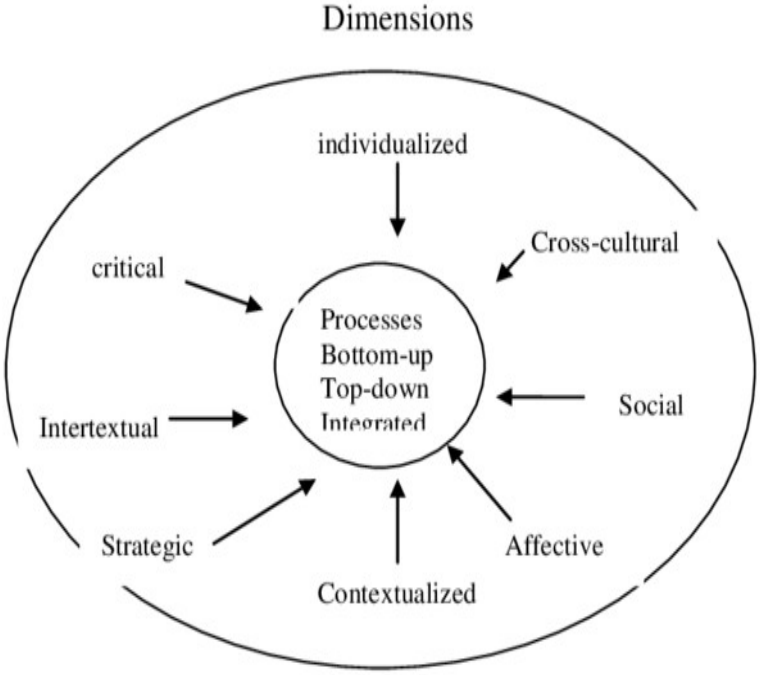

Figure 1. L2 Listening Model (Flowerdew & Miller, 2005)

Moreover, listening is transient; students cannot pause or review the spoken input as they can with written texts. This ephemeral nature necessitates the development of real-time processing skills (Rost, 2011). The pressure to comprehend in real time often makes listening more challenging than other language skills, especially when variables such as unfamiliar accents, colloquial expressions, reduced forms, or rapid speech are present (Flowerdew & Miller, 2005).

Despite its complexity and importance, listening has historically been underrepresented in language education. Prior to the communicative language teaching (CLT) movement, listening was primarily viewed as a passive skill (Richards & Rodgers, 2001). Audio-lingual and grammar-translation methods relegated listening to mechanical repetition and memorization exercises. It was not until the 1980s that scholars began to advocate for a more interactive and process-oriented view of listening (Rost, 2002; Nunan, 1999).

In recent decades, the integration of strategy instruction has reshaped the teaching of listening. Vandergrift (1997) emphasized the importance of metacognitive awareness —planning, monitoring, and evaluating one's comprehension—as a predictor of listening success. Research by Graham and Macaro (2008) further supports this claim, showing that students who receive explicit instruction in listening strategies perform significantly better in comprehension tasks than those who do not.

Authentic listening, which exposes students to real-life speech rather than scripted textbook audio, has also gained traction in SLA pedagogy. Gilmore (2007) argues that authentic materials enhance learners' exposure to natural speech features, such as hesitation, ellipsis, and turn-taking, thereby better preparing them for real-world communication. Nonetheless, using authentic materials in traditional classrooms poses logistical and pedagogical challenges, including selecting suitable texts and adjusting difficulty levels—challenges that AI technologies are increasingly equipped to solve.

In sum, listening is a sophisticated, high-stakes skill that warrants more focused instructional design. Its critical role in communicative competence, combined with the evolving landscape of language learning technologies, underscores the need to revisit and enrich how listening is taught—particularly for students with advanced abilities. This foundation sets the stage for exploring how AI can augment listening instruction and better support the cognitive and linguistic development of gifted students.

2. The role of artificial intelligence in language education

Artificial Intelligence (AI) has increasingly gained traction as a powerful tool in the field of education, offering unprecedented opportunities for personalization, scalability, and learner engagement (Luckin et al., 2016; Holmes, Bialik, & Fadel, 2019). In language education specifically, AI applications range from natural language processing and machine learning to intelligent tutoring systems, speech recognition, and real-time feedback mechanisms (Heift & Schulze, 2007). These technologies can be particularly valuable in addressing the limitations of traditional language instruction, especially in skills like listening that require dynamic and context-sensitive input.

