Artificial intelligence and second language acquisition: new pathways for teaching Spanish to Chinese students

Inteligencia artificial y adquisición de una segunda lengua: nuevas vías para la enseñanza del español a estudiantes chinos

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Abstract

The emergence of artificial intelligence (AI) is decisively transforming foreign language teaching-learning processes, offering unprecedented possibilities for personalization, feedback, and automation. This article analyzes the impact of AI on the acquisition of Spanish as a foreign language by Chinese university students, addressing both the psycho-cognitive dimensions of second language acquisition (SLA) and the inherent cultural and intercultural challenges. Drawing on established acquisition models (Krashen, VanPatten, Schmidt), it discusses how AI technologies—particularly language models and adaptive platforms—can complement or reconfigure the processes of input, noticing, and automatization. The application of a hybrid "AI

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+ human educator" pedagogy is proposed, aimed at balancing technological potential with intercultural and ethical mediation, to foster more autonomous and profound learning.

Keywords: artificial intelligence, second language acquisition (SLA), Spanish foreign language teaching, learning personalization, hybrid pedagogy.

Resumen

La irrupción de la inteligencia artificial (IA) está transformando de manera decisiva los procesos de enseñanza-aprendizaje de lenguas extranjeras, ofreciendo posibilidades inéditas de personalización, retroalimentación y automatización. Este artículo analiza el impacto de la IA en la adquisición del español como lengua extranjera por parte de estudiantes universitarios chinos, atendiendo tanto a las dimensiones psicocognitivas de la adquisición de segundas lenguas (ASL) como a los desafíos culturales e interculturales inherentes. A partir de modelos reconocidos de adquisición (Krashen, VanPatten, Schmidt), se discute cómo las tecnologías de IA —especialmente los modelos de lenguaje y las plataformas adaptativas— pueden complementar o reconfigurar los procesos de input, noticing y automatización. Se propone la aplicación de alternativas de pedagogía híbrida «IA + docente humano» orientada a equilibrar la potencialidad tecnológica con la mediación intercultural y ética, en beneficio de un aprendizaje más autónomo y profundo.

Palabras clave: inteligencia artificial, adquisición de segundas lenguas (ASL), enseñanza del español como lengua extranjera, personalización del aprendizaje, pedagogía híbrida.

Introduction

The study of Second Language Acquisition (SLA) is supported by theoretical frameworks that explain the fundamental cognitive processes during learning. Krashen's (1982, 1985) comprehensible input theory establishes that acquisition occurs when students receive

linguistic input slightly above their current level (i + 1) in meaningful contexts where the affective filter is low. This principle today finds a powerful ally in generative AI technologies, which can produce unlimited volumes of comprehensible input adapted to the student's interests and level, Lee & Warschauer (2023).

Subsequently, VanPatten (1996, 2015) developed the input processing model, which explains how linguistic structures are perceived and processed during comprehension. This author argues that students, especially in initial stages, tend to process content before grammatical forms, which pedagogically justifies the design of input activities that foster connections between form and meaning. Processing instruction, derived from this model, finds in AI a valuable tool for creating exercises that direct attention toward specific linguistic elements in meaningful communication contexts.

Complementarily, Schmidt (1990, 2001) proposed the noticing hypothesis or conscious perception, stating that for a linguistic element to be acquired, it must first be consciously noticed in the input. Current AI systems can strategically optimize this process through the creation of visual cues, immediate feedback, and repetition of target structures in varied contexts, facilitating the detection of patterns that might go unnoticed in natural input situations.

These theoretical frameworks remain fully relevant in the age of artificial intelligence, as they provide the necessary pedagogical foundation for effective technological integration, preventing its use from becoming an end in itself rather than a means to favor acquisition processes.

Development

Technological Evolution in Language Teaching

The historical trajectory of technology in foreign language teaching shows a progressive evolution toward greater interactivity and adaptation to the learner. From the language laboratories of the 1960s, based primarily on repetition and phonetic correction, the transition was made to Computer-Assisted Language Learning (CALL) in the 1980s and 1990s, which introduced grammar and vocabulary practice exercises through computer programs. With the advent of the Internet, online platforms emerged that allowed remote access to materials and interactive practice. Subsequently, mobile learning (m-learning) facilitated ubiquitous access to linguistic resources, breaking the spatiotemporal barriers of the traditional classroom.

