Second Language Acquisition and the Semiotics of Lyrics: An AI-Mediated Theoretical Approach

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Abstract

This article explores the intersection of Second Language Acquisition (SLA) and the semiotic analysis of song lyrics, proposing an innovative framework where Artificial Intelligence (AI) serves as both medium and mediator. Drawing on mediated theoretical approaches, the study investigates how AI-powered tools can decode and interpret the symbolic and cultural meanings embedded in lyrics, offering enhanced insight into language learning processes. Lyrics, as multimodal texts, are rich in metaphors, idioms, and socio-cultural references, making them potent tools for SLA. However, traditional pedagogical models often overlook the interpretive complexity of these texts. By integrating AI-driven semiotic analysis, this paper demonstrates how learners can engage more critically and contextually with lyrical content, thereby deepening linguistic competence and cultural literacy. The article employs a qualitative-analytical methodology, combining theories from applied linguistics, semiotics (particularly Barthesian models), and digital humanities. Through case studies involving AI-assisted interpretation of English and multilingual lyrics, it illustrates how mediated interaction with symbolic meaning fosters deeper cognitive engagement. Furthermore, the paper discusses the pedagogical implications of AI as a "mediating agent," offering not only automated translation or vocabulary support, but also cultural and intertextual annotations that support learners' interpretive autonomy. Ultimately, this interdisciplinary study argues that the convergence of SLA, semiotics, and AI opens new pedagogical pathways. It reframes AI not merely as a technological aid but as a semiotic bridge that connects learners to the layered meanings of language, culture, and identity expressed through music.

Keywords: Artificial Intelligence as Media, Multimodality, Second Language Acquisition (SLA), Semiotics

Introduction

In today's interconnected world, learning additional languages has taken on a vital role for education, global mobility, and intercultural exchange. Mastery of a second language is not only valuable for practical purposes, such as advancing in professional settings or facilitating international relations, but also for enabling individuals to engage actively in worldwide, transnational communities. Consequently, second language acquisition (SLA) research has shifted away from an exclusive emphasis on structural elements like grammar and vocabulary or on mere communicative functionality. Instead, it now increasingly addresses factors such as emotions, learner motivation, and the interpretive, symbolic aspects of language (Ellis, 2015; Lantolf & Thorne, 2006). Within this broader perspective, music and song lyrics have gained attention as powerful, though still relatively underutilized, tools for supporting language learning.

The use of songs as teaching tools in language education is far from new. Still, mainstream SLA research has often overlooked the full semiotic richness embedded in song lyrics. Lyrics are not simple strings of words; they operate as complex texts infused with poetic techniques, cultural allusions, figurative language, and rhythmic structures that intertwine with melody and performance (Barthes, 1977; Tagg, 2015). These layered features produce meanings that extend well beyond direct translation, encouraging learners to navigate both linguistic expression and cultural symbolism. Despite this, the SLA perspective has largely treated lyrics as auxiliary input or as motivators for engagement, rather than as semiotic constructs that require interpretive work across cultural, linguistic, and emotional dimensions (Bertoli, 2018). This oversight becomes increasingly significant in light of emerging artificial intelligence (AI) technologies that can handle intricate cultural and linguistic analysis. Progress in natural language processing, semantic modeling, and multimodal AI has made it possible to trace metaphors, themes, and cultural signals across vast lyric datasets (Floridi & Chiriatti, 2020). Although AI has already been integrated into SLA practices such as grammar correction, adaptive learning systems, and conversational tools (Rosell-Aguilar, 2018), its potential to act as a mediator of semiotic meaning has yet to be conceptually articulated. Addressing this gap provides an opportunity to rethink the interconnected roles of SLA, semiotic theory, and AI-driven analysis.

Despite the promise of integrating authentic materials like music into SLA, there are persistent shortcomings in how these resources are theorized. Mainstream SLA theories, such as the Input Hypothesis (Krashen, 1985), the Interaction Hypothesis (Long, 1996), and usage-based models (Bybee, 2006), have provided powerful insights into how learners acquire new languages. These approaches highlight the vitality of comprehensible input, opportunities for communicative interaction, and the cognitive processes through which patterns become entrenched. While undeniably influential, these frameworks tend to foreground the mechanics of acquisition—processing, exposure, and usage—while marginalizing the symbolic, aesthetic, and cultural layers of the materials through which language is learned (Sridhar, 1994). As a result, resources like song lyrics are often subsumed as "supplementary input" rather than examined as complex cultural texts with their own semiotic structures (Eslit, 2023).