AI-driven platforms such as Duolingo, LingQ, ELSA Speak, and FluentU have demonstrated the potential for enhancing language acquisition by adapting content to individual student profiles. These systems collect and analyze large datasets on student behavior—such as speed of response, accuracy, and error types—to adjust task difficulty and content selection accordingly (Chaudhry & Kazim, 2021). This form of adaptive learning is rooted in constructivist principles, which emphasize the importance of student-centered environments where tasks are tailored to individual needs and readiness levels (Bruner, 1961; Vygotsky, 1978).

One of AI's most transformative contributions is its ability to provide immediate, personalized feedback, a feature that is especially valuable in listening instruction. In contrast to traditional classrooms, where feedback on listening tasks is often delayed or generalized, AI tools can offer real-time corrections, prompts, and strategy suggestions. Research by Li and Lan (2021) found that students using AI-assisted listening apps outperformed peers in both comprehension accuracy and strategic listening behaviors, attributing the improvement to timely feedback and individualized support.

Another key benefit of AI in listening instruction is its capacity to present authentic and varied input. Through AI algorithms, platforms can extract real-world audio from videos, podcasts, and interviews and align them with appropriate task types (e.g., summarizing, inferring, evaluating). This exposure to natural language use, including colloquial expressions, regional accents, and pragmatic markers, enhances students' comprehension skills in real-life contexts (Reinders & White, 2010). Such authenticity is especially important for gifted students, who often crave complexity and intellectual stimulation that go beyond scripted textbook dialogues.

AI can also support multimodal learning, integrating audio with visual cues such as transcripts, subtitles, images, and interactive annotations. Mayer's (2009) cognitive theory of multimedia learning suggests that combining auditory and visual channels can enhance comprehension and retention, particularly for abstract or fast-paced content. This is particularly beneficial for gifted students who process information more quickly and are more capable of synthesizing multimodal inputs (Robinson, 2008).

Furthermore, AI contributes to student autonomy and metacognition—two pillars of gifted education—by enabling students to track their progress, set goals, and reflect on their learning patterns. Tools like learning dashboards, error analysis, and strategy suggestions empower students to take ownership of their development (Schunk & Zimmerman, 2012). In a study by Huang, Hew, and Fryer (2021), AI-based self-monitoring tools significantly improved students' motivation and listening performance, suggesting that technology can serve as a facilitator of both skill development and self-regulation.

Despite these advantages, it is essential to approach AI integration with a critical lens. Challenges include ensuring equitable access to technology, maintaining data privacy and transparency, and preventing over-reliance on algorithmic systems that may limit human creativity or interpersonal interaction (Williamson & Eynon, 2020). Nevertheless, when thoughtfully implemented, AI holds immense promise in revolutionizing how listening is taught and learned—making it more responsive, inclusive, and aligned with the diverse needs of 21st-century students.

In the context of gifted education, these affordances become even more significant. By leveraging AI to provide intellectually rigorous, personalized, and metacognitively rich listening experiences, educators can better support the linguistic and cognitive development of gifted students.

3. Gifted students and their unique needs in listening instruction

Gifted students represent a diverse group of students who demonstrate exceptional abilities in one or more academic domains, including language acquisition (Renzulli, 1978; Sternberg & Davidson, 2005). In the context of English language learning, gifted students often show advanced vocabulary knowledge, rapid pattern recognition, heightened metacognitive awareness, and an aptitude for abstract reasoning (VanTassel-Baska, 2003; Winner, 1996). These characteristics necessitate pedagogical approaches

that go beyond conventional instruction, particularly in skills as nuanced as listening comprehension.

Traditional listening tasks, which typically involve short audio clips followed by comprehension questions, may lack the depth and complexity required to stimulate gifted learners intellectually (Tomlinson, 2001). As such, these learners often require differentiated instruction—tasks that offer greater cognitive challenge, opportunities for creative thinking, and engagement with real-world problems (Reis & Renzulli, 2010). In listening instruction, this might include analyzing authentic spoken discourse, interpreting implicit meanings, or comparing multiple perspectives across different audio sources (Callahan et al., 2015).

Gifted students also benefit from a high degree of autonomy and self-regulated learning opportunities. Zimmerman (2002) emphasizes the role of self-regulated learning in academic achievement, noting that gifted students often thrive when they are empowered to set goals, monitor progress, and reflect on their learning processes. In listening contexts, this could involve allowing students to select challenging listening materials, use tools to annotate or slow down audio, and engage in critical discussion or debate about the content (Gentry, 2006).