The emergence of generative AI and Natural Language Processing (NLP) technologies marks an unprecedented turning point. Unlike previous technological approaches, contemporary systems can generate natural language, dynamically adapt difficulty, analyze undefined linguistic production, and provide contextualized feedback. Models like GPT-4 and tools like ChatGPT (launched in 2022) can sustain contextualized dialogues, correct errors with explanations, simulate interlocutors with varied registers, and offer unlimited practice in near-real communication situations.

Higher education institutions globally are recognizing this transformative potential. Leading universities have implemented comprehensive frameworks to responsibly integrate AI into teaching, including the development of specialized academic programs, grants for teaching innovation, and specific training for faculty.

This technological evolution has progressively transformed the student's role, from a passive receiver to an active manager of their own learning, and the teacher's role, from a knowledge transmitter to a designer of experiences and a mediator in the critical use of digital tools.

Applications of Artificial Intelligence in L2 Teaching

The current landscape of AI applications in foreign language teaching is diverse and expanding rapidly, offering solutions for different linguistic competencies and aspects of the acquisition process. Today, more than ever, computer applications in second language acquisition make a distinction. According to Chapelle, (2001), they become tools of widespread use. These tools can be classified according to their main pedagogical function:

1. Conversational chatbots (like ChatGPT or Replika) that stimulate communicative interaction in simulated contexts, allowing students to practice production and comprehension in real-life situations. These systems can adapt their linguistic register, grammatical complexity, and response speed according to the user's level, providing personalized conversational scaffolding.

2. Adaptive platforms like Duolingo Max (with generative AI from OpenAI) and Babbel Live, which dynamically adjust the difficulty level and content based on the user's performance and preferences. These platforms use recommendation algorithms to identify the learner's weak areas and offer specific additional practice.

3. Correction assistants like Grammarly or Elsa Speak, which analyze the student's written or oral production, identifying not only grammatical errors but also problems of pragmatic appropriateness, style, and discursive organization. These systems provide explanatory feedback that helps learners understand the nature of their errors.

4. Assisted translation systems (DeepL Write, Google Translate Neural System) that have evolved from word-for-word translation toward contextual translation of complete phrases, better preserving the meaning and register of the original text. When used pedagogically, they can serve as initial lexical scaffolding for beginner students.

5. Text analysis tools that allow the analysis of specific linguistic features in authentic corpora, facilitating work with specialized or literary language at advanced levels.

It is essential to recognize that the AI landscape is shaped by regional ecosystems. For Chinese students, access to and familiarity with locally developed AI tools add a layer of practical relevance and accessibility. Therefore, alongside global platforms, it is pertinent to consider applications from the Chinese ecosystem:

1. Local language models: Assistants such as DeepSeek (developed by Shenzhen Shenma Zhineng) and the Qwen model series (by Alibaba Group) have become widely adopted open-source alternatives. These models can be used for specific tasks such as grammatical analysis, generating exercises contextualized within Chinese culture, or explaining Hispanic literary concepts through analogies with Chinese cultural traditions.

2. Integrated platforms: Flagship applications like WeChat, through its mini-programs, and search engines such as Baidu, are integrating generative AI capabilities that students natively use to translate, summarize texts, and search for information—practices that can be pedagogically redirected.

3. Specialized tools: The WPS Office suite has incorporated AI functions that assist with writing and style correction, making it a valuable tool for developing written production in Spanish within a software environment familiar to the student.

The pedagogical advantage of these tools lies in their accessibility, their Mandarin-language interface, and their training on datasets that include a larger volume of Chinese cultural references, which can facilitate the creation of cognitive bridges. The institutional integration of these tools is gaining momentum in academic contexts. Innovative initiatives include collaborations with technology companies to provide equitable access to advanced AI tools and

develop specialized computational infrastructure that supports the research and educational application of these technologies. This trend aligns with findings from recent systematic reviews that underscore the value of generative AI for creating personalized learning environments and developing critical thinking when integrated with pedagogical foundation (Zawacki-Richter et al., 2019).

Cognitive and cultural challenges of Chinese students

Learning Spanish by Mandarin-speaking students presents specific challenges derived from the typological differences between Mandarin and Western languages. It should be noted that, while this study is framed within the general theory of SLA, the learning context analyzed is specifically that of Spanish as a Foreign Language (SFL). This distinction is crucial, as Chinese university students acquire the language in an environment where it is not the community language, which determines many of the challenges described here.