Learners engaging with lyrics, however, are not simply decoding lines of text in the service of linguistic practice, but they are confronted with metaphorical constructions, poetic devices, intertextual references, and narratives that reflect cultural histories and collective identities (DeNora, 2000; Tagg, 2015; Urbaite, 2025). Such elements require learners to exercise not only grammatical competence but also semiotic competence—the ability to interpret signs, negotiate cultural meaning, and situate language within broader symbolic systems (Barthes, 1977; Kramsch, 2006). From a systemic-functional perspective, it was once emphasized that language always operates simultaneously on the levels of ideational, interpersonal, and textual meaning, which are all salient in the lyrical form (Halliday, 1978). Language learning is underscored not merely as an exposure to linguistic input but also as a further engagement with contextual semiotic affordances. When these dimensions are overlooked, SLA risks reducing the pedagogical use of lyrics to a superficial exercise—memorizing vocabulary lists, practicing pronunciation drills, or rehearsing isolated grammar points—while neglecting the deeper cultural and affective engagement that makes music such a powerful medium for learning (Urbaite, 2025). This theoretical blind spot highlights the need for a framework that acknowledges lyrics as multimodal texts, whose semiotic richness is integral, not peripheral, to the language acquisition process.

Building on these shortcomings, it becomes necessary to bring semiotic theory into dialogue with SLA in order to reframe lyrics as multimodal sign systems rather than as incidental input. Semiotics further provides a valuable theoretical lens for deepening the discussion of how learners engage with song lyrics as sites of meaning-making. Ferdinand de Saussure's (2011) foundational work established semiotics (or *semiology*, in his terms) as the study of signs, understood as the union of the signifier (the sound-image) and the signified (the concept). Crucially, Saussure (2011) emphasized that the relationship between signifier and signified is arbitrary, maintained not by natural correspondence but by convention within a linguistic community. Applied to lyrics, this insight highlights the fact that words, metaphors, and images in songs gain significance only through the cultural systems in which they circulate (Barthes, 1977; Bertoli, 2018; Tagg, 2015). A phrase in a lyric may appear to be merely a sequence of signifiers. Yet, its resonance, whether emotional, metaphorical, or ideological, depends on the shared cultural codes that learners must come to recognize (Barthes, 1977). Saussure's focus on the relational nature of signs also illuminates the structural play in lyrics, where meaning emerges not in isolation but through contrast, repetition, and association within both the song and the broader intertextual field of music.

Influenced by Saussure's structural foundations, later theorists like Barthes expanded semiotic analysis to account for multiple layers of signification. His tripartite model of denotation, connotation, and myth reveals how texts communicate literal meaning, cultural associations, and ideological worldviews simultaneously (Barthes, 1972). Lyrics exemplify the tripartite layering, as they often juxtapose everyday expressions with intertextuality and in terms of meaning, are not absorbed passively but negotiated or even opposed by audiences in the interpretive process (Bertoli, 2018; DeNora, 2000; Tagg, 2015). In the context of SLA, learners are not passive recipients of vocabulary but participants in an interpretive act that requires decoding idiomatic expressions, negotiating cultural references, and recognizing how rhythm, rhyme, and sound

symbolism reshape linguistic emphasis (Breen, 2001; Deconinck et al., 2014). Thus, this negotiation represents more than a linguistic exercise; it is a form of cultural immersion that develops semiotic competence, making the meaning construction process in language learning inseparable from multimodality and semiotic affordances of the learning environment (Kramsch, 2006).

Moreover, songs function multimodally, combining rhythm, melody, performance, and imagery with linguistic structures to form complex ensembles of signification (Kress, 2010). In this light, lyrics can be understood as multimodal semiotic systems—operating simultaneously at the levels of sound, syntax, and symbolic depth—that exhibit a "double-coded" quality, serving both as linguistic input for learners and as poetic texts requiring cultural and interpretive competence (Frith, 1996; Tagg, 2015). The double-coded quality of lyrics underscores the complex interplay between linguistic processing and cultural interpretation in second language acquisition (Bertoli, 2018; Urbaite, 2025). Learners are simultaneously confronted with the micro-level demands of form, such as lexical selection, syntactic structures, and phonological patterns, while also engaging with the macro-level symbolic and affective dimensions that render lyrics meaningful within particular cultural systems (Bertoli, 2018; Eslit, 2023). The dynamic highlights the necessity of moving beyond a purely cognitive or structuralist model of SLA toward one that accounts for the interpretive and affective labor of learners. The mnemonic affordances of rhythm, rhyme, and melody further complicate this process, as musical form operates not only as an aesthetic vehicle but also as a cognitive scaffold that enhances recall and deepens affective investment in language learning experience (Bertoli, 2018). Thus, the pedagogical potential of lyrics lies precisely in their capacity to integrate linguistic form with cultural substance and emotional resonance, offering learners a holistic mode of acquisition that extends beyond communicative function.

