

Technology, Pedagogy, Learner Engagement, and Linguistic Development in Contemporary Language Learning: A Systematic Literature Review

Chan Jie Yan^{1*}, Neo Yee Feng², Chong Pei Qi³, Ayisha Zhang Huiqin⁴, Noor Hanim Rahmat⁵, Lily Thamrin⁶

^{1,2,3,4,5}Akademi Pengajian Bahasa, Universiti Teknologi MARA, Shah Alam, Malaysia

⁶Fakultas Keguruan dan Ilmu Pendidikan, Universitas Tanjungpura, Pontianak, Indonesia

*Corresponding Author

DOI: <https://doi.org/10.47772/IJRISS.2026.102100196>

Received: 07 September 2026; Accepted: 14 September 2026; Published: 07 October 2026

ABSTRACT

This systematic literature review (SLR) examines current trends and developments in instructional design for Mandarin language learning. Guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, the review systematically analysed studies retrieved from the Scopus and Web of Science databases published between 2021 and 2026. The selection process involved identification, screening, eligibility assessment, data abstraction, and quality appraisal. Following the application of the inclusion and exclusion criteria and quality assessment procedures, 23 studies were retained for analysis. An integrative thematic analysis was employed to synthesise findings from quantitative, qualitative, and mixed-methods studies. The analysis resulted in four major themes: Technology-Enhanced Language Learning and Artificial Intelligence, Innovative Pedagogical Approaches, Learner Engagement and Learning Experiences, and Linguistic Development within Specific Learning Contexts. The findings indicate that emerging technologies such as virtual reality, ChatGPT, large language models, and intelligent tutoring systems have significantly influenced language instruction by enhancing learner engagement and supporting personalised learning experiences. Furthermore, innovative pedagogical approaches, including flipped learning, task-based learning, and curriculum design innovations, contribute to improved language proficiency and communication skills. The review also highlights the importance of learner motivation, self-regulated learning, and supportive learning environments in facilitating successful language acquisition. Overall, the findings provide valuable insights for educators, curriculum designers, and researchers seeking to enhance language teaching and learning in contemporary educational contexts.

Keywords: Language Learning, Instructional Design, Artificial Intelligence, Learner Engagement, Systematic Literature Review

INTRODUCTION

Background of the study

Language education has experienced significant transformation due to rapid technological advancements, evolving pedagogical practices, and increasing emphasis on learner-centered instruction. The emergence of artificial intelligence (AI), virtual reality (VR), intelligent tutoring systems, large language models, and mobile learning applications has expanded opportunities for enhancing language teaching and learning. Recent studies have demonstrated the potential of these technologies to improve learners' vocabulary acquisition, writing proficiency, motivation, and engagement (Muangchan et al., 2026; Tseng & Lin, 2024; Liu & Ma, 2025; Wang & Reynolds, 2024). At the same time, innovative pedagogical approaches such as flipped learning, the Production-Oriented Approach (POA), Universal Design for Learning (UDL), and service-learning have

gained attention for their effectiveness in promoting active learning and improving educational outcomes. Furthermore, learner-related factors such as motivation, learning strategies, and engagement, as well as contextual influences including multilingual environments and instructional materials, have been recognized as important determinants of language learning success. Collectively, these developments indicate that language education is becoming increasingly multifaceted, requiring a comprehensive understanding of how technology, pedagogy, learner characteristics, and linguistic development interact to support effective learning.

Statement of Problem

Despite the growing body of research in language education, existing studies tend to focus on specific aspects of the field, such as technology integration, instructional approaches, learner motivation, or linguistic development, rather than examining these dimensions collectively. For example, studies have investigated the effectiveness of AI-powered learning tools, VR-supported learning environments, flipped classrooms, and learner strategies independently, producing fragmented findings that are difficult to synthesize into a coherent understanding of contemporary language education. Moreover, language learning occurs in diverse educational, cultural, and linguistic contexts, making it challenging to identify overarching trends and evidence-based practices. Consequently, educators, curriculum developers, and policymakers lack a comprehensive synthesis of current research that integrates technological innovations, pedagogical developments, learner-centered factors, and contextual influences. This situation highlights the need for a systematic review that examines these interconnected dimensions to provide a holistic perspective on language teaching and learning.

Research Gap

Although previous studies have reported positive outcomes related to technology-enhanced learning, innovative pedagogical approaches, and learner engagement, there is limited research synthesizing these findings within a single comprehensive framework. Most existing reviews focus on a specific technology, teaching strategy, or learner characteristic, resulting in a lack of integrated understanding regarding how these factors collectively contribute to linguistic development. Furthermore, insufficient attention has been given to the relationships among technology adoption, instructional innovation, learner experiences, and contextual influences across different language learning environments. Therefore, a research gap exists in the literature concerning the holistic examination of these interconnected factors. To address this gap, this systematic literature review synthesizes evidence from recent studies to identify major themes, emerging trends, and future directions related to technology, pedagogy, learner engagement, and linguistic development in language education. The findings are expected to contribute to both theoretical understanding and practical applications in contemporary language learning environments.

Research Questions (RQ)

Research questions are important to a systematic literature review (SLR). The questions provide the foundation and direction for the entire review process. A well-defined research question ensures that the literature search is exhaustive and systematic, covering all relevant studies that address key aspects of the topic (Kitchenham, 2007). The research questions in this SLR are formulated based on the PICO framework. This framework is a mnemonic style used to formulate research questions, particularly in qualitative research, proposed by Lockwood et al. (2015). PICO stands for Population, Interest, and Context. This SLR is done to answer the four research questions below;

RQ1: How are technology-enhanced learning tools and artificial intelligence (AI) being utilized to support language teaching and learning in contemporary educational contexts?

RQ2: What innovative pedagogical approaches have been implemented to improve language learning outcomes, and what evidence exists regarding their effectiveness?

RQ3: How do learner engagement and learning experiences influence language learning outcomes across different educational settings?

RQ4: How do linguistic development within specific learning contexts factors shape language teaching and learning practices in diverse educational environments?

