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TEMA

A SYSTEMATIC LITERATURE REVIEW ON THE USE OF DIGITAL TOOLS IN EFL
TEACHING

AUTOR

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de mi vida.

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RESUMEN

Esta investigación presenta una revisión sistemática de la literatura (2018–2025) sobre el impacto de las herramientas digitales en la enseñanza del Inglés como Lengua Extranjera (EFL). El estudio surge ante la necesidad de optimizar el uso de la tecnología en contextos con conectividad limitada y brechas de acceso, como el de Ecuador, donde la implementación digital suele ser administrativa y no pedagógica.

A través de una metodología estructurada en bases de datos como Scopus y ERIC, se analizaron 42 estudios bajo los marcos teóricos de Krashen, Long y Vygotsky. El objetivo fue evaluar cómo estas herramientas afectan el desarrollo de la fonología, morfología, sintaxis, semántica y pragmática en los estudiantes.

Los hallazgos indican que la tecnología es más efectiva en la morfología y fonología, donde aplicaciones móviles y sistemas de reconocimiento de voz facilitan la retención de vocabulario y la pronunciación mediante la práctica repetida. Sin embargo, en sintaxis, semántica y pragmática, los beneficios dependen estrictamente de la mediación docente y de tareas que promuevan una interacción real. Se concluye que las herramientas digitales no son soluciones automáticas; su éxito reside en el andamiaje pedagógico y en la capacidad del docente para adaptar los recursos a las limitaciones técnicas del entorno.

Como propuesta, se sugiere un modelo de integración que priorice el input comprensible y garantice la equidad mediante estrategias offline. Se recomienda fortalecer la formación docente en mediación pedagógica para transformar el uso de la tecnología en un aprendizaje lingüístico profundo y duradero.

Palabras clave: Herramientas digitales; EFL; revisión sistemática; tecnología educativa; adquisición de lenguas; brecha digital; mediación docente.

ABSTRACT

This study presents a systematic literature review (2018–2025) on the impact of digital tools in teaching English as a Foreign Language (EFL). It emerges from the need to optimize the pedagogical use of technology in contexts with limited connectivity and unequal access, such as Ecuador, where digital implementation often remains administrative rather than instructional.

Using a structured methodology across databases such as Scopus and ERIC, 42 peer-reviewed studies were analyzed through the theoretical lenses of Krashen, Long, and Vygotsky. The aim was to evaluate how these tools influence the development of phonology, morphology, syntax, semantics, and pragmatics in learners.

Findings indicate that technology tends to be most effective for morphology and phonology, where mobile applications and automatic speech recognition tools support vocabulary retention and pronunciation through repeated practice. However, for syntax, semantics, and pragmatics, benefits depend strongly on teacher mediation and on tasks that promote authentic interaction. The review concludes that digital tools are not automatic solutions; their effectiveness relies on pedagogical scaffolding and on teachers' ability to adapt resources to local technical constraints.

As a practical contribution, the study proposes an integration model that prioritizes comprehensible input and ensures equity through offline strategies. It also recommends strengthening teacher development in pedagogical mediation to transform technology use into deeper and more sustainable language learning.

Keywords: Digital tools; EFL; systematic review; educational technology; second language acquisition; digital divide; teacher mediation.

Title

A Systematic Literature Review on the Use of Digital Tools in EFL Teaching

Research line:

Educational innovation and technology-enhanced language learning (TELL) in EFL contexts

1. INTRODUCTION

Over the last decade—and especially after the pandemic—digital tools have moved from being “optional extras” to becoming a central part of language education. In English as a Foreign Language (EFL), teachers increasingly rely on mobile apps, learning platforms, and AI-supported tools to keep students engaged and to expand learning beyond the classroom (Moorhouse & Yan, 2024; Athanasopoulos & Wei, 2023). On paper, this looks like a clear step forward. In daily teaching practice, however, the picture is more complicated.