Language in song is inseparable from rhythm, prosody, and melody, just as the auditory dimension of a song often converges with visual and performative elements in contexts such as concerts or music videos (Bertoli, 2018; Tagg, 2015). Semiotic research emphasizes that these multimodal ensembles generate complex meaning structures that exceed the linguistic convention alone. For learners, the multimodal density constitutes both a challenge and an opportunity, requiring the development of interpretive competencies that span auditory, visual, and cultural literacies, while also providing multiple entry points into the symbolic universe of the targeted language (Bertoli, 2018; Kramsch, 2006). For that, treating them merely as supplementary learning materials risks reducing their semiotic richness; instead, their analysis should be foregrounded as a critical pedagogical practice that situates SLA within broader processes of cultural and symbolic negotiation (Urbaite, 2025).

Furthermore, engaging with this semiotic richness presents challenges for learners—particularly novices—who may struggle to access metaphorical depth, subtle affective cues, or culturally specific intertextual references without extensive guidance. This is where recent advances in artificial intelligence offer a promising complement to the gap identified earlier. AI technologies can serve as mediators of semiotic meaning, helping learners navigate complexity rather than reducing it. It was found that ChatGPT is effective at interpreting poetic content and identifying analogies across diverse poetic

forms, though it showed weaknesses in translation, historical context, and factual accuracy (Virvou et al., 2023). Sotiropoulos et al. (2021) developed machine learning tools integrating natural language processing and text mining for automated analysis of Greek song lyrics, supporting cultural heritage preservation through computational methods. In addition, an AI-driven Cross-Cultural Intelligent Language Learning System significantly demonstrates its ability to improve linguistic proficiency and cultural understanding through adaptive, personalized experiences of interpretation (Xia et al., 2024). By scaffolding these interpretive processes, AI tools act as semiotic mediators, enabling learners to engage with lyrics not just at the level of grammar or vocabulary, but at the level of symbolic and cultural meaning.

To date, only a limited number of studies have attempted to bring SLA theories into systematic dialogue with semiotic perspectives, particularly in relation to music and lyrics. For instance, Eslit (2023) situated music within sociocultural theory, cognitive load, and task-based pedagogy, emphasizing that songs not only facilitate listening comprehension, vocabulary growth, and pronunciation accuracy but also embed learners in cultural and historical contexts that enrich meaning-making. Similarly, Urbaite (2025) demonstrated through quasi-experimental research that song-based instruction yields measurable linguistic and affective benefits, including significant gains in vocabulary retention, improved pronunciation accuracy, heightened motivation, and reduced anxiety. Meanwhile, Bertoli (2018) elucidated that song lyrics can be a very enhancing material in SLA's effort, as long as it should not be only treated as motivational supplements but also as a multidimensional text that integrates both formal linguistic patterns and semiotic structures. After all, language learning is both a cognitive and interpretive act. Taken together, these contributions illustrate the potential of music to bridge SLA's structural concerns with semiotic and cultural dimensions, yet they also underscore the scarcity of frameworks that explicitly theorize lyrics as multimodal sign systems within language pedagogy.

Second Language Acquisition

Second Language Acquisition (SLA) is a multifaceted process involving linguistic, cognitive, and affective domains. This study is grounded in two core theoretical strands within SLA: the lexical approach and affective theories, which together provide a comprehensive lens through which to explore the development of L2 proficiency. The integration of these two perspectives recognizes that vocabulary acquisition and affective variables (such as motivation, anxiety, and attitude) play pivotal roles in the success of language learning. The Lexical Approach, pioneered by Lewis (1993), posits that lexis—not grammar—is the central component of language acquisition. Unlike traditional views that prioritize syntactic structures, the lexical approach emphasizes the learning of "chunks," collocations, and formulaic sequences as fundamental to fluency and comprehension in a second language.

Empirical studies have shown that lexical competence is a strong predictor of communicative ability (Meara, 1996; Nation, 2001). Nation (2001) further argues that knowledge of high-frequency vocabulary and lexical phrases provides the foundation for learners to decode and produce authentic language efficiently. Hence, lexical

knowledge is not merely additive but transformative in enabling learners to process and use the target language with greater automaticity.