Mandarin Chinese belongs to a completely different language family (Sino-Tibetan), with an essentially isolating morphological system, where grammatical relations are expressed mainly through word order and particles, in contrast to the inflectional system of Spanish. These differences manifest at multiple levels. At the phonological level, Chinese students must adapt to new phonetic inventories and intonation patterns radically different from their L1. At the morphosyntactic level, they face the challenge of mastering verb conjugation systems, gender-number agreement, and articles, categories nonexistent in Mandarin. At the pragmatic level, they must learn markedly different cultural conventions of politeness and discursive patterns.

Research on cognitive styles in language learning (Chen, 2022) indicates that Chinese learners tend to favor analytical and reflective processes, showing frequent dependence on mental translation to L1 during L2 processing. This strategy, although initially useful, can hinder

the development of the fluency and automatization necessary for spontaneous communication. Culturally, traditional Chinese educational contexts have valued linguistic accuracy over fluency, emphasizing metalinguistic study and pattern-drill practice. While this approach produces solid knowledge about the linguistic system, according to Lee et al., (2024). it can generate communicative inhibition and difficulties in the practical application of knowledge in spontaneous interactions.

Artificial intelligence can offer specific solutions to these challenges by creating safe practice environments where students can make mistakes without facing the social pressure of the traditional classroom. AI systems can be designed to:

1. Provide visual scaffolding that illustrates structural differences between L1 and L2 through graphic representations.

2. Offer intensive practice of challenging morphosyntactic structures through contextualized exercises.

3. Generate multimodal examples that connect linguistic forms with specific communicative functions.

4. Gradually reduce translation dependence through the strategic use of images, definitions in L2, and highly predictable contexts.

The successful implementation of these technological solutions, however, requires a deep understanding of both linguistic systems and the intercultural dimensions of learning, avoiding the direct transfer of pedagogical models developed for learners of Western languages.

AI as a tool for personalization and feedback

The adaptive capabilities of contemporary artificial intelligence allow for a degree of learning personalization until recently unthinkable, particularly valuable in the context of second

language acquisition. AI-based systems can analyze individual error patterns, identify predominant learning styles, and adapt content and sequencing according to the specific needs of each student. In the realm of corrective feedback, AI tools have evolved from simple error detection toward contextualized explanation and suggestion of alternatives. Advanced systems like intelligent tutors can:

1. Differentiate between systematic and occasional errors, prioritizing the correction of those reflecting a recurrent pattern.

2. Provide metalinguistic explanations adapted to the student's level of linguistic knowledge.

3. Offer additional specific practice for the weak points identified in the learner's performance.

4. Analyze longitudinal progress through tracking the frequency and type of errors over time.

From the perspective of cognitive acquisition processes, this immediate and personalized feedback significantly enhances the mechanisms of noticing and automatization. Correction at the precise moment of cognitive need facilitates the mnemonic consolidation of linguistic forms, while adaptive practice accelerates the development of implicit competence.

Regarding input personalization, AI systems can generate materials that respond to the personal interests and specific academic needs of each student, increasing the intrinsic motivation and perceived relevance of learning activities. For example, a business student can receive materials with vocabulary and situations from their professional field, while a literature student can access texts and analysis of works according to their aesthetic preferences.

It is crucial to emphasize, however, that this technological personalization does not replace human mediation by the teacher. The professor retains an essential role in interpreting the data provided by AI systems, identifying gaps in automated feedback, and providing the affective support necessary to maintain motivation in long-term learning processes.

Hybrid Pedagogy: AI + human educator

The effective integration of artificial intelligence in foreign language teaching requires a hybrid pedagogical model that leverages the complementary strengths of technology and teaching mediation. Far from being posed as a substitute for the teacher, AI should be conceptualized as a multiplier resource that amplifies teaching capabilities and enables approaches previously unfeasible in contexts with high student-teacher ratios.

This hybrid "AI + human educator" pedagogy could be structured around the following fundamental principles:

1. Comprehension-first: Prioritize exposure to abundant and meaningful comprehensible input before demanding spontaneous linguistic production. AI can generate unlimited volumes of input adapted to interests and level, while the teacher selects and sequences materials according to curricular objectives.

2. Reflective feedback: Integrate the immediate feedback from AI systems with spaces for metalinguistic reflection guided by the teacher, where students analyze error patterns and develop self-correction strategies.

3. Integrated communicative tasks: Design activities that maintain the focus on meaningful interaction, using AI as a support tool during the planning and execution of authentic communicative projects.

4. Transparency and ethics: Teach the critical and conscious use of AI, recognizing its potential limitations and biases, and fostering academic responsibility in its use.