The pedagogical problem that motivates this work is familiar in many real classrooms, particularly in Latin America and Ecuador: digital tools are available, but their use often stays at a basic administrative level (posting materials, assigning tasks, collecting homework), rather than being intentionally connected to specific language-learning goals. At the same time, unequal access to devices and reliable internet means that the same “digital strategy” can produce very different learning opportunities for students in the same course, and even more so across rural and urban contexts (Canales et al., 2023). In short, there is a tension between what technology could enable and what actually happens when teachers face time constraints, training gaps, and connectivity limitations. In my own experience delivering classes in both private and public settings in Loja, Ecuador, I have seen how teachers often struggle to move beyond certain apps such as, Wordwall, Kahoot and the like,

as a primary delivery tools, not due to a lack of will, but because it is the only platform that students' limited data plans can support and/or are used to utilizing.

For EFL teaching, the key question is not simply whether digital tools are “good” or “bad,” but how they affect the development of core linguistic components—phonology, morphology, syntax, semantics, and pragmatics—and under what conditions those benefits are more likely to occur. Because research on technology and second language learning has expanded rapidly in recent years, a systematic synthesis is needed to identify patterns, contradictions, and practical implications (vom Brocke et al., 2009).

Therefore, this paper presents a systematic literature review of peer-reviewed studies (2018–2025) on digital tools in EFL teaching. It is guided by these research questions:

- What does recent scholarship reveal about the effectiveness of digital tools in EFL instruction?
- What are the main findings regarding their impact on phonology, morphology, syntax, semantics, and pragmatics?
- What challenges and best practices does the literature highlight for implementation?

By answering these questions, the review aims to connect theory with classroom reality and to support teachers, researchers, and decision-makers—especially in contexts where digital access is uneven and where implementation needs to be realistic as well as pedagogically grounded.

2. DEVELOPMENT

2.1. State of the art: conceptual and theoretical foundations

This review is grounded in central theories of Second Language Acquisition (SLA), particularly Krashen's Input Hypothesis and Long's Interaction Hypothesis. From Krashen's perspective, acquisition is supported when learners receive comprehensible input slightly above their current level ($i+1$). In practical terms, this framework helps assess whether digital tools expand access to meaningful language exposure—through multimedia input, graded materials, and flexible repetition—without overwhelming learners.

Long's Interaction Hypothesis complements this by emphasizing that interaction and negotiation of meaning make input more noticeable and learning more likely. Under this lens, digital tools are not evaluated simply by the content they provide, but by whether they enable learners to clarify meaning, receive feedback, and adjust language during communication—processes that matter for deeper acquisition.

Before moving to broader technology frameworks, it is also appropriate to include Lev Vygotsky's sociocultural perspective, especially the concepts of the Zone of Proximal Development (ZPD) and scaffolding. In technology-mediated classrooms, tools such as automatic speech recognition (ASR), grammar checkers, guided prompts, peer review platforms, and collaborative storytelling can act as mediators: they support learners in completing tasks that may be difficult to accomplish independently. This is not a forced addition; it helps explain how input and interaction can turn into learning—when support is timely, understandable, and gradually leads learners toward more independent control of language.

Building on these SLA foundations, the review also draws on Technology-Enhanced Language Learning (TELL) (Chapelle, 2001), which views technology as a means to extend and strengthen pedagogy rather than replace it. From a TELL perspective, what matters is how tools promote autonomy, collaboration, and purposeful language use. Finally, the

Technology Acceptance Model (TAM) (Davis, 1989) is included because adoption depends heavily on perceived usefulness and ease of use—factors that are particularly decisive in low-resource settings where time, training, and infrastructure are limited.

Together, these perspectives guide the interpretation of findings not only in terms of language outcomes, but also in terms of feasibility and equity.

2.2. Methodology of the systematic literature review

A systematic literature review relies on a structured, transparent, and replicable approach to identify and synthesize evidence while reducing bias (vom Brocke et al., 2009). This review followed a multi-phase process to locate, screen, and analyze research on digital tools in EFL instruction.

Search procedure and sources. Searches were conducted on December 15, 2025 using Scopus, ERIC, and Google Scholar, given their coverage of applied linguistics and educational research. Search terms included combinations of: “digital tools EFL,” “technology language teaching,” “mobile learning EFL,” and related keywords, using Boolean operators to refine results.