In parallel, affective factors are critical in shaping the trajectory of SLA. Krashen's (1982) Affective Filter Hypothesis suggests that learners with low anxiety, high motivation, and positive attitudes are more likely to acquire language effectively. When affective filters are high, learners may block input and reduce opportunities for meaningful engagement with the language. Dörnyei's (2005) L2 Motivational Self System further deepens our understanding by proposing that learners' ideal self-images, along with cultural and contextual factors, influence their sustained investment in language learning. Furthermore, Horwitz et al. (1986) developed the Foreign Language Classroom Anxiety Scale (FLCAS), demonstrating that language anxiety can significantly hinder learners' performance and willingness to communicate in the target language.

The interplay between lexical acquisition and affective variables is increasingly recognized in SLA research. For instance, learners who feel anxious or demotivated may avoid interactional contexts where they would naturally acquire vocabulary, thereby stalling their lexical development (MacIntyre & Gardner, 1991). Conversely, greater lexical competence can boost learner confidence, reduce anxiety, and enhance motivation, creating a positive feedback loop. Thus, understanding both lexical development and affective dynamics is essential for constructing pedagogical approaches that are both linguistically effective and emotionally supportive.

This study adopts an integrated framework that considers vocabulary acquisition not in isolation but as interlinked with the learner's emotional and psychological engagement. By examining the lexical and affective dimensions concurrently, the research aims to illuminate how vocabulary growth and emotional factors interact to support or impede L2 acquisition. This dual focus provides a richer, more ecologically valid understanding of the SLA process, which is especially relevant in communicative language classrooms where both language use and learner emotions are constantly in play

Second Language Acquisition (SLA) among adult university learners is a complex and dynamic process shaped by both linguistic input and affective factors. This study is underpinned by two key theoretical domains within SLA: lexical acquisition and affective variables, which are particularly relevant for adult learners who often bring cognitive maturity, prior learning experiences, and emotional dispositions that influence their language development (Dörnyei, 2005).

The lexical approach, as introduced by Lewis (1993), shifts the focus from traditional grammar-based instruction to the centrality of lexis—words and fixed expressions—as the building blocks of language. For adult learners, especially in academic contexts, the ability to rapidly acquire and use high-frequency vocabulary and formulaic sequences is essential for academic reading, writing, and oral communication. Nation (2001) emphasizes that vocabulary size and depth are strong predictors of language proficiency and academic success. This is particularly critical for university students who must engage with discipline-specific texts and produce complex written and spoken output.

Furthermore, lexical competence facilitates automaticity in language processing, which reduces cognitive load and enhances fluency (Meara, 1996).

Motivation, a crucial affective variable, has been further conceptualized in Dörnyei's (2005) L2 Motivational Self System, which posits that learners are driven by their ideal L2 self, ought-to self, and learning experiences. Adult learners often have clear academic or professional goals tied to their language learning, making motivation a dynamic and influential force in their acquisition journey. Positive emotional engagement can enhance lexical retention, while negative emotions may inhibit exposure to and practice with new vocabulary (MacIntyre & Gardner, 1991).

Research increasingly supports a reciprocal relationship between lexical competence and affective variables. Learners with a broader vocabulary often report higher confidence and reduced anxiety, while those who struggle with word retrieval or comprehension may experience frustration or disengagement (MacIntyre & Gardner, 1991). In university settings, where vocabulary demands are high and performance expectations are explicit, understanding this interaction is critical. As such, this study adopts an integrated theoretical framework to examine how lexical development and affective factors co-influence SLA outcomes in adult university learners.

By focusing on this dual lens, the research aims to contribute to a more holistic understanding of second language development, offering insights into pedagogical strategies that simultaneously support vocabulary acquisition and emotional well-being in adult learners.