LITERATURE REVIEW

THEORETICAL FRAMEWORK

The Technology Acceptance Model (TAM), developed by Davis (1989), is one of the most widely used theories for explaining users' adoption and acceptance of technology. TAM proposes that an individual's intention to use a technological system is primarily determined by two key constructs: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which a user believes that a particular technology will enhance learning performance, while perceived ease of use concerns the extent to which the technology can be used with minimal effort. In language education, TAM provides a strong theoretical foundation for understanding the adoption of technologies such as artificial intelligence (AI), ChatGPT, virtual reality (VR), intelligent tutoring systems, and mobile learning applications. Studies have shown that learners are more likely to embrace technology-enhanced language learning tools when they perceive them as useful, accessible, and capable of improving language proficiency. As educational institutions increasingly integrate AI-driven technologies into language classrooms, TAM helps explain learners' acceptance, engagement, and continued use of these innovations. Therefore, the model serves as an appropriate theoretical lens for examining technology-enhanced language learning and AI applications in contemporary language education.

Constructivist Learning Theory, advanced by Vygotsky (1978), argues that learning is an active process in which individuals construct knowledge through interaction with their environment and with others. Central to the theory is the concept of the Zone of Proximal Development (ZPD), which describes the gap between what learners can accomplish independently and what they can achieve with guidance from teachers or peers. The theory emphasizes collaborative learning, scaffolding, problem-solving, and learner-centered instruction. In language education, Constructivist Learning Theory provides a valuable framework for understanding innovative pedagogical approaches. Teaching methods such as flipped learning, service learning, Universal Design for Learning (UDL), and the Production-Oriented Approach (POA) encourage learners to actively participate in the learning process rather than passively receive information. Similarly, effective curriculum design focuses on authentic learning experiences that promote interaction, reflection, and knowledge construction. By emphasizing meaningful engagement and social interaction, Constructivist Learning Theory supports the development of instructional approaches that foster deeper language learning, critical thinking, and learner autonomy in diverse educational settings.

Self-Determination Theory (SDT), proposed by Deci and Ryan (1985, 2000), is a motivational theory that explains the psychological factors influencing human behavior, engagement, and learning. According to SDT, individuals are more likely to demonstrate intrinsic motivation when three fundamental psychological needs are fulfilled: autonomy, competence, and relatedness. Autonomy refers to the feeling of having control over one's learning activities, competence relates to the belief in one's ability to perform tasks successfully, and relatedness concerns the sense of connection with others. In language learning contexts, SDT provides a useful framework for examining learner engagement and learning experiences. Students who feel autonomous and capable are more likely to adopt effective learning strategies, participate actively in classroom activities, and persist in overcoming language learning challenges. Additionally, supportive teacher-student relationships and collaborative learning environments enhance learners' sense of relatedness, further strengthening motivation and engagement. Consequently, SDT helps explain why motivated and engaged learners tend to achieve better language learning outcomes and is highly relevant for understanding learner-centered factors within language education research.

Sociocultural Theory (SCT), introduced by Vygotsky (1978), emphasizes that learning and cognitive development are strongly influenced by social interaction, cultural practices, and environmental contexts. The

theory argues that knowledge is constructed through participation in socially meaningful activities, where language functions as a critical mediating tool for communication and learning. SCT highlights the importance of interaction among learners, teachers, peers, instructional materials, and the broader learning environment in shaping educational outcomes. In language education, Sociocultural Theory provides a strong foundation for understanding language learning contexts, instructional materials, and linguistic development. Learners acquire language more effectively when they engage in authentic communication, collaborate with others, and interact with culturally relevant learning resources. Furthermore, learning environments such as multilingual classrooms, online learning platforms, and social media communities create opportunities for meaningful language use and development. Instructional materials and curricula also play a significant mediating role by providing learners with appropriate linguistic input and opportunities for practice. Therefore, SCT explains how contextual, social, and cultural factors collectively contribute to linguistic development and language learning success across diverse educational contexts.

CONCEPTUAL FRAMEWORK

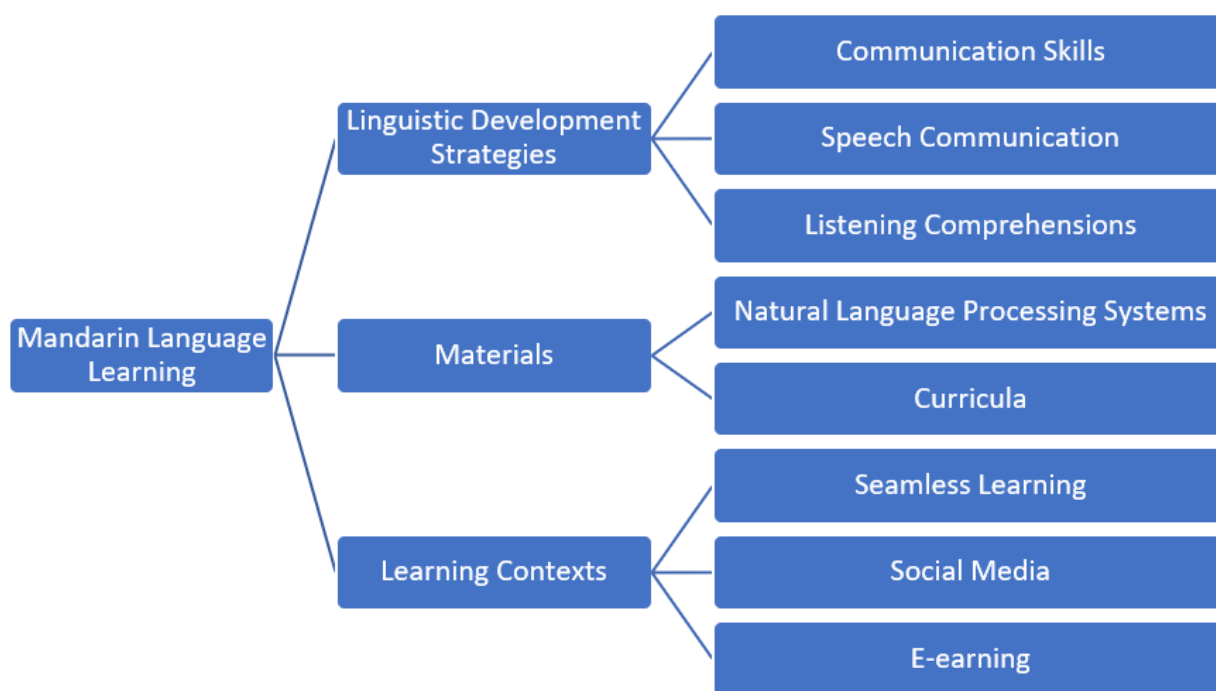


Figure 1 The Conceptual Framework of “Technology, Pedagogy, Learner Engagement, and Linguistic Development in Language Education”