For Chinese higher education contexts, where collaborative learning is gaining increasing recognition (Gao, 2023), this hybrid model could be implemented through institutional platforms that combine AI-assisted autonomous practice with in-person sessions focused on intercultural discussion, collaborative problem-solving, and applied projects, furthermore, Jin & Cortazzi (2020), agree with this idea.

The most innovative institutions are establishing specific support structures for this transition. The systematic review by Zawacki-Richter et al. (2019) underscores the importance of teacher learning communities focused on disciplinary applications of AI, highlighting common themes such as tutoring, personalized learning, and critical thinking development. The successful implementation of this model requires sustained investment in teacher professional development, not only in technical aspects but especially in the pedagogical design of learning experiences that synergistically integrate AI resources with specialized human mediation.

AI applications in the Latin American Literature Course within the Spanish Major

The study of Latin American literature represents a particular challenge for Chinese students, not only due to linguistic barriers but also because of the cultural distance from Hispanic American literary traditions. AI can mediate in this process through specific applications that function as cognitive and cultural scaffolding.

For contents spanning from pre-Hispanic literature to modernism, contrastive analysis systems can be implemented that automatically compare Spanish Baroque literature with the Chinese literary tradition of the Ming dynasty, identifying parallels in the use of metaphor, the conceptualization of nature, and the social functions of literary production. Graded anthology

generators with cultural glosses can explain concepts like “el barroco de Indias” through analogies with literary movements familiar to Chinese students, facilitating intercultural understanding.

Complementarily, intertextuality visualization tools can map influences between figures like Sor Juana Inés de la Cruz and contemporary Chinese poets such as Li Qingzhao, revealing transhistorical thematic and formal connections. For contents covering from revolutionary narrative to the pre-Boom, thematic analysis assistants can automatically identify elements of the Mexican Revolution in novels by Mariano Azuela, contrasting them with Chinese revolutionary narratives to highlight both differences and similarities in the literary representation of traumatic historical processes.

Augmented reality platforms can reconstruct literary spaces like the Andean region in the novels of José María Arguedas, superimposing layers of cultural and geographical meaning that facilitate immersion in originally distant contexts. Stylometric analysis systems help Chinese students distinguish the characteristics of incipient magical realism through the quantification of lexical patterns, syntactic structures, and recurrent narrative resources.

For contents corresponding to the Boom and post-Boom, specialized chatbots can simulate interviews with authors like García Márquez or Cortázar, adapting the language to the student's level and providing relevant contextual information. Semantic network analysis tools visualize the complex narrative structures of these works, mapping relationships between characters, spaces, and narrative times that often prove especially challenging for non-native readers.

Explanatory content generators can translate concepts like “lo real maravilloso” to the Chinese cultural context, finding approximate equivalents in their own literary tradition to

facilitate deep understanding. A concrete example would be the implementation of an AI module that analyzes One Hundred Years of Solitude identifying: elements of magical realism versus traditional realism; presence of Latin American myths and legends; and connections with family narrative in contemporary Chinese literature, particularly in works like Red Sorghum by Mo Yan where the relationship between family history and national history is also explored.

For Latin American Literature, creative writing workshops assisted by AI can also be designed where the AI suggests narrative developments in the style of studied authors, allowing students to experiment with literary registers without the pressure of completely original production. Debate forums with simulated historical characters through chatbots with personalities based on literary figures can facilitate deep understanding of production contexts. Stylistic correction systems can preserve creative content while improving linguistic correctness, balancing expressive development and formal precision.

AI application in history and overview of Spanish-Speaking Countries

Historical and cultural study requires a deep understanding of geopolitical contexts and social evolutions where AI can provide significant cognitive scaffolding for Chinese students. For contents about Spain, interactive timelines can correlate key events in Spanish history with contemporary Chinese dynasties, establishing temporal connections that facilitate relative chronological placement. Cultural geolocation systems can superimpose historical maps of the Reconquista with explanations adapted to the cognitive context of Chinese students, using familiar spatial referents to explain complex historical processes.

Automatically annotated image banks can focus on cultural details particularly relevant for Chinese students, such as differences in the pictorial representation of power between Eastern and Western traditions. For contents about Latin America, historical development simulators can

model the consequences of the encounter between pre-Hispanic cultures and the Spanish, allowing students to manipulate variables and observe long-term impacts on the formation of contemporary social structures. Comparative analysis assistants can juxtapose Latin American independence processes with Chinese revolutions, identifying common patterns in the construction of postcolonial nation-states.