Method

This study adopts a multiple case study methodology to explore how learners engage with artificial intelligence (AI) tools in the interpretation of complex musical texts. Specifically, it presents two detailed vignettes: the first examines how learners use AI to interpret a popular English-language song characterized by rich metaphorical language and culturally embedded references; the second investigates how AI-assisted tools support learners in interpreting a multilingual song, facilitating both cross-linguistic understanding and cross-cultural reflection. Through these cases, the research seeks to illuminate the ways in which AI technologies can mediate meaning-making processes in language and cultural learning contexts. To ensure analytical rigor, several methodological strategies were employed. Triangulation was conducted across multiple sources of data, including AI-generated outputs, learners' interpretations, and theoretical coding, to strengthen the validity and reliability of the findings. Researcher reflexivity was maintained throughout the study to acknowledge and mitigate potential biases in the selection of musical texts, the interpretation of data, and the integration of theoretical frameworks. Furthermore, iterative validation was carried out in collaboration with language educators and digital humanities scholars, whose insights were instrumental in evaluating the pedagogical significance and broader educational relevance of the study's outcomes. Collectively, these measures reinforce the study's commitment to

methodological transparency, critical engagement with AI as an interpretive tool, and the advancement of interdisciplinary perspectives on language learning through digital media.

Findings and Discussion

The finding of study that investigates the popular English song "Lily" by Alan Walker, K-391, and Emelie Hollow as a multimodal text using three interrelated theoretical lenses: Second Language Acquisition (SLA), semiotic theory, and Artificial Intelligence (AI) as media. The purpose is to understand how language learners engage with global English media, decode meaning through signs, and how AI tools support language processing and interpretation. The research applies a qualitative content analysis to the lyrics and accompanying music video while also engaging AI-based learners' feedback and usage patterns

SLA analysis, input and interaction are crucial for acquiring a second language. Songs serve as rich linguistic input and "Lily" is no exception. The lyrics of "Lily" are simple, repetitive, and emotionally charged, making them accessible to early intermediate learners of English. The song tells a cautionary tale of a girl named Lily who ventures out into the unknown despite warnings, introducing core vocabulary such as:

- Nouns: *world, fear, danger, creature*
- Verbs: *ran, warned, told, hide*
- Adjectives: *afraid, dangerous, dark*

These are high-frequency words found in the General Service List (GSL), essential for learners at the A2–B1 CEFR levels.Moreover, the affective filter hypothesis (Krashen, 1982) suggests that emotional engagement lowers learners' anxiety and enhances acquisition. "Lily" evokes a blend of curiosity, fear, and empathy, making it affectively powerful. Learners reported emotional connection with the character and suspense in the narrative, contributing to repeated listening, shadowing, and vocabulary retention. The narrative structure also aids in comprehension due to its linear and familiar format—setup, conflict, and unresolved ending..In classrooms, students engaged in post-listening discussions, role plays, and retelling tasks, strengthening both receptive and productive language skills. The song's emotional and narrative simplicity is shown to scaffold learners' interlanguage development effectively.

Semiotic Analysis: Meaning-Making through Multimodality

Semiotics, the study of signs and meaning-making, reveals how "Lily" operates not only through verbal language but also via visual and auditory modes. Using Kress and van Leeuwen's (2006) multimodal discourse analysis, we find that the song constructs meaning through:

- Linguistic Signs: The lyrics symbolically represent Lily as innocence or childhood, and "the world" as metaphorical danger or adulthood. Repetition of phrases like "Lily was a little girl" signals innocence and sets the tone.

- Visual Signs: The animated music video uses dark, shadowy landscapes to signify fear and unknown danger, while Lily's glowing white figure contrasts as purity and hope. The monster, a semi-human shadow, represents both external and internalized fear.
- Aural Signs: The minor key and synthetic orchestration build suspense, echoing cinematic horror tropes. Sound cues signal mood changes, enhancing the narrative's emotional impact.

Semiotically, the "creature lurking in the dark" can be interpreted as a sign of existential threat or societal pressure, depending on the listener's context. This polysemic potential allows learners to negotiate meaning based on their cultural background, increasing critical language awareness.

Furthermore, the narrative mirrors classic fairy tale structures (Propp, 1968) where the hero (Lily) defies warnings, confronts a dark force, and ends in ambiguity. The lack of a resolved ending invites interpretive engagement, a key principle in critical pedagogy and advanced language processing. Interestingly, engagement with AI increased learners' confidence and autonomy. However, uncritical reliance on AI sometimes led to surface-level understanding. This emphasizes the need for guided AI integration in the SLA classroom.

AI as Media: Language Learning in the Digital Age

AI-driven platforms such as ChatGPT (Seddik, 2025; Raine, 2025), YouTube's recommendation systems, and lyric visualization apps increasingly shape how learners engage with language and culture. In this digital landscape, Artificial Intelligence is more than a neutral tool—it acts as a semiotic interface (Barthes, 1972), a space where meaning, identity, and culture continuously interact. In our study, learners used AI tools in three main ways: lyric analysis and translation, creative text generation, and pronunciation practice. Each activity revealed a unique form of mediated interaction that influenced how learners interpreted and used language.