The conceptual framework for this systematic literature review, “Technology, Pedagogy, Learner Engagement, and Linguistic Development in Language Education” is built upon four interrelated constructs represented by the identified themes: Technology-Enhanced Language Learning and AI, Innovative Pedagogical Approaches, Learner Engagement and Learning Experiences, and Linguistic Development within specific learning contexts. As illustrated in the conceptual framework, language learning is influenced by the interaction among linguistic development strategies, learning materials, and learning contexts. These dimensions collectively reflect the four themes identified in the systematic literature review. Theme 1, Technology-Enhanced Language Learning and AI, is represented through technology-mediated materials and learning contexts, including natural language processing systems, e-learning, social media, and seamless learning environments. This theme is supported by the Technology Acceptance Model (Davis, 1989), which explains how learners' perceptions of usefulness and ease of use influence technology adoption. Theme 2, Innovative Pedagogical Approaches, is reflected through curricula and instructional materials that facilitate active knowledge construction and meaningful learning experiences, consistent with Constructivist Learning Theory (Vygotsky, 1978). Theme 3, Learner Engagement and Learning Experiences, is embedded within learning contexts that promote autonomy, competence, and relatedness, as explained by Self-Determination Theory (Deci & Ryan, 1985, 2000). Finally,

Theme 4, Linguistic Development within Specific Learning Contexts, is represented by linguistic development strategies that contribute to communication skills, speech communication, and listening comprehension. This relationship is underpinned by Sociocultural Theory (Vygotsky, 1978), which emphasizes the role of social interaction, cultural context, and learning environments in language development. Collectively, these theoretical perspectives explain how technology, pedagogy, learner engagement, and contextual factors interact to influence language learning outcomes.

METHODOLOGY

This systematic literature review (SLR) adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework developed by Page et al. (2021). PRISMA is a widely recognized and rigorous approach that promotes transparency, consistency, and comprehensiveness throughout the review process. The framework provides systematic guidelines for identifying, screening, evaluating, and synthesizing relevant studies, thereby enhancing the reliability and validity of review findings.

In this study, the authors collaboratively conducted the review process by identifying, evaluating, and analysing literature relevant to the research topic. To ensure broad and comprehensive coverage of scholarly publications, two established databases, Web of Science (WoS) and Scopus, were selected as the primary sources for data retrieval due to their extensive indexing of high-quality academic literature.

The review process followed five stages of the PRISMA framework: (i) identification, (ii) screening, (iii) eligibility, (iv) data abstraction and analysis, and (v) quality appraisal. During the identification stage, a systematic search was conducted in the selected databases to retrieve all potentially relevant studies. In the screening stage, duplicate records and studies that did not meet the predefined inclusion criteria were excluded based on their titles and abstracts. The eligibility stage involved a detailed assessment of the full-text articles to determine their suitability for inclusion in the review. Subsequently, during the data abstraction and analysis stage, relevant information was extracted, organised, and synthesised to identify patterns, themes, and research trends related to the study topic. Finally, the quality appraisal stage was conducted to evaluate the methodological rigor and credibility of the selected studies, ensuring that only high-quality evidence informed the review findings.

By following the PRISMA framework, this study maintained a systematic, transparent, and replicable review process, thereby enhancing the trustworthiness of the findings and providing a robust foundation for future research and practice in the field.

Identification

In accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Page et al., 2021), the identification stage serves as the initial phase of the systematic literature review process. The purpose of this stage is to comprehensively locate potentially relevant studies while minimizing selection bias and ensuring transparency in the search process. To achieve this objective, a systematic search was conducted in two major bibliographic databases, namely Scopus and Web of Science (WoS), using predefined search strings related to instructional design and Mandarin language learning.

The databases were selected due to their extensive multidisciplinary coverage, rigorous indexing standards, and broad collection of peer-reviewed scholarly publications. A structured search strategy was employed using combinations of keywords associated with instructional design, curriculum development, and Mandarin language education. The complete search strings used in both databases are presented in Table 1.

The search was conducted in July 2026 and yielded a total of 117 records, comprising 17 records from Scopus and 100 records from Web of Science. The retrieval of studies from multiple databases enhanced the comprehensiveness of the review by reducing database-specific bias and increasing the likelihood of capturing diverse perspectives and research contexts. Furthermore, the use of carefully selected keywords ensured that

the search remained aligned with the objectives of the review while accommodating variations in terminology across different studies.

Overall, the identification stage established a comprehensive evidence base for the subsequent screening and eligibility processes, thereby supporting the rigor, transparency, and replicability of the review.

Table 1 The Search String

Scopus	TITLE-ABS-KEY (("instructional design" OR "curriculum design" OR "educational design" OR "learning design") AND ("mandarin class" OR "mandarin course" OR "mandarin language" OR "Chinese language class" OR "Chinese course"))
Web of Science	TITLE-ABS-KEY (("instructional design" OR "curriculum design" OR "educational design" OR "learning design") AND ("mandarin class" OR "mandarin course" OR "mandarin language" OR "Chinese language class" OR "Chinese course"))

Screening

During the screening stage, the records identified from Scopus and Web of Science (WoS) were evaluated to determine their relevance to the objectives and research questions of the study. This phase involved refining the initial pool of studies through the application of predefined inclusion and exclusion criteria, as well as a duplication check.

Following the preliminary assessment, 93 publications were excluded because they did not meet the scope, relevance, or methodological requirements of the review. Consequently, 24 articles (Scopus = 5; WoS = 19) were retained for further evaluation in the eligibility stage, as illustrated in Figure 2.

The screening process prioritised scholarly publications that provided substantive empirical evidence related to the research topic. Therefore, publication types such as book reviews, book series, conference proceedings, book chapters, meta-syntheses, and meta-analyses were excluded. To ensure relevance to current educational developments, only peer-reviewed journal articles published in English between 2021 and 2026 were considered. A duplication check was also conducted, which identified no duplicate records across the databases.

The systematic application of these criteria enhanced the quality and relevance of the evidence base, ensuring that only studies directly related to the research objectives progressed to the eligibility stage.

Eligibility

The eligibility stage involved a comprehensive full-text assessment of the studies retained after screening. At this stage, the titles, abstracts, and full-text content of the selected articles were carefully examined to ensure compliance with the predefined inclusion criteria and alignment with the objectives of the present study.