Furthermore, gifted students often possess heightened sensitivity to subtleties in language use, tone, and cultural nuances—areas that are seldom emphasized in conventional listening curricula (Kaplan, 2016). According to Treffinger, Young, Selby, and Shepardson (2002), these students should be encouraged to explore language at deeper levels of inference, irony, and emotional expression to fully exercise their advanced processing capacities. Listening tasks for gifted students should thus integrate cultural, affective, and pragmatic dimensions of meaning to enhance both linguistic and cognitive engagement.

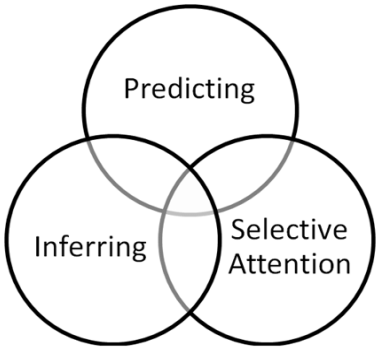

Figure 2. P.I.S.A. Framework (Sulaiman et al., 2017)

Despite these needs, research indicates that gifted students are frequently underserved in mainstream classrooms, with instruction often being too generalized or limited to acceleration rather than enrichment (Johnsen, 2004). Listening instruction is no exception. As Tannenbaum (2000) asserts, failing to nurture giftedness through targeted pedagogy may result in underachievement and disengagement. Thus, innovative methods —including the integration of AI technologies—are essential for meeting the distinct listening needs of gifted students.

By tailoring listening tasks to the advanced cognitive profiles of gifted students, educators can foster deeper engagement, sustain motivation, and promote higher-order thinking. In the following sections, this review will examine how AI-driven tools and platforms can fulfill this promise, offering personalized, challenging, and meaningful listening experiences that align with the unique learning trajectories of gifted students.

4. AI-enhanced listening tasks: Opportunities for gifted students

The design of listening tasks for gifted students must take into account their cognitive complexity, creativity, and preference for autonomy. Artificial Intelligence (AI) offers the means to deliver such enriched, differentiated experiences through adaptive learning environments that respond to each student's individual profile. Gifted students, who often process and analyze language at an advanced level, benefit from tasks that extend beyond factual recall and demand evaluative, inferential, and critical thinking skills (VanTassel-Baska & Stambaugh, 2006).

AI tools can curate listening content aligned with students' academic or personal interests, integrating interdisciplinary themes such as science, ethics, or global affairs. This alignment increases motivation and engagement while fostering linguistic growth in both general and domain-specific vocabulary (Kozulin, 2002). For example, Natural Language Processing (NLP)-based platforms can extract topical content from online sources and tailor it to a student's ability level, providing exposure to rich, meaningful language that exceeds the scope of textbook materials (Zawacki-Richter et al., 2019).

Furthermore, AI allows for the design of higher-order listening tasks that include evaluating an argument's strength, identifying speaker bias, or comparing perspectives across multiple sources. These task types align with Bloom's revised taxonomy, particularly at the levels of analysis, evaluation, and creation (Anderson & Krathwohl, 2001). For instance, a gifted student might listen to two contrasting interviews on climate

change, use AI support to annotate rhetorical techniques, and then create a podcast response. Such tasks cultivate not only linguistic proficiency but also critical literacy—a key 21st-century skill (Beers, 2003).

AI-enhanced platforms also offer features such as voice recognition and intelligent feedback that support oral interaction and listening comprehension in tandem. These interactive tools encourage students to repeat, paraphrase, or critique what they hear, fostering active listening habits (Golonka et al., 2014). AI agents can simulate dialogues that adapt to student responses, offering branching scenarios that resemble real-life conversation. This mirrors task-based language teaching (TBLT), wherein meaning-focused use of language promotes fluency and pragmatic competence (Ellis, 2003).

Metacognition is another crucial area supported by AI in listening tasks. Gifted students often benefit from reflecting on how they listen, what strategies they employ, and where their difficulties lie (Flavell, 1979). AI dashboards can display data visualizations of student behavior, such as pause frequency, replay rates, or response times, enabling students to self-assess and modify their approach accordingly (Winne & Hadwin, 1998). Embedding reflective prompts within AI systems can further strengthen students' metacognitive awareness.

Lastly, the scalability of AI enables gifted students in geographically isolated or under-resourced schools to access high-quality, customized listening instruction. While gifted education programs are often centralized in urban or affluent areas, AI systems can democratize access, ensuring equity in learning opportunities (Petersen & Gentry, 2013). By reducing the dependency on teacher intervention for differentiation, AI becomes a powerful ally in delivering challenging and meaningful instruction to gifted students at scale.