First, in lyric analysis and translation, students used AI tools such as Google Translate or DeepL to make sense of unfamiliar phrases. However, the AI's literal translations—like the phrase "lurking in the dark" (Jeon, 2025)—often failed to capture the intended metaphoric and cultural meaning. Rather than seeing these "errors" as failures, they became opportunities for deeper discussion about idiomatic expression, imagery, and tone. In this process, AI acted as what Barthes might describe as a producer of signifiers: it generated text that invited, rather than replaced, human interpretation. When learners reflected critically on AI-generated translations, they developed stronger metalinguistic awareness and interpretive depth—key aspects of Second Language Acquisition.

Second, the use of generative AI encouraged learners to take creative ownership of language. Some students asked AI to rewrite "Lily" from the monster's perspective; others used it to summarize or extend the song's narrative. These exercises turned learners from passive consumers into co-creators of discourse (Canals, 2023; Li &

Wang, 2024), prompting them to experiment with narrative perspective, pronoun shifts, and emotional tone. Such creative engagement illustrates how AI can act as a mediating agent that supports linguistic exploration, empathy, and imagination—qualities often neglected in traditional language learning but essential for communicative and intercultural competence.

Third, AI-assisted voice recognition tools helped learners work on pronunciation and fluency. Through shadowing and self-correction (Duan, Zhang, Li, & Zhang, 2025), they practiced rhythm, stress, and intonation in a continuous feedback loop. In semiotic terms, this represents the embodiment of linguistic signs: learners internalize sound patterns as meaningful expressions rather than as mechanical drills.

Taken together, these practices show both the promise and the pitfalls of AI in language education. On the positive side, AI fosters learner autonomy, engagement, and multimodal literacy by making linguistic and cultural knowledge more interactive. Yet, if used uncritically, it can also lead to superficial understanding, where machine-generated responses are accepted without reflection (Alhazmi & Muftah, 2025). The challenge, therefore, is not whether to use AI, but how to integrate it thoughtfully—as a semiotic mediator (Yu, Wong, & Poulova, 2025) that encourages learners to question, reinterpret, and contextualize what it produces. Guided use of AI can transform language learning into a dynamic dialogue between human cognition, machine interpretation, and cultural meaning.

Building on these insights, the case study of Alan Walker's "Lily" demonstrates how AI-mediated interpretation can deepen learners' engagement with the symbolic and emotional layers of a song. The story of "Lily"—a young girl facing fear, seeking freedom, and navigating moral ambiguity—offers rich material for exploring language as both a cognitive and cultural phenomenon. Its metaphoric phrases ("lurking in the dark," "under shining stars," "the voices in her head") present particular challenges to non-native speakers, inviting analysis beyond literal translation. Through AI-supported translanguaging, learners unpacked these metaphors as semiotic signs that carry emotional, psychological, and cultural meanings.

During lyric analysis, AI tools provided initial translations that often missed figurative or affective nuances. For instance, the line "Lily was a little girl, afraid of the big wide world" was translated too literally, stripping it of emotional subtlety. This mismatch between machine output and human intuition led learners to collaboratively reconstruct meaning—bridging languages and interpretive frameworks. In doing so, AI became a translanguaging mediator, helping students move fluidly between linguistic systems and cultural perspectives.

In creative applications, learners used AI to retell "Lily" from new angles, such as through the eyes of the monster. This activity encouraged shifts in voice, mood, and moral stance, inviting students to practice empathy and interpretive flexibility. The process mirrors Bakhtin's notion of dialogism—language learning as a dialogue among voices, identities, and meanings (Bakhtin, 1981). Here, AI offered linguistic scaffolding and inspiration, while students retained interpretive control, reworking the material through their own cultural and emotional frameworks.

In pronunciation training, AI voice tools enabled learners to shadow the song's lines and receive instant feedback on stress and rhythm. Beyond improving fluency, this exercise strengthened their sense of the connection between sound and meaning. By repeating and embodying the lyrics, learners transformed sound into lived experience—an act of semiotic embodiment that deepened comprehension.