The assessment focused on the relevance of each study to the research topic, the methodological approach employed, and the extent to which the findings contributed to addressing the research questions. Studies that were not empirical in nature or did not provide sufficient scientific evidence were excluded from further consideration. As a result, one article was omitted during this stage because they did not meet the empirical research requirements established for the review.

Following the eligibility assessment, a final total of 23 articles satisfied all inclusion criteria and were included in the systematic literature review. The selection criteria applied throughout the screening and eligibility stages are presented in Table 2.

Table 2 Selection Criteria

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2021–2026	Before 2021
Literature Type	Journal Articles	Conference Proceedings, Books, Review Articles
Publication Stage	Final Publication	In Press
Subject Area	Instructional Design and Mandarin Language Learning	Studies outside the research scope

Data Abstraction and Analysis

An integrative analysis approach was employed in this study to examine and synthesise findings from studies adopting diverse research designs, including quantitative, qualitative, and mixed-methods approaches. This method enabled the researchers to obtain a comprehensive understanding of research related to instructional design and Mandarin language learning from multiple methodological perspectives.

A total of 23 selected articles were systematically reviewed and analysed to extract information relevant to the research objectives. The researchers examined the study aims, methodologies, participants, educational settings, and key findings of each article. The extracted data were subsequently organised and synthesised to identify recurring patterns, trends, and emerging issues within the literature.

To facilitate thematic development, the researchers collaboratively analysed the findings from the selected studies and identified common concepts across the literature. Throughout the analysis process, detailed notes were maintained to document interpretations, analytical insights, and emerging ideas. The researchers regularly compared their analyses and discussed any discrepancies to ensure consistency and reliability in the coding and theme-generation processes.

Through an iterative process of review and discussion, the themes and subthemes were refined to ensure their clarity, relevance, and alignment with the objectives of the study. This collaborative approach enhanced the credibility and trustworthiness of the findings by establishing consensus among the researchers regarding the classification and interpretation of the data. The thematic analysis ultimately resulted in the identification of four major themes: Technology-Enhanced Language Learning and AI, Innovative Pedagogical Approaches, Learner Engagement and Learning Experiences, and Linguistic Development within Specific Learning Contexts. These themes formed the basis for understanding the current trends and developments in instructional design for Mandarin language learning.

Quality Appraisal

Quality appraisal is an essential component of systematic literature reviews as it ensures that the included studies meet established standards of methodological rigor and credibility (Kitchenham, 2007). Accordingly, the quality of the selected articles was assessed using the framework proposed by Abouzahra et al. (2020).

The framework consists of six evaluation questions designed to assess the clarity, methodological quality, and scholarly contribution of each study. Each criterion was assessed using a three-point scale: Yes (Y = 1) when the criterion was fully met, Partly (P = 0.5) when the criterion was partially met, and No (N = 0) when the criterion was not met.

Table 3 Quality Assessment Criteria Adapted from Abouzahra et al. (2020)

No.	Question
QA1	Is the purpose of the study clearly stated?
QA2	Is the interest and the usefulness of the work clearly presented?
QA3	Is the study methodology clearly established?
QA4	Are the concepts and approaches clearly defined?
QA5	Is the study compared with or evaluated against related studies?
QA6	Are the limitations of the study clearly discussed?

Each researcher independently evaluated the selected studies using the six quality assessment criteria. The individual scores were subsequently compared and aggregated to determine the final quality score for each article. A study was considered eligible for inclusion if its overall score exceeded 3.0, ensuring that only studies of sufficient methodological quality were retained for the final analysis.

The outcomes of the quality appraisal are presented in Table 3, demonstrating that the selected studies met the minimum quality standards required for inclusion in this systematic literature review.

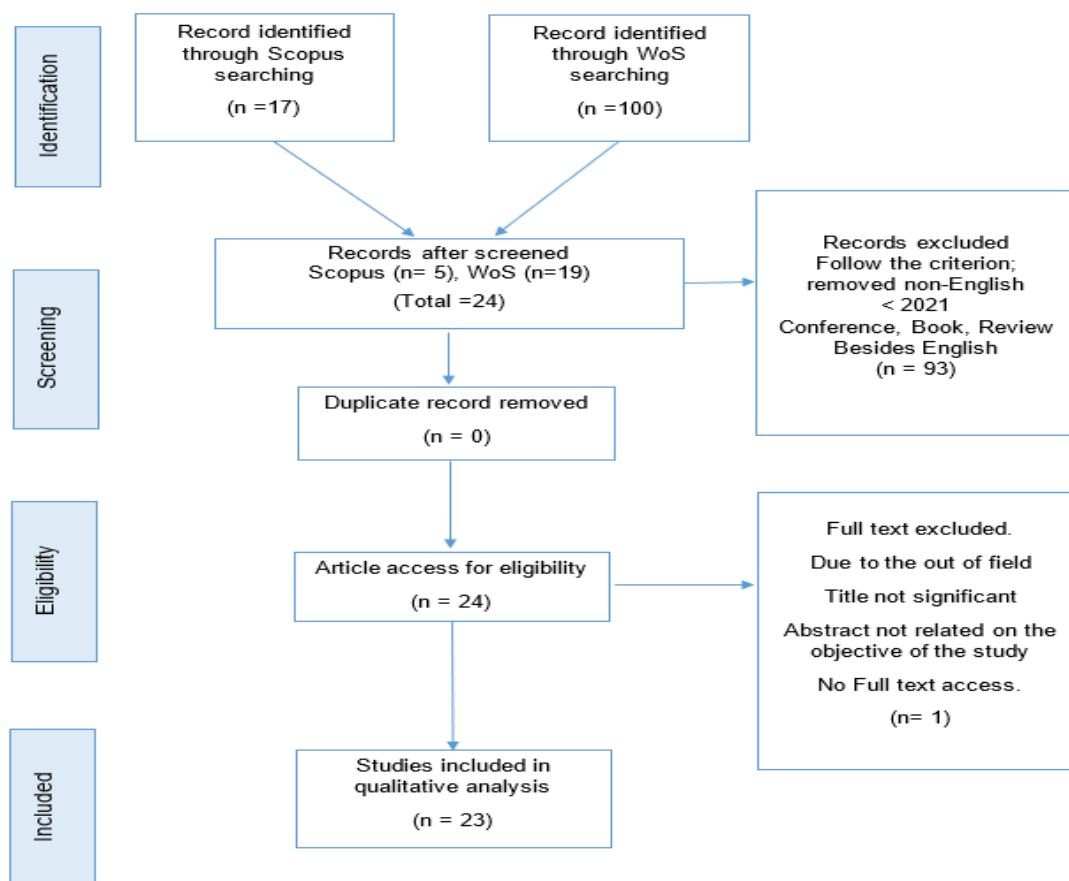


Figure 2 PRISMA flow diagram illustrating the study selection process (Moher et al., 2009; Page et al., 2021).