5. Theoretical frameworks supporting AI integration

The application of AI in gifted listening instruction is supported by several well-established educational theories. One foundational concept is Vygotsky's (1978) Zone of Proximal Development (ZPD), which refers to the range of tasks that a student can perform with guidance but not yet independently. AI systems, through scaffolding features like hints, glossaries, and strategic prompts, can operate within a student's ZPD, thereby optimizing learning outcomes (Luckin, 2010).

Another relevant theoretical underpinning is the Differentiated Instruction model articulated by Tomlinson (2014), which advocates for the modification of content, process, and product based on students' readiness, interests, and learning profiles. AI technologies, through continuous assessment and learning analytics, can differentiate all three components in real time. For instance, a gifted student might be assigned a listening passage on neuroscience with open-ended synthesis tasks, while another student receives scaffolding on the same theme through guided note-taking and vocabulary support.

Cognitive Load Theory (Sweller, 1988) is also significant in the design of AI-enhanced listening instruction. This theory suggests that students benefit when instructional materials are structured to reduce unnecessary mental effort, allowing them to focus on core learning processes. AI systems can analyze performance data to adjust the level of complexity or support features, ensuring that cognitive load is optimized for advanced learners.

Self-Determination Theory (Ryan & Deci, 2000) offers insight into the motivational mechanisms behind gifted students' engagement with AI. This theory emphasizes the importance of autonomy, competence, and relatedness in fostering intrinsic motivation. AI platforms that offer choice, challenge, and opportunities for self-expression can satisfy these needs, leading to sustained effort and enjoyment in listening tasks (Huang et al., 2021).

Lastly, Universal Design for Learning (UDL) provides a framework for creating inclusive and flexible learning environments. AI's capability to offer multiple means of engagement, representation, and expression aligns closely with UDL principles (CAST, 2018). For gifted students, this means being able to access high-level content in various formats, demonstrate understanding in diverse ways, and engage with material that reflects their interests and strengths.

6. Challenges and ethical considerations

While the benefits of AI in language education are manifold, they must be balanced with thoughtful consideration of ethical, logistical, and pedagogical challenges. One pressing concern is data privacy. AI-powered tools rely heavily on user data to personalize instruction, but the collection and storage of such information raise issues related to consent, transparency, and security (Williamson & Eynon, 2020). This

dilemma is particularly sensitive when working with minors, including gifted students who may be participating in specialized programs.

Another challenge is algorithmic bias. Training AI systems on non-diverse datasets may reinforce stereotypes or marginalize certain linguistic varieties. For example, speech recognition software might perform poorly on regional accents or non-native pronunciations, affecting the validity of feedback and student confidence (Nassaji, 2020). Therefore, developers must ensure diverse data representation, and educators must critically evaluate AI tools before classroom adoption.

There is also a risk of over-reliance on AI at the expense of human interaction. Gifted students, despite their advanced capabilities, still require mentorship, emotional support, and collaborative learning opportunities that AI alone cannot provide (Gentry & Owen, 2004). The ideal scenario is a hybrid model where AI enhances—but does not replace—human pedagogy.

Access inequity is another major concern. AI technologies often require stable internet connections, updated devices, and digital literacy—all of which may be unavailable in underfunded schools. Policymakers and school leaders must address these gaps to prevent further widening of the digital divide (Holmes et al., 2019).

Finally, teachers must receive adequate training to integrate AI effectively. Professional development should include not only technical skills but also ethical literacy, data interpretation, and pedagogical alignment. Without teacher agency, even the most sophisticated AI tools may fail to deliver meaningful learning outcomes (Luckin et al., 2016).

7. Existing research and gaps in the literature

Although AI's role in language education is a rapidly growing area of inquiry, much of the current research focuses on general student populations, with limited attention to gifted individuals. Studies on AI-based speaking tools (e.g., automated pronunciation feedback) and reading systems (e.g., AI-generated vocabulary exercises) are more prevalent than those on listening comprehension (Godwin-Jones, 2018). Moreover, existing studies often emphasize performance outcomes without exploring the cognitive, emotional, or motivational impacts of AI on students.

There is a particular scarcity of empirical studies that examine how AI can be used to design differentiated listening tasks for gifted students. Research is needed to

investigate how AI supports higher-order listening skills such as evaluating bias, synthesizing content, and interpreting tone—areas especially relevant to advanced students (Callahan et al., 2015). Likewise, few frameworks exist for aligning AI tools with gifted education standards and assessments.

Additionally, most current AI applications in education are not designed with gifted students in mind. As a result, even adaptive systems may cap difficulty levels too early or fail to incorporate abstract, open-ended, or cross-disciplinary content that gifted students require. Future research should address how AI can be adapted or co-designed to meet these needs (Zawacki-Richter et al., 2019).