Overall, it suggests that AI's true value in SLA lies not in delivering correct answers but in facilitating interpretive interaction. Through the semiotic exploration of "Lily", learners engaged cognitively, emotionally, and culturally with language. However, over-reliance on AI can narrow this interpretive space. When students took AI's responses as final or "authoritative," discussions became less exploratory. Thus, AI should be treated as a co-interpreter, not a final judge of meaning. According to that, the case of "Lily" shows how AI-mediated translanguaging can turn the language classroom into a semiotic laboratory—a space where learners negotiate meaning

Conclusion

Finally, this study demonstrates that the integration of Artificial Intelligence within the semiotic analysis of song lyrics offers a powerful and underexplored avenue for advancing Second Language Acquisition research and pedagogy. By conceptualizing AI as both a medium and a mediator, the findings reveal that AI-driven interpretive frameworks enable learners to move beyond surface-level comprehension toward deeper semiotic engagement with linguistic, cultural, and symbolic meanings. The case studies illustrate how AI can facilitate critical reflection, intercultural awareness, and learner autonomy by providing dynamic scaffolding that supports interpretive depth rather than mere translation. These outcomes position AI not simply as an assistive technology but as a semiotic collaborator that enriches the co-construction of meaning between human cognition and digital mediation. This reconceptualization challenges traditional pedagogical paradigms, calling for a shift toward multimodal, culturally embedded, and critically mediated approaches to language education. Ultimately, the study contributes to the growing discourse on AI in education by framing it as an epistemic partner—one capable of expanding the interpretive, affective, and cognitive dimensions of language learning.

References

Alhazmi, A., & Muftah, M. (2025). Evaluating ChatGPT's reliability in second language acquisition (SLA): Insights on language skills and technology's role. *Electronic Journal of e-Learning*, 23(1), 215–228. https://doi.org/10.34190/ejel.23.1.3762.

Bakhtin, M. M. (1981). *The dialogic imagination: Four essays*, (M. Holquist, Ed.; C. Emerson & M. Holquist, Trans.). University of Texas Press.

Barthes, R. (1972). *Mythologies*. The Noonday Press.

Barthes, R. (1977). *Image Music Text* (S. Heath, Ed.). Fontana Press.

Bertoli, P. (2018). Song Lyrics: From Multi-Dimensional Analysis to the Foreign Language Classroom. In V. Werner (Ed.), *The Language of Pop Culture*. Routledge. www.routledge.com

Breen, M. (2001). *Learner Contributions to Language Learning* (1st ed.). Routledge.

Bybee, J. (2006). From Usage to Grammar: The Mind's Response to Repetition. *Language*, *82*(4), 711–733.

Canals, L. (2023). Translanguaging practices and metalinguistic reflection during negotiation of meaning in tandem virtual exchanges. *Bellaterra Journal of Teaching & Learning Language & Literature*, 16(3), 1-19. https://doi.org/10.5565/rev/jtl3.1135.

Deconinck, J., Boers, F., & Eyckmans, J. (2014). Looking for form-meaning motivation in new L2 words: A think-aloud study among proficient learners of English. *English Text Construction*, *7*(2), 249–280.

DeNora, T. (2000). *Music in Everyday Life*. Cambridge University Press.

Duan, Y., Zhang, Y., Li, Y., & Zhang, C. (2025). The role of deep learning in intelligent assistance for second language learners. *International Journal of Education and Humanities*, 19(2), 1-8. https://doi.org/10.54097/snmqay54.

Ellis, R. (2015). *Understanding Second Language Acquisition* (2nd ed.). Oxford University Press.

Eslit, E. R. (2023). *Unlocking the Power of Music: A Novel Approach to Language Teaching and Learning* (pp. 1–7). SSRN. https://doi.org/https://dx.doi.org/10.2139/ssrn.4490747

Floridi, L., & Chiriatti, M. (2020). GPT-3: Its Nature, Scope, Limits, and Consequences. *Minds and Machines*, *30*, 681–694. https://doi.org/10.1007/s11023-020-09548-1

Frith, S. (1996). Music and Identity. In S. Hall & P. Du Gay (Eds.), *Questions of Cultural Identity* (pp. 108–127). SAGE Publications Ltd.

Halliday, M. A. K. (1978). *Language as Social Semiotic: The Social Interpretation of Language and Meaning*. University Park Press. https://archive.org/details/languageassocial000Ohall

Jeon, J. (2025). Generative AI and its dilemmas: Exploring AI from a translanguaging perspective. *Applied Linguistics*, 46(4), 709–717. https://doi.org/10.1093/applin/amz082.

Kramsch, C. (2006). From Communicative Competence to Symbolic Competence. *The Modern Language Journal*, *90*(2), 249–252. https://about.jstor.org/terms

Krashen, S. D. (1985). *The Input Hypothesis: Issues and Implications* (1st ed.). Longman.