FINDINGS AND DISCUSSION

Quality of Assessment

Table 4 presents the results of the quality appraisal conducted on the 23 selected studies using the quality assessment criteria adapted from Abouzahra et al. (2020). Each study was evaluated based on six criteria, namely the clarity of the study purpose, the significance and usefulness of the research, the rigor of the methodology, the clarity of the conceptual framework or approach, comparisons with related studies, and the

discussion of research limitations. Scores were assigned using a three-point scale: Yes (Y = 1), Partly (P = 0.5), and No (N = 0).

The quality assessment revealed that the majority of the selected studies were of moderate to high quality. Based on the established classification, studies scoring 80% and above were considered high-quality studies, while those scoring between 60% and 79% were categorised as moderate-quality studies. Studies with scores below 60% were classified as lower-quality studies.

A total of seven studies achieved high-quality ratings, namely PS2, PS9, PS10, PS14, PS15, PS18, and PS20, with percentage scores ranging from 83.3% to 100%. These studies demonstrated strong methodological rigor, clearly articulated research objectives, well-defined approaches, and comprehensive reporting of findings. Notably, PS2 obtained the highest score (100%), satisfying all six quality assessment criteria.

The majority of the selected studies (13 studies) were classified as moderate quality, including PS1, PS3, PS4, PS5, PS6, PS7, PS8, PS12, PS13, PS16, PS17, PS21, and PS23. These studies generally presented clear research objectives and methodologies but showed minor shortcomings, particularly in relation to comparative analyses with previous studies and the discussion of research limitations.

Meanwhile, three studies (PS11, PS19, and PS22) were categorised as lower-quality studies, obtaining scores of 58.3%. Although these studies fulfilled several assessment criteria, they demonstrated limitations in terms of conceptual clarity, comparative evaluation, or methodological reporting. Nevertheless, all three studies exceeded the minimum acceptance threshold of 3.0 and were therefore retained for analysis.

Overall, the quality appraisal findings indicate that the selected studies provide a reliable and robust evidence base for the systematic literature review. With the majority of studies demonstrating moderate to high methodological quality, the findings derived from the thematic analysis can be considered credible and sufficiently rigorous to address the objectives of the review. Table 4 summarises the quality assessment results for all 23 selected studies.

Table 4 Quality Assessment for the Selected 23 Papers

Study	Author(s) & Year	Article Title	QA1	QA2	QA3	QA4	QA5	QA6	Total Mark	Percentage (%)
PS1	Ling et al. (2026)	Navigating Challenges in Teaching and Learning Mandarin at a British University in Malaysia	Y	Y	Y	P	N	P	4.0	66.7
PS2	Muangchan et al. (2026)	Task-Based Learning with VR Support in CFL Learning	Y	Y	Y	Y	Y	Y	6.0	100
PS3	Zeng et al. (2025)	Grey correlation analysis on influencing factors of online learning satisfaction of college students' Chinese course	Y	Y	Y	Y	N	N	4.0	66.7
PS4	Lau et al. (2025)	Effects of instructional factors on students' acceptance of and participation in flipped language learning	Y	Y	Y	Y	N	N	4.0	66.7
PS5	Zhou et al. (2024)	Motivational design for enhancing behavioral engagement in a flipped Chinese course	Y	Y	Y	Y	N	N	4.0	66.7

PS6	Zhao & Howard (2025)	Developing a Pinyin curriculum for early biliteracy development in a Mandarin-English dual language program	Y	Y	Y	Y	N	P	4.5	75.0
PS7	Wang & Reynolds (2024)	Beyond the Books: Exploring Factors Shaping Chinese English Learners' Engagement with Large Language Models for Vocabulary Learning	Y	Y	Y	Y	N	N	4.0	66.7
PS8	Tseng & Lin (2024)	Enhancing EFL Learners' Writing with ChatGPT: A University-Level Course Design	Y	Y	Y	Y	N	N	4.0	66.7
PS9	Liu & Ma (2025)	Supporting low-proficiency L2 learners' vocabulary learning with custom GPT-scaffolded corpus-based language pedagogy	Y	Y	Y	Y	P	Y	5.5	91.7
PS10	Su et al. (2024)	Lexical complexity in exemplar EFL texts	Y	Y	Y	Y	Y	N	5.0	83.3
PS11	Zhang & Zhang (2025)	Exploring technology-assisted language learning innovations and effectiveness	Y	Y	Y	P	N	N	3.5	58.3
PS12	Sharma et al. (2024)	Traditional vs Modern English Language Teaching Methods	Y	Y	Y	P	Y	N	4.5	75.0
PS13	Bulusan (2026)	An emerging instructional materials design model for ESL and EFL contexts	Y	Y	Y	Y	P	N	4.5	75.0
PS14	Pan & Sun (2024)	An innovative pictographic glosses design for East Asian EFL vocabulary learners	Y	Y	Y	Y	Y	N	5.0	83.3
PS15	Xuan et al. (2024)	The Effectiveness of the Production-Oriented Approach	Y	Y	Y	Y	Y	P	5.5	91.7
PS16	Mahardika (2023)	Thai Students' Strategies in Learning English Vocabulary	Y	Y	Y	P	N	Y	4.5	75.0
PS17	Mao & Peng (2024)	Exploring Chinese University Students' Learning Strategy Use in EMI Courses	Y	Y	Y	Y	P	N	4.5	75.0
PS18	Alghamdy (2023)	The Effect of Universal Design for Learning	Y	Y	Y	Y	Y	N	5.0	83.3
PS19	Dahbi (2023)	Integrating an Intelligent Language Tutoring System in Teaching English Grammar	Y	Y	Y	P	N	N	3.5	58.3
PS20	Ebrahimi (2022)	Ubiquitous learning: the	Y	Y	Y	P	Y	Y	5.0	83.3

		effect of LingAR application								
PS21	Chien (2023)	Analysis of 31 Taiwanese EFL undergraduates' designs and implementations of contextualized language instruction as service learning	Y	Y	Y	Y	N	P	4.5	75.0
PS22	Kumar et al. (2022)	Adopting Learning Strategies for English Language Acquisition	Y	Y	Y	P	N	N	3.5	58.3
PS23	Hanh (2021)	Vocabulary Learning Strategy and Vietnamese University Students' Learning Experience in English as medium of instruction classrooms	Y	Y	Y	Y	P	N	4.5	75.0