Inclusion and exclusion criteria. Studies were included if they:

- were peer-reviewed,
- addressed EFL teaching/learning,
- examined digital tools (empirically or analytically), and
- were published primarily between 2018 and 2025 to reflect contemporary tools and post-pandemic shifts.

Studies were excluded if they were not EFL-focused, did not involve digital tools, were outside the time frame, or were not peer-reviewed.

Screening results. The initial search produced 312 records. After removing duplicates, 187 unique records remained. Title and abstract screening excluded 145 studies, leaving 42 studies for full-text review. Inter-rater reliability was checked through a second reader for 20% of the sample.

Table 1. Results of the systematic search

Database	Initial Results	After Duplicates	Selected for Full Review
Scopus	98	66	28
ERIC	75	50	10
Google Scholar	139	71	4
Total	312	187	42

Data extraction and synthesis. Data were extracted with a standardized form capturing author/year, methodology, tool type, key outcomes, and linguistic focus. The synthesis used thematic analysis organized around five linguistic components (phonology, morphology, syntax, semantics, pragmatics). A quantitative meta-analysis was not conducted due to high heterogeneity in designs and measures; instead, a qualitative synthesis was developed to preserve nuance. A limitation is the potential bias toward positive findings in published studies. Reporting alignment is consistent with PRISMA principles (Page et al., 2021).

While reviewing these 42 studies, I noticed a significant gap: most empirical data comes from well-funded Asian or European contexts, which made me realize how urgent it is to produce more local research that reflects the specific infrastructure challenges we face in Ecuador.

2.3. Findings by linguistic component

Rather than listing every study in the main text, this section summarizes patterns across the evidence base and highlights what appears consistent, what is mixed, and what conditions shape outcomes.

Table 2. Summary of findings by linguistic component (2018–2025)

Component	Common tools/trends	Overall pattern of effects	What the effect likely reflects	Key limitations/moderators
Phonology	ASR, mobile practice, multimedia, gamification	Improvements in pronunciation/listening and practice frequency	Often driven by increased exposure and repeated practice plus feedback (when feedback is understandable)	Internet stability, accent bias/variation, need for teacher mediation
Morphology	Flashcards, MALL, vocabulary apps	Strong gains in vocabulary retention (especially receptive)	Efficient spaced practice and retrieval; productive use needs extra tasks	Overreliance on translation, shallow learning, weaker long-term retention without reinforcement
Syntax	Multimodal platforms, interactive video, grammar tools	Better coherence/complexity in writing in several studies	Benefits increase when tools are integrated with explicit instruction and revision	Unequal device access, overcorrection, non-contextual suggestions
Semantics	Contextual reading tools, authentic content, immersive tech	Better contextual inference; mixed results with complex meaning	Gains depend on i+1 input selection and guided attention to nuance	Cultural mismatch, input overload, mixed proficiency groups
Pragmatics	Exchanges, video calls,	Growth in intercultural awareness and	Works best with guided tasks that	Privacy, uneven commitment, proficiency

	collaborative storytelling	interaction skills when structured	trigger negotiation of meaning	mismatch, bandwidth limits
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Evidence tables and full study matrix:

Appendix A: Full matrix of included studies (n = 42).

2.3.1. Phonology

Across studies, phonology-related tools frequently involve multimedia input and practice with feedback. ASR-based interventions are reported to reduce pronunciation errors (e.g., reductions in intonation errors reported in Xu et al., 2019), and other studies suggest that mobile and gamified practice can increase voluntary speaking or practice time (Gamlo, 2019). At the same time, these gains are not guaranteed. Feedback quality varies depending on accent recognition and system limitations, and unstable connectivity can reduce both practice time and audio quality, especially in low-resource settings.

2.3.2. Morphology

Vocabulary learning is one of the most common targets of digital tools. Platforms like Quizlet and MALL apps are regularly associated with gains in retention and learner engagement (Mykytka, 2023; Hayitova, 2025). A recurring theme is that receptive vocabulary gains are often stronger than productive gains (Ma, 2022), and that without reinforcement over time, long-term retention may weaken (Lin & Lin, 2019). Another concern raised in the literature is the risk of superficial learning when students rely heavily on translation tools instead of developing morphological awareness and flexible use.