PART C: PRACTICAL IMPLICATIONS

1. A comparative analysis of IELTS and NEC

1.1. Overview of IELTS and NEC listening tasks

1.1.1. IELTS listening

The IELTS listening component is designed to assess the receptive auditory skills of English language students in real-world contexts. Its structure is sequenced to increase in complexity and cognitive demand, consisting of four parts:

– Parts 1–2: Social contexts such as conversations involving service encounters or informational briefings.

– Parts 3–4: Academic settings, including dialogues between students or lectures delivered by subject experts.

Question types range from form and note completion, multiple-choice, and labeling diagrams, to matching features and sentence completion. Although these tasks evaluate various dimensions of listening—such as the ability to understand factual information, identify main ideas, and follow arguments—they largely remain at the level of information retrieval. There is limited emphasis on probing deeper cognitive abilities such as evaluating perspectives, recognizing nuance in tone, or synthesizing ideas across segments.

1.1.2. NEC listening

In contrast, the National English Competition (NEC) in Vietnam targets an elite cohort of high-performing students. As such, the listening tasks are intentionally more demanding, featuring:

– Dense academic discourse, often involving interdisciplinary topics.

– Multispeaker dialogues, with implicit opinions, embedded arguments, or contrasting viewpoints.

– Advanced inferential challenges, including identifying logical inconsistencies, evaluating speaker intention, and drawing conclusions from unstated premises.

NEC listening items frequently mirror tasks found in university-level assessments, making them better suited for differentiation among gifted students. Nonetheless, both NEC and IELTS assessments could be further optimized to push the boundaries of comprehension for students with exceptional aptitude.

1.2. Enrichment strategies and AI integration

To create optimal conditions for gifted students, listening tasks must move beyond conventional formats and offer layers of analytical and reflective engagement. Drawing on models from gifted education and the capabilities of artificial intelligence, enrichment should encompass both vertical differentiation (enhancing cognitive complexity) and horizontal expansion (extending application and transfer).

1.2.1. Depth enrichment

– Inference and Prediction Tasks: Enrich basic comprehension questions by requiring students to infer motivation, project future developments, or reverse-engineer the speaker's assumptions.

– Argument Deconstruction: Students analyze the structure of a spoken argument, identifying premises, counterpoints, rhetorical strategies, and conclusion validity.

– Perspective Evaluation: Students assess the reliability of the speaker or detect potential cognitive bias, cultural framing, or intentional ambiguity.

1.2.2. Breadth enrichment

– Cross-Modal Analysis: Students listen to a passage and then reconcile it with visual data (e.g., charts or infographics) that may support or contradict the audio.

– Role-Playing Extensions: Using AI-generated voice synthesis, students assume roles (e.g., interviewer, critic, policymaker) and extend the dialogue beyond the audio's endpoint.

– Transdisciplinary Thematization: Tasks are embedded in broader thematic contexts (e.g., climate ethics, digital surveillance), requiring background research and conceptual mapping across disciplines.

1.2.3. Personalized AI support

– Artificial intelligence can elevate student engagement through:

– Diagnostic Feedback: Tracking listening behavior (e.g., pausing, re-listening, error types) and providing tailored remediation or strategy tips.

– Dynamic Text-Audio Synchronization: Highlighting transcripted audio in real time while integrating comprehension prompts.

– Generative Task Reframing: Based on student performance, AI adapts tasks—simplified, extended, or recontextualized to match individual learning zones.

1.3. Sample task transformations

The following transformations illustrate how standard IELTS and NEC items can be adapted to deepen engagement and challenge gifted students.

Sample 1: IELTS Sentence Completion

– Original: The lecture begins at _____.

– Enriched:

+ Predict the rationale behind the precise timing of the lecture. How might the schedule reflect institutional priorities or student behavior?

+ Construct an alternative timeline that optimizes student engagement based on psychological research on attention spans.

Sample 2: NEC Speaker Matching

– Original: Match each speaker to their opinion on technology and privacy.

– Enriched:

+ Evaluate whether any speaker exhibits internal contradictions in their argumentation.

+ Synthesize two opposing views and propose a middle-ground policy position, supported by evidence from the audio.

Sample 3: Summary Completion

– Original: Fill in the blanks using no more than three words.

– Enriched:

+ Analyze whether the summary reflects a neutral stance or contains persuasive framing. Justify your reasoning with lexical and tonal cues.

+ Suggest revisions to the summary to reflect a different ideological perspective, and defend your linguistic choices.