Regional immersion systems can generate personalized virtual experiences for each geocultural zone, adapting the complexity level of the information to the specific preparation of each student. A specific implementation for content related to the Andean region could consist of developing an AI tool that: analyzes Quechua and Aymara influence in current Andean Spanish; generates comparisons between Inca social organization systems and Chinese feudal structures; and produces audiovisual materials with subtitles adapted to the student's Spanish level, using graduated vocabulary and contextualized cultural explanations.

For History and Overview of Spanish-Speaking Countries, historical role-playing games where students interact with key events through AI simulations allow an experiential approach to complex historical processes. Guided research projects with assistants that locate and summarize primary and secondary sources in Spanish teach essential academic skills while reducing the linguistic load associated with L2 research. The creation of interactive documentaries where AI assists in editing and narration in academic Spanish develops multimedia competencies while consolidating the use of formal registers.

Assessment and impact measurement

AI-enhanced assessment instruments can include automated rubrics that evaluate both content and linguistic competence, providing separate feedback for each dimension. Plagiarism

detection systems adapted to L2 productions can differentiate between intentional misappropriation and genuine difficulties in academic paraphrasing in a foreign language.

Longitudinal progress analyses can identify improvements in intercultural competence through tracking the complexity of cross-cultural reflections in student work (Jin & Cortazzi 2020). The integration of AI tools is specifically articulated with curricular contents to develop key competencies. For example, for the study of pre-Hispanic literature, cultural gloss generators and translators of mythological concepts enhance intercultural understanding and symbolic analysis.

When addressing the Latin American Boom, the use of style analyzers and author interview simulators fosters advanced literary analysis and students' critical competence. In the realm of colonial history, historical process simulators and documentary databases are oriented toward developing historical thinking and multicausal analysis. Finally, for regional culture, virtual tours and cultural contrast assistants seek to refine intercultural competence and regional sensitivity.

Pedagogical considerations for implementation

According to Smith et al., (2024) teacher's research ability through the didactic coherence they demonstrate to prepare, plan, execute and control the teaching-learning process and how they solve professional problems related to communication, prove that there are formative insufficiencies in the research dimension in continuing education, thus, this may originate a scarce treatment to the macro-skill´s (do research) structural decomposition and its related micro-skill. The AI era must lead to modelling a scale for the implementation of these new tools, to favour the training processes and do away with non-asserted pedagogical implications in lessons.

For teachers, it is essential to develop criteria for selecting and validating AI results in academic contexts, establishing protocols to identify and correct potential cultural or factual biases in automatically generated responses. Designing rubrics that value both disciplinary content and linguistic progress requires a deep understanding of both assessment domains.

For institutions, providing technological infrastructure that supports specialized AI tools is a fundamental requirement, as well as developing teacher training programs in digital pedagogy that transcend mere technical instruction. Ethical protocols for the use of student data must ensure the privacy and security of sensitive information generated during learning processes with AI.

For students, developing critical competence to evaluate AI-generated sources is a fundamental skill in the contemporary digital landscape. Contrast exercises between Hispanic and Chinese perspectives, facilitated by comparative analysis tools, can deepen understanding of both cultural traditions.

For students, the development of critical competence must also extend to the everyday AI tools used in their context. Teachers should guide students to understand the limitations and potential biases of language models, and to learn how to formulate prompts effectively and ethically—maximizing the usefulness of assistants such as DeepSeek for L2 learning tasks, including dialogue practice or requests for grammatical explanations—while avoiding dependency or plagiarism.

Practice in formulating questions that generate nuanced responses from AI systems develops critical thinking skills applied to interaction with artificial intelligence. This integration of AI into the specific curriculum of the Spanish Major not only facilitates linguistic acquisition but also deepens cultural and literary understanding, creating genuine bridges between the

Chinese academic tradition and Hispanic studies through adaptive and pedagogically grounded technologies.

Ethical considerations and future outlook

The integration of artificial intelligence in second language acquisition entails important ethical considerations that must be addressed institutionally and pedagogically. Algorithmic biases present in many AI systems, derived from predominantly Western training data, can perpetuate cultural stereotypes or provide distorted representations of Spanish-speaking communities.

It is essential to develop critical evaluation mechanisms for AI results that allow students and teachers to identify and question these limitations. Data privacy constitutes another central concern, particularly in educational contexts where detailed information about student performance and learning patterns is collected. Institutions must implement transparent protocols regarding the use, storage, and protection of this data, ensuring compliance with local and international privacy protection regulations.