Themes (Formed from Table 4)

Table 5 Analysis for Themes

Theme	Theme Name	Number of Studies
Theme 1	Technology-Enhanced Language Learning and AI	7
Theme 2	Innovative Pedagogical Approaches	9
Theme 3	Learner Engagement and Learning Experiences	5
Theme 4	Linguistic Development within Specific Learning Contexts	2

Table 5 presents the thematic distribution of the 23 studies included in this systematic literature review. The findings reveal four major themes that reflect current research trends in language teaching and learning. The largest theme, Innovative Pedagogical Approaches (10 studies), accounts for the highest proportion of the literature. This indicates that researchers are actively exploring new teaching methods, curriculum frameworks, and instructional designs to improve language learning outcomes and respond to diverse learner needs. The second largest theme, Technology-Enhanced Language Learning and AI (7 studies), highlights the growing integration of digital technologies such as virtual reality, ChatGPT, large language models, intelligent tutoring systems, and mobile learning applications into language education. These studies suggest that technology can enhance learner engagement, motivation, and language proficiency. Meanwhile, Learner Engagement and Learning Experiences (5 studies) emphasizes the importance of learner-related factors, including learning strategies, satisfaction, motivation, and engagement, in determining language learning success. Finally, Linguistic Development within Specific Learning Contexts (2 studies) focuses on contextual challenges, curriculum adaptation, and linguistic development in diverse educational settings. Overall, the analysis demonstrates that contemporary language education research is primarily driven by pedagogical innovation and technological advancement, while also recognizing the critical role of learner characteristics and contextual factors in shaping effective language learning experiences.

Theme 1 (T1): Technology-Enhanced Language Learning and AI

Table 6 Studies Group under Theme 1 (T1): Technology-Enhanced Language Learning and AI

PS ID	Authors	Article Title
PS2	Muangchan, P.; Anggoro, K.J.; Kateleatprasert, P. (2026)	Task-Based Learning with VR Support in CFL Learning
PS7	Wang, X.C.; Reynolds, B.L. (2024)	Beyond the Books: Exploring Factors Shaping Chinese English Learners' Engagement with Large Language Models for Vocabulary Learning

PS8	Tseng, Y.C.; Lin, Y.H. (2024)	Enhancing English as a Foreign Language (EFL) Learners' Writing with ChatGPT: A University-Level Course Design
PS9	Liu, J.; Ma, Q. (2025)	Supporting Low-Proficiency L2 Learners' Vocabulary Learning with Custom GPT-Scaffolded Corpus-Based Language Pedagogy: A Case Study
PS11	Zhang, Y.D.; Zhang, Y.L. (2025)	Exploring Technology-Assisted Language Learning Innovations and Effectiveness in Enhancing English Linguistics Skills for College Students
PS19	Dahbi, M. (2023)	Integrating an Intelligent Language Tutoring System in Teaching English Grammar
PS20	Ebrahimi, M. (2022)	Ubiquitous Learning: The Effect of LingAR Application on EFL Learners' Language Achievement and the Realization of Their Motivation Towards Mobile Learning

Table 6 shows that seven studies were categorized under Technology-Enhanced Language Learning and AI. These studies focused on the use of emerging technologies, including virtual reality (VR), ChatGPT, custom GPTs, large language models (LLMs), intelligent tutoring systems, and mobile learning applications to support language learning. The findings generally indicate that technology integration can improve learners' vocabulary acquisition, writing skills, grammar learning, motivation, and engagement. Furthermore, AI-powered tools and digital learning environments provide personalized learning experiences and immediate feedback, helping learners overcome language learning challenges more effectively. The increasing number of studies within this theme demonstrates the growing interest in leveraging advanced technologies to enhance language teaching and learning processes in various educational contexts.

Theme 2 (T2): Innovative Pedagogical Approaches

Table 7 Studies Group under Theme 2 (T2): Innovative Pedagogical Approaches

PS ID	Authors	Article Title
PS4	Lau, K.-L.; Qian, Q.; Chiu, T.K.F. (2025)	Effects of Instructional Factors on Students' Acceptance of and Participation in Flipped Language Learning
PS5	Zhou, X.; Chen, S.; Ohno, S.; She, J.; Kameda, H. (2024)	Motivational Design for Enhancing Behavioral Engagement in a Flipped Chinese Course
PS6	Zhao, M.Q.; Howard, E. (2025)	Developing a Pinyin Curriculum for Early Biliteracy Development in a Mandarin-English Dual Language Program
PS12	Sharma, N.; Manjari, N.P.; Joshi, H. (2024)	Traditional vs Modern English Language Teaching Methods: Study Based on a Survey
PS13	Bulusan, F. (2026)	An Emerging Instructional Materials Design Model for English as a Second Language (ESL) and English as a Foreign Language (EFL) Senior High School Contexts
PS14	Pan, L.C.; Sun, J.C.Y. (2024)	An Innovative Pictographic Glosses Design for East Asian EFL Vocabulary Learners: Effects on Retention Performance and Situational Interest
PS15	Xuan, Q.Y.; Cheung, A.; Yin, H.B.; Yu, X.X.; Huang, R.F. (2024)	The Effectiveness of the Production-Oriented Approach to Enhance Adult Chinese EFL Learners' Language Proficiency: A Comparative Study of Three Language Teaching Approaches
PS18	Alghamdy, R.Z. (2023)	The Effect of Universal Design for Learning on the Proficiency of English as a Foreign Language Students' Acquisition of Reading and Vocabulary Skills
PS21	Chien, C.W. (2023)	Analysis of 31 Taiwanese EFL Undergraduates' Designs and Implementations of Contextualized Language Instruction as Service Learning: A Case Study

Table 7 indicates that Innovative Pedagogical Approaches is the most dominant theme, comprising ten studies. These studies examined innovative teaching approaches such as flipped learning, the Production-Oriented Approach (POA), Universal Design for Learning (UDL), service-learning, curriculum development, and instructional materials design. The findings suggest that learner-centered pedagogies and well-designed instructional models contribute significantly to improving language proficiency, engagement, and learning outcomes. The prominence of this theme reflects researchers' continuous efforts to develop and refine teaching methods that address diverse learner needs and adapt to changing educational environments. Overall, these studies emphasize the importance of pedagogical innovation in achieving effective language education.