1.4. Pedagogical implications

Enriched listening tasks serve not only as evaluative instruments but as catalysts for cognitive development. For gifted students, they:

– Cultivate epistemic curiosity and intellectual risk-taking.

– Develop metacognitive awareness, as students monitor and refine their comprehension strategies.

– Promote interdisciplinary transfer, bridging listening with reading, writing, speaking, and reasoning.

– Support student agency, allowing students to take ownership of inquiry and response.

Teachers can integrate these tasks into differentiated instruction frameworks, while AI-driven platforms can automate parts of the enrichment process, making individualized instruction scalable and sustainable.

2. AI-designed listening activities: Typology and implementation

2.1. Key design principles

Effective AI-assisted listening tasks for gifted students should align with the following pedagogical principles:

– *Personalization:* AI must adapt to individual student profiles, offering tailored content and feedback.

– *Cognitive Rigor:* Listening tasks must go beyond literal comprehension to encourage inference, evaluation, and synthesis.

– *Authenticity:* Use of real-world spoken materials, including debates, lectures, interviews, and podcasts.

– *Real-Time Feedback:* Instant formative assessment capabilities help students regulate their understanding.

– *Scaffolding for Strategy Use:* AI should help students develop and practice listening strategies.

2.2. Phases of task design

Phase 1: Needs Analysis and Goal Setting

– Conduct a diagnostic assessment using tools like Listenwise or custom AI dashboards.

– Identify students' listening skill levels, learning preferences, and intellectual strengths.

– Define task-specific learning outcomes that align with both CEFR descriptors and gifted education objectives.

Phase 2: Designing Listening Tasks with AI Tools

– Tool Selection: Choose platforms such as FluentU (for authentic videos), ELSA Speak (for pronunciation-focused listening), and ChatGPT (for interactive feedback and summarization).

– Task Components:

ㄹPre-listening: Use AI to activate background knowledge (e.g., AI-generated quizzes, visual prompts).

ㄹWhile-listening: Implement adaptive questioning (e.g., multiple-choice, cloze, inferencing) based on real-time responses.

ㄹPost-listening: Use AI to generate personalized comprehension summaries and reflective questions.

– Complex Task Models: Design multi-layered tasks such as opinion-based debates, podcast synthesis, or news analysis, with AI adapting to students' inputs.

Phase 3: Integrating into the Teaching Process

– Blend AI into lesson routines with teacher facilitation (e.g., 15–20 min AI-driven task, followed by group discussion).

– Create a feedback loop: student input → AI-generated output → teacher refinement and extension.

– Use classroom dashboards to track performance and make instructional adjustments.

Phase 4: Evaluation and Reflection

– Use AI tools to collect learning analytics (e.g., comprehension accuracy, strategy use).

– Facilitate student reflection using AI-generated insights in journals, goal-setting, or class discussions.

– Encourage peer review through shared AI-supported listening responses.

2.3. AI-designed listening activities

2.3.1. Authentic newsroom simulation (AI-powered analysis)

– *Learning Goal:* Enhance students' ability to extract key ideas and underlying arguments from authentic broadcast material, while fostering critical interpretation.

– *Tools:* BBC Learning English for high-quality input, Google's Speech-to-Text API for real-time transcription, and ChatGPT for generating discussion prompts and synthesizing information.

– *Scenario/Procedure:* Students choose a topical issue—such as environmental policy, geopolitical tensions, or technological innovation in Asia. The AI tools process the news audio, highlight relevant terminology, and provide structural outlines. Students

use ChatGPT to script simulated panel discussions, then assume roles as journalists, policy analysts, or activists in a mock press conference.

– *Impact:* This task cultivates autonomy, promotes real-world engagement, and challenges students to evaluate and reframe information—a hallmark of gifted cognition.

2.3.2. Podcast debate and response bot

– *Learning Goal:* Develop interpretive listening skills alongside persuasive speech production and argument construction.

– *Tools:* Listenwise for curated, level-appropriate podcast content; Voiceflow for building AI interlocutors; and ChatGPT for crafting rebuttals and elaborating on argumentative structures.

– *Scenario/Procedure:* Students explore a controversial topic through a podcast (e.g., AI ethics, climate migration). They engage in a structured debate with AI-generated personas who present counterpoints. After multiple turns of exchange, students create a personal podcast reflection summarizing their stance.

– *Impact:* Encourages synthesis of complex perspectives and cultivates flexible reasoning under conversational pressure.

2.3.3. Interactive drama-based listening via ai narratives

– *Learning Goal:* Deepen comprehension of narrative structure, emotional undertones, and character-driven linguistic choices.