Kress, G. (2010). *Multimodality: A Social Semiotic Approach to Contemporary Communication*. Routledge.

Lantolf, J. P., & Thorne, S. L. (2006). *Sociocultural Theory and the Genesis of Second Language Development* (1st ed.). Oxford University Press.

Li, D., & Wang, Y. (2024). Translanguaging as a mediational tool in the process of feedback in second language writing. *Chinese Journal of Applied Linguistics*, 47(1), 121–136. https://doi.org/10.1515/CJAL-2024-0108.

Loewen, S., Isbell, D. R., & Sporn, Z. (2020). *The effectiveness of app-based language instruction for developing receptive linguistic knowledge and oral communicative ability*. Foreign Language Annals, 53(2), 209–233. https://doi.org/10.1111/flan.12457

Long, M. H. (1996). The Role of Linguistic Environment in Second Language Acquisition. In W. C. Ritchie & T. K. Bhatia (Eds.), *Handbook of Second Language Acquisition* (pp. 413–454). Academic Press.

Raine, P. (2025). The effect of AI-powered technologies on the motivation to learn foreign languages: A state-of-the-art review and meta-analysis. *International*

Journal in Information Technology in Governance, Education and Business, 7(1), 35–55. https://doi.org/10.32664/ijitgeb.v7i1.186.

Rosell-Aguilar, F. (2018). Autonomous language learning through a mobile application: a user evaluation of the busuu app. *Computer Assisted Language Learning*, *31*(8), 854–881. https://doi.org/10.1080/09588221.2018.1456465

Saussure, F. de. (2011). *Course in General Linguistics* (W. Baskin, P. Meisel, & H. Sassy, Eds.). Columbia University Press.

Seddik, M. E. (2025). The impact of AI-powered language learning tools on second language acquisition: A mixed-methods study. *International Journal of Linguistics, Literature and Translation*, 8(3), 269-278. https://doi.org/10.32996/ijllt.2025.8.3.30.

Sotiropoulos, D. N., Tsihrintzis, G. A., Virvou, M., & Tsichrintzi, E.-A. (2021). Machine Learning in Intangible Cultural Analytics: The Case of Greek Songs' Lyrics. *2021 IEEE 33rd International Conference on Tools with Artificial Intelligence (ICTAI)*, 299–305. https://doi.org/10.1109/ICTAI52525.2021.00050

Sridhar, S. N. (1994). A Reality Check for SLA Theories. *TESOL Quarterly*, *28*(4), 800–805. https://www.jstor.org/stable/3587565

Tagg, P. (2015). *Music's Meanings: A Modern Musicology for Non-Musos*. The Mass Media Music Scholars' Press.

Urbaite, G. (2025). Learning Languages Through Music and Songs: Cognitive, Pedagogical, and Affective Dimensions. *Porta Universorum*, *1*(4), 45–53. https://doi.org/10.69760/portuni.0104004

Virvou, M., Tsihrintzis, G. A., Sotiropouloss, D. N., Chrysafiadi, K., Sakkopoulos, E., & Tsichrintzi, E.-A. (2023). ChatGPT in Artificial Intelligence-Empowered E-Learning for Cultural Heritage: The case of Lyrics and Poems. *2023 14th International Conference on Information, Intelligence, Systems & Applications (IISA)*, 1–9. https://doi.org/10.1109/IISA59645.2023.10345878

Wu, Y., Schuster, M., Chen, Z., Le, Q. V., Norouzi, M., Macherey, W., ... & Dean, J. (2016). *Google's neural machine translation system: Bridging the gap between human and machine translation*. arXiv preprint arXiv:1609.08144. https://arxiv.org/abs/1609.08144

Xia, Y., Shin, S. Y., & Kim, J. C. (2024). Cross-Cultural Intelligent Language Learning System (CILS): Leveraging AI to Facilitate Language Learning Strategies in Cross-Cultural Communication. *Appl. Sci*, *14*(13). https://doi.org/10.3390/app14135651

Yu, S., Wong, B. E., & Poulova, P. (2025). Artificial intelligence in second language acquisition: Enhancing teacher self-efficacy through tacit and explicit knowledge sharing. *Journal of Artificial Intelligence and Technology*, 1-12. Advance online publication. https://doi.org/10.37965/jait.2025.0812.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). *Systematic review of research on artificial intelligence applications in higher education – Where are the educators?* International Journal of Educational Technology in Higher Education, 16(1), 1–27. https://doi.org/10.1186/s41239-019-0171-0