From the perspective of educational equity, differential access to advanced AI technologies could widen existing gaps between institutions with different resource levels. Public policies and institutional initiatives must work to ensure that the pedagogical benefits of AI are available to students from diverse socioeconomic contexts. The world is not even in this sense; thoughts of Smith & Linch, (2025) reassure this idea. They consider the challenges of language teaching-learning and propose a methodology as a solution to enhance skills. Current practices often fall short, with ineffective methods and inadequate teacher training hindering student development in a given number of countries.

Looking toward the future, prospective research in AI for language acquisition will need to consider the phenomenon of regional AI ecosystems while focusing on developing systems with greater intercultural understanding, capable of mediating more effectively between diverse worldviews. The integration of multimodal modalities (voice, gesture, facial expression) in AI tutorial systems promises a more immersive and natural learning experience. Advances in affective computing will allow these systems to respond not only to cognitive needs but also to learners' emotional states, potentially optimizing conditions for language acquisition.

Higher education institutions face the challenge of preparing students for a linguistic and professional landscape where human-AI collaboration will become increasingly ubiquitous. This requires developing not only technical competencies but also fostering a critical, reflective attitude toward technology, enabling future graduates to use these tools both ethically and effectively in their professional contexts.

Conclusions

Artificial intelligence substantially redefines the paradigms of foreign language acquisition by offering genuine opportunities for personalization, error analysis, and rich input exposure. However, its effectiveness critically depends on its conscious pedagogical integration: AI without teacher mediation risks fostering superficial or overly technology-dependent learning.

For Chinese university students, the challenge and opportunity lie in using AI not as mere translation substitutes, but as cognitive and cultural mediators that facilitate immersion in originally distant linguistic and cultural universes. The example of curricular integration in the Spanish Bachelor's Degree demonstrates how specific implementations can be designed that respond to concrete disciplinary challenges through contextualized AI applications.

The future of teaching Spanish as a foreign language lies in hybrid models where technology enhances understanding without replacing the human bond that underpins every genuine act of communication. Future research should focus on the rigorous evaluation of the impacts of these integrations on long-term competency development and on identifying best practices for balancing automation and human mediation in diverse learning contexts.

References

Chapelle, C. A. (2001). *Computer Applications in Second Language Acquisition: Foundations for Teaching, Testing and Research*. Cambridge University Press.

Chen, L. (2022). Chinese EFL Learners' Cognitive Styles and the Role of Feedback in Oral Tasks. *Asian EFL Journal*, *24*(2), 98-117.

Gao, L. (2023). Blended Learning and Digital Literacy in Chinese Higher Education. *Frontiers in Education*, 8, 1142765. https://doi.org/10.3389/feduc.2023.1142765

Jin, L. & Cortazzi, M. (2020). *Researching Intercultural Learning: Investigations in Language and Education*. Palgrave Macmillan.

Krashen, S. (1982). *Principles and Practice in Second Language Acquisition*. Pergamon Press.

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

Lee, J., & Warschauer, M. (2023). Generative AI in Language Education: Promises and Perils. *Language Learning & Technology*, *27*(2), 1-15. https://doi.org/10.10125/73513

Lee, J., Warschauer, M., & Zheng, B. (2024). *Language Learning in the Age of AI: Rethinking Pedagogy and Assessment*. Routledge.

Schmidt, R. (1990). The Role of Consciousness in Second Language Learning. *Applied Linguistics*, *11*(2), 129-158.

Schmidt, R. (2001). *Attention.* In P. Robinson (Ed.), Cognition and Second Language Instruction (pp. 3-32). Cambridge University Press.

Smith Batson, M. C., Téllez Lazo, L., & Arteaga Pupo, F. (2024). Una caracterización del rol investigativo del profesor para la solución de problemas comunicativos. Universidad de La Habana, (300), e8929. https://revistas.uh.cu/revuh/article/view/10364

Smith Batson, M. C., & Linch Aguilera, M. (2025). English oral and written communication essentials through the 5E methodology. *Didáctica y Educación, 16*(1), 21–44. https://revistas.ult.edu.cu/index.php/didascalia/article/view/1511

VanPatten, B. (1996). *Input Processing and Grammar Instruction*. Ablex.

VanPatten, B. (2015). *While We're on the Topic: BVP on Language, Acquisition, and Classroom Practice*. ACTFL.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic Review of Research on Artificial Intelligence Applications in Higher Education. *International Journal of Educational Technology in Higher Education*, *16*(39). https://doi.org/10.1186/s41239-019-0171-0