– *Tools:* Narrative AI engines (e.g., TalkToTransformer), Synthesia for visual narration, and Voki for animated avatars.

– *Scenario/Procedure:* Students enter a story world shaped by their choices. Each listening segment offers plot developments with cultural, moral, or emotional implications. After each segment, students predict outcomes, assess motivations, and articulate character transformations.

– *Impact:* Especially meaningful in Vietnam, where creative autonomy is not always emphasized. The moral complexity of these narratives allows gifted students to navigate shades of meaning, context, and ethical ambiguity.

2.3.4. AI-powered lecture dissection for high-stakes exam preparation

– *Learning Goal:* Train students to parse dense academic language and extract argumentative logic—a critical skill for exams like NEC and IELTS.

– *Tools:* TED Talks as input source, Otter.ai for transcription, ChatGPT for summarizing, and Miro for visualizing argument flow.

– *Scenario/Procedure:* Students watch segmented lectures and use AI to highlight main ideas, supporting evidence, and transitions. They construct logical maps that mirror essay frameworks.

– *Impact:* Simulates real exam conditions while scaffolding higher-order thinking in academic discourse.

2.3.5. Social listening and community interaction task

– *Learning Goal:* Build sociopragmatic awareness and intercultural communicative competence.

– *Tools:* ChatGPT (role-play design), Google Translate AI (for multilingual support), WhatsApp Voice (for asynchronous response recording).

– *Scenario/Procedure:* Students interact with AI personas that reflect diverse voices in Vietnamese society—fishermen, small business owners, environmentalists. They must listen for implied meaning, emotional cues, and sociocultural norms. Follow-up reflection tasks promote introspection and empathy.

– *Impact:* Moves listening beyond content recall toward real-world, relationship-driven communication.

2.3.6. Cross-disciplinary expert simulation (innovative addition)

– *Learning Goal:* Connect academic content knowledge with advanced listening and questioning skills.

– *Tools:* YouTube academic interviews, ChatGPT for question generation, and AI summarizers like QuillBot.

– *Scenario/Procedure:* Students choose a topic in science, history, or economics. After analyzing expert interviews, they simulate a follow-up press briefing using ChatGPT to role-play specialists. This culminates in a research podcast.

– *Impact:* Encourages transdisciplinary thinking and authentic communication of abstract ideas.

2.3.7. Real-time crisis communication roleplay (innovative addition)

– *Learning Goal:* Develop real-time responsiveness, clarity, and emotional control in auditory interpretation.

– *Tools:* ChatGPT for dynamic scripting, Voiceflow for branching scenarios, and live transcription tools.

– *Scenario/Procedure:* Students act as local officials responding to a fictional crisis (e.g., chemical spill, cyber-attack). They listen to breaking news segments, craft responses, and field AI-generated citizen questions in real time.

– *Impact:* Prepares students for high-stakes listening where clarity, speed, and empathy intersect.

2.3.8. Strategic integration recommendations

– *Learning Goal:* Support teachers in incorporating AI-enhanced listening tasks systematically and sustainably into existing instructional plans.

– *Tools:* Google Classroom, LMS-integrated AI modules, ChatGPT for planning assistance, Listenwise, FluentU.

– *Scenario/Procedure:*

+ Begin with a low-stakes rollout: introduce 2–3 well-structured AI listening tasks in the first semester to allow both students and teachers to familiarize themselves with the tools.

+ Activate prior knowledge with pre-task tools such as AI-generated concept maps or vocabulary quizzes.

+ Following AI interaction, transition to in-person activities such as group discussion, Socratic seminars, or oral presentations.

+ Employ AI-generated student dashboards to co-evaluate progress in terms of fluency, depth of analysis, and engagement over time.

– *Impact:* Encourages phased implementation, reduces cognitive overload, and strengthens the feedback loop between AI scaffolding and teacher mediation. Allows for iterative refinement based on data and observation.

2.3.9. Barriers and responsive strategies

– *Learning Goal:* Identify and address systemic and pedagogical obstacles to effective AI integration in gifted listening education.

– *Tools:* Mobile-compatible AI tools (e.g., WhatsApp, ELSA Speak), PD platforms, school-based mentoring apps.

– *Scenario/Procedure:*

+ Infrastructure Limitations: Prioritize the selection of lightweight, mobile-friendly platforms that work offline or in low-bandwidth settings.

+ Teacher Preparedness: Integrate AI-focused pedagogy into professional development curricula. Create school-based tech mentorship groups where more experienced staff can guide new adopters.