Theme 3 (T3): Learner Engagement and Learning Experiences

Table 8 Studies Group under Theme 3 (T3): Learner Engagement and Learning Experiences

PS ID	Authors	Article Title
PS3	Zeng, Y.; Yang, K.; Yang, Y. (2025)	Grey Correlation Analysis on Influencing Factors of Online Learning Satisfaction of College Students' Chinese Course
PS16	Mahardika, A.A.A. (2023)	Thai Students' Strategies in Learning English Vocabulary
PS17	Mao, Y.T.; Peng, J.E. (2024)	Exploring Chinese University Students' Learning Strategy Use in English-Medium Instruction Courses
PS22	Kumar, T.; Roy, V.K.; Yunus, M.M. (2022)	Adopting Learning Strategies for English Language Acquisition on Secondary Level Students
PS23	Hanh, L.T.T. (2021)	Vocabulary Learning Strategy and Vietnamese University Students' Learning Experience in English as Medium of Instruction Classrooms

As presented in Table 8, five studies were grouped under Learner Engagement and Learning Experiences. These studies investigated how learners' strategies, motivation, satisfaction, and engagement influence language learning outcomes. The findings reveal that effective learning strategies, particularly metacognitive and cognitive strategies, play a significant role in enhancing language acquisition. Additionally, factors such as learner motivation, teacher-student interaction, and engagement were found to contribute positively to learning success. Studies within this theme highlight the importance of understanding learners' perspectives and behaviors, as these factors directly influence their ability to adapt to different learning environments and achieve academic goals.

Theme 4 (T4): Linguistic Development within Specific Learning Contexts

Table 9 Studies Group under Theme 4 (T4): Linguistic Development within Specific Learning Contexts

PS ID	Authors	Article Title
PS1	Ling, K.H.; Moy, L.Y.; Lee, S.; May, H.N.J.; Chin, S.S.Y. (2026)	Navigating Challenges in Teaching and Learning Mandarin at a British University in Malaysia
PS10	Su, Y.F.; Liu, K.L.; Liu, F.K.; Lee, J.H.; Jin, T. (2024)	Lexical Complexity in Exemplar EFL Texts: Towards Text Adaptation for 12 Grades of Basic English Curriculum in China

Table 9 also identifies Linguistic Development within Specific Learning Contexts as a theme consisting of two studies. These studies focused on challenges associated with language learning environments, curriculum materials, and linguistic development. The findings emphasize the importance of considering learners' backgrounds, multilingual contexts, and the appropriateness of instructional materials when designing language programs. Issues such as lexical complexity, curriculum adaptation, and diverse language exposure were found to influence learning effectiveness. Although this theme contains fewer studies compared to the others, it highlights critical contextual and linguistic factors that shape language learning experiences and outcomes across different educational settings.

CONCLUSION

Summary of Findings

This systematic literature review examined 23 studies published between 2021 and 2026 to investigate the roles of technology, pedagogy, learner engagement, and linguistic development in language education. The findings revealed four major themes: Technology-Enhanced Language Learning and AI, Innovative Pedagogical Approaches, Learner Engagement and Learning Experiences and Linguistic Development within Specific Learning Contexts. Among these themes, innovative pedagogical approaches emerged as the most dominant area of research, highlighting the increasing emphasis on learner-centered teaching methods and curriculum innovation. Studies on flipped learning, Universal Design for Learning (UDL), the Production-Oriented Approach (POA), and service-learning consistently demonstrated positive effects on language proficiency, engagement, and academic achievement. Moreover, research by Muangchan et al. (2026), Wang and Reynolds (2024), Tseng and Lin (2024), and Liu and Ma (2025) showed that emerging technologies such as virtual reality, ChatGPT, custom GPTs, and large language models can enhance vocabulary acquisition, writing skills, grammar learning, motivation, and learner engagement. The review also found that learner-related factors, including motivation, metacognitive strategies, self-regulation, and learning experiences, significantly influence language learning success, while contextual elements such as multilingual environments, instructional materials, and linguistic complexity contribute to linguistic development and educational effectiveness.

Implications and Suggestions for Future Research

The findings of this review have important implications for educators, curriculum developers, and policymakers. The evidence suggests that effective language education requires the integration of technology-enhanced learning tools with innovative pedagogical approaches to create engaging, learner-centered, and contextually relevant learning environments. Educational institutions should invest in digital technologies while ensuring that instructional practices promote meaningful interaction, learner autonomy, and linguistic development. Furthermore, teachers should consider learners' diverse backgrounds, motivations, and learning strategies when designing language instruction. Future research should focus on the long-term effectiveness of AI-driven language learning technologies and investigate their impact across different cultural, linguistic, and educational contexts. Additional comparative and longitudinal studies are needed to explore how technological innovations, pedagogical practices, learner engagement, and contextual factors interact to support sustainable language development. Such research will contribute to a deeper understanding of contemporary language education and provide evidence-based guidance for improving teaching and learning practices in an increasingly digital and globalized world.

REFERENCES

1. Abouzahra, A., Sabraoui, A., & Afdel, K. (2020). Model composition in Model Driven Engineering: A systematic literature review. *Information and Software Technology*, 125, 106316. <https://doi.org/10.1016/j.infsof.2020.106316>
2. Alghamdy, R. Z. (2023). The effect of Universal Design for Learning on the proficiency of English as a Foreign Language students' acquisition of reading and vocabulary skills. *Arab World English Journal*, 14(2), 146-160. <https://doi.org/10.24093/awej/vol14no2.11>
3. Bulusan, F. (2026). An emerging instructional materials design model for English as a second language (ESL) and English as a foreign language (EFL) senior high school contexts. *Innovation in Language Learning and Teaching*, 20(3), 432-445. <https://doi.org/10.1080/17501229.2024.2431890>
4. Chien, C. W. (2023). Analysis of 31 Taiwanese EFL undergraduates' designs and implementations of contextualized language instruction as service learning: A case study. *Community College Journal of Research and Practice*, 18(4), 632-650. <https://doi.org/10.1080/1554480X.2022.2122977>
5. Dahbi, M. (2023). Integrating an intelligent language tutoring system in teaching English grammar. *Arab World English Journal*, 14(4), 189-196. <https://doi.org/10.24093/awej/vol14no4.11>
6. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information

- technology. *MIS Quarterly*, 13(3), 319-340. <https://doi.org/10.2307/249008>
7. Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.
8. Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01
9. Ebrahimi, M. (2022). Ubiquitous learning: The effect of LingAR application on EFL learners' language achievement and the realization of their motivation towards mobile learning. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2022.2041044>
10. Hanh, L. T. T. (2021). Vocabulary learning strategy and Vietnamese university students' learning experience in English as medium of instruction classrooms. *International Journal of Instruction*, 14(3), 117-132. <https://doi.org/10.29333/iji.2021.1437a>
11. Kitchenham, B. (2007). *Guidelines for performing systematic literature reviews in software engineering (Version 2.3)*. EBSE Technical Report.
12. Kumar, T., Kumar, V., & Yunus, M. M. (2022). Adopting learning strategies for English language acquisition on secondary level students. *JETT*, 13(6), 575-581. <https://doi.org/10.47750/jett.2022.13.06.059>
13. Lau, K.-L., Qian, Q., & Chiu, T. K. F. (2025). Effects of instructional factors on students' acceptance of and participation in flipped language learning. *Interactive Learning Environments*, 33(2), 1755-1769. <https://doi.org/10.1080/10494820.2024.2375642>
14. Lee, H. S. (2022). Usage-based approach to grammar in Korean language teaching and learning. In *Korean Language Education and Research* (pp. 386-413). Routledge. <https://doi.org/10.4324/9781003034704-23>
15. Ling, K. H., Moy, L. Y., Lee, S., May, H. N. J., & Chin, S. S. Y. (2026). Navigating challenges in teaching and learning Mandarin at a British university in Malaysia. *Electronic Journal of Foreign Language Teaching*, 23, 50-61. <https://doi.org/10.56040/klsh2315>
16. Liu, J., & Ma, Q. (2025). Supporting low-proficiency L2 learners' vocabulary learning with custom GPT-scaffolded corpus-based language pedagogy: A case study. *Computer Assisted Language Learning*. <https://doi.org/10.1080/09588221.2025.2539152>
17. Lockwood, C., Munn, Z., & Porritt, K. (2015). Qualitative research synthesis: Methodological guidance for systematic reviewers utilizing meta-aggregation. *International Journal of Evidence-Based Healthcare*, 13(3), 179-187. <https://doi.org/10.1097/XEB.0000000000000062>
18. Mahardika, A. A. A. (2023). Thai students' strategies in learning English vocabulary. *Language and Language Teaching*, 26(2), 784-795. <https://doi.org/10.24071/llt.v26i2.6993>
19. Mao, Y. T., & Peng, J. E. (2024). Exploring Chinese university students' learning strategy use in English-medium instruction courses. *The Asia-Pacific Education Researcher*, 33(1), 209-218. <https://doi.org/10.1007/s40299-023-00720-6>
20. Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group*, T. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine*, 151(4), 264-269. <https://doi.org/10.7326/0003-4819-151-4-200908180-00135>
21. Muangchan, P., Anggoro, K. J., & Kateleatprasert, P. (2026). Task-based learning with VR support in CFL learning. *Education Sciences*, 16(2), Article 340. <https://doi.org/10.3390/educsci16020340>
22. Page, M. J., McKenzie, J. E., Bossuyt, P., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Medicina Fluminensis*, 57(4), 444-465. https://doi.org/10.21860/medflum2021_264903
23. Pan, L. C., & Sun, J. C. Y. (2024). An innovative pictographic glosses design for East Asian EFL vocabulary learners: Effects on retention performance and situational interest. *Educational Technology Research and Development*, 28(1), Article 73559.
24. Sharma, N., Manjari, N. P., & Joshi, H. (2024). Traditional vs modern English language teaching methods: Study based on a survey. *Management in Education Research Journal*, 14(1), 21-36. <https://doi.org/10.52634/mier/2024/v14/i1/2465>

25. Su, Y. F., Liu, K. L., Liu, F. K., Lee, J. H., & Jin, T. (2024). Lexical complexity in exemplar EFL texts: Towards text adaptation for 12 grades of basic English curriculum in China. *International Review of Applied Linguistics in Language Teaching*, 62(1), 137-164. <https://doi.org/10.1515/iral-2022-0236>
26. Tseng, Y. C., & Lin, Y. H. (2024). Enhancing English as a Foreign Language (EFL) learners' writing with ChatGPT: A university-level course design. *Electronic Journal of e-Learning*, 22(2), 78-97. <https://doi.org/10.34190/ejel.21.5.3329>
27. Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
28. Wang, X. C., & Reynolds, B. L. (2024). Beyond the books: Exploring factors shaping Chinese English learners' engagement with large language models for vocabulary learning. *Education Sciences*, 14(5), 496. <https://doi.org/10.3390/educsci14050496>
29. Xuan, Q. Y., Cheung, A., Yin, H. B., Yu, X. X., & Huang, R. F. (2024). The effectiveness of the production-oriented approach to enhance adult Chinese EFL learners' language proficiency: A comparative study of three language teaching approaches. *The Asia-Pacific Education Researcher*, 33(2), 297-306. <https://doi.org/10.1007/s40299-023-00728-y>
30. Zeng, Y., Yang, K., & Yang, Y. (2025). Grey correlation analysis on influencing factors of online learning satisfaction of college students' Chinese course. *International Journal of Continuing Engineering Education and Life-Long Learning*, 35, 217-231. <https://doi.org/10.1504/IJCEELL.2025.146012>
31. Zhang, Y. D., & Zhang, Y. L. (2025). Exploring technology-assisted language learning innovations and effectiveness in enhancing English linguistics skills for college students. *Education and Information Technologies*, 30(14), 20597-20625. <https://doi.org/10.1007/s10639-025-13563-z>
32. Zhao, M. Q., & Howard, E. (2025). Developing a Pinyin curriculum for early biliteracy development in a Mandarin-English dual language program. *Journal of Multilingual and Multicultural Development*. <https://doi.org/10.1080/19313152.2025.2598070>
33. Zhou, X., Chen, S., Ohno, S., She, J., & Kameda, H. (2024). Motivational design for enhancing behavioral engagement in a flipped Chinese course. *Asia Pacific Education Review*, 25(5), 1289-1303. <https://doi.org/10.1007/s12564-023-09849-x>