+ Resistance to Innovation: Use orientation sessions to present AI as a teacher-empowering assistant. Offer classroom walkthroughs, video modeling, and testimonials to demystify the tools.

– *Impact:* Reduces resistance by addressing practical concerns. Builds a culture of experimentation and support. Enhances teacher confidence and ensures ethical, equitable implementation across varying contexts.

PART D: CONCLUSION

This study demonstrates a comprehensive, interdisciplinary exploration of the pedagogical affordances and implementation challenges associated with integrating artificial intelligence (AI) into the domain of listening instruction for gifted students. By drawing on conceptual paradigms from applied linguistics, cognitive psychology, educational technology, and gifted education, the research establishes a robust theoretical and practical foundation that enables educators and scholars to reconceptualize auditory language acquisition within AI-enhanced learning environments. of the affordances and implications of artificial intelligence (AI) integration into the domain of listening pedagogy for intellectually precocious students. Synthesizing conceptual paradigms from applied linguistics, cognitive psychology, educational technology, and gifted education, the study constructs a robust theoretical and methodological scaffold from which practitioners and scholars alike may reimagine the contours of auditory language acquisition in AI-enhanced instructional ecosystems.

Beyond merely delineating the instrumental capacities of AI applications, the investigation advances a paradigmatic shift—from mechanistic, input-output models of listening instruction to a multidimensional, dialogic, and student-responsive framework. AI, in this reconceptualization, is positioned not as a didactic surrogate nor a depersonalized technological overlay, but rather as a mediational artifact—an entity that intervenes in and enhances the cognitive interactions between student, content, and context. In this framework, AI supports what is referred to in educational psychology as distributed cognition, wherein knowledge construction is shared across human and technological agents through interactive feedback loops, adaptive scaffolding, and context-aware processing. This perspective situates AI as an embedded facilitator in a learning ecology that is dialogic, responsive, and epistemically generative. nor a depersonalized technological overlay, but as a mediational artifact—facilitating distributed cognition, adaptive feedback loops, and multilayered meaning-making processes. The integration of tools such as ChatGPT, Otter.ai, FluentU, and synthetic speech technologies is shown to enable pedagogical designs that are simultaneously differentiated, cognitively rigorous, and socially embedded.

By operationalizing AI in the design of complex listening tasks—ranging from authentic newsroom simulations and expert panel discourses to context-sensitive

roleplays and cross-disciplinary lecture dissections—this study illustrates how the medium of listening can be elevated into a site of critical inquiry, epistemological expansion, and metacognitive reflection. These AI-mediated tasks not only respond to the advanced inferential capacities and affective sensitivities of gifted students but also transcend the performative constraints of standardized curriculum delivery.

At the same time, the study foregrounds the non-trivial challenges of implementation. Barriers such as infrastructural stratification, algorithmic opacity, and inequitable access to AI-enhanced resources necessitate targeted policy interventions—such as investment in mobile-first platforms, the integration of AI literacy into national teacher training standards, and the establishment of oversight frameworks for algorithmic transparency and data ethics within educational cont technocentric dependency, and pedagogical conservatism demand a nuanced approach—one anchored in distributed expertise, dialogic teacher training, and critical digital pedagogy. It is through intentional instructional design, socio-technical alignment, and institutional responsiveness that AI can fulfill its transformative potential without displacing the humanistic essence of education.

The implications of this research extend across multiple vectors. For practitioners, it delineates an actionable framework for high-impact listening instruction calibrated to the epistemic needs of gifted students. For educational leaders and policy architects, it identifies leverage points for equitable resource allocation, AI governance, and infrastructural readiness. For academic researchers, it contributes to an emergent canon of scholarship interrogating the ontological and axiological dimensions of AI-mediated language learning.

Ultimately, this inquiry positions the AI-enhanced listening classroom as emblematic of a post-digital educational paradigm. In this configuration, students emerge as agentive knowledge constructors, educators embody the role of reflective technopedagogues, and AI operates as a dialogic collaborator—co-constructing transformative, socially situated, and cognitively rich educational experiences. Looking forward, such integration heralds a future in which language instruction is not only technologically augmented but epistemically expansive and ethically grounded. as a post-digital learning environment—one wherein students become agentive knowledge constructors, teachers assume the role of reflective technopedagogues, and AI functions

as a dialogic partner in the orchestration of transformative educational experiences. The telos of such integration is not technological efficiency per se, but rather the cultivation of critical consciousness, linguistic sophistication, and ethical discernment among the next generation of global communicators. When AI is deployed with epistemic humility and pedagogical intentionality, it becomes not merely a facilitator of instruction but an amplifier of human intellectual possibility.

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