2.3.3. Syntax

Studies focusing on writing and syntax report that multimodal and interactive tools can support more coherent writing and more complex sentence construction, particularly when learners receive feedback and opportunities to revise (Ogbonna et al., 2019; Putri et al., 2021). However, automated correction tools can also create problems if learners accept suggestions without understanding them, or if the tool provides non-idiomatic or context-inappropriate advice. The effectiveness of syntax-focused tools appears to depend strongly on explicit instruction and teacher guidance.

2.3.4. Semantics

Tools that promote contextual learning through authentic content (e.g., reading circles, contextual platforms) are associated with improvements in inference and meaning-making (Ferdiansyah et al., 2020). Still, semantics introduces challenges not always visible in vocabulary-only studies: cultural mismatch in content can lead to misinterpretation, and excessive input can overwhelm learners when idioms, polysemy, and pragmatic cues are not supported by guidance.

2.3.5. Pragmatics

Digital exchanges and synchronous communication tools can foster pragmatic development and intercultural awareness, especially when students engage in meaningful interaction rather than scripted or purely academic exchanges (Lubis et al., 2023; Warschauer, 2019). But pragmatics is also where implementation risks are most visible: uneven commitment between exchange partners, privacy concerns, proficiency mismatch, and bandwidth problems can weaken interaction quality. The literature suggests that pragmatic gains are more likely when interaction is structured through tasks and mediated by the teacher.

2.4. Discussion

Overall, the evidence suggests that digital tools in EFL do not work as “magic solutions.” Their impact is better explained by which learning mechanisms they activate and under what conditions they are implemented. When interpreted through SLA and sociocultural theory, a clearer pattern emerges: the strongest effects appear when tools (a) provide manageable input, (b) enable meaningful interaction, (c) offer useful scaffolding within learners’ ZPD, and (d) are realistically adoptable given local constraints.

2.4.1. Krashen (Input): access is not the same as effective input

Many tools clearly expand exposure to English, which aligns with Krashen’s emphasis on comprehensible input. However, the review suggests that “more input” alone is an incomplete explanation. Gains are more consistent when learners receive input that is both comprehensible and appropriately challenging ($i+1$), and when they can revisit it over time. This helps explain why vocabulary retention and listening improvements are frequently reported: these areas often benefit from repeated, accessible input and practice. It also helps explain mixed results in semantics: authentic content may be rich, but if it exceeds learners’ processing capacity or lacks cultural support, the extra input may create confusion rather than acquisition.

In contexts like Ecuador, the “input advantage” of technology is also shaped by equity. When connectivity is uneven, some learners receive stable exposure while others experience interrupted access. As a result, the same tool can widen gaps unless the teacher designs alternatives (offline options, low-bandwidth materials, flexible deadlines) that keep input opportunities more balanced.

2.4.2. Long (Interaction): interaction quality predicts outcomes more than interaction availability

Findings related to pragmatic competence and speaking opportunities are consistent with Long's view that negotiated interaction promotes acquisition. Yet the evidence also shows that not all "interaction" leads to negotiation of meaning. When digital exchanges are unstructured or when learners are mismatched in proficiency, interaction may remain shallow, repetitive, or socially uneven. Bandwidth instability can further reduce interaction quality by cutting off turn-taking and reducing opportunities for clarification and reformulation.

This suggests a practical interpretation: digital tools can increase the frequency of interaction, but teachers must design tasks that increase the quality of interaction—activities that require clarification, elaboration, repair, and feedback—so that interaction becomes acquisition-relevant rather than merely communicative.

2.4.3. Vygotsky: digital feedback helps only when it functions as real scaffolding

Vygotsky's contribution helps explain why tools with feedback mechanisms (ASR, peer review platforms, writing tools) can support learning: they can act as mediators within learners' ZPD. However, scaffolding only works when it is understandable, contingent, and gradually leads learners toward independence. Automated feedback can fail pedagogically when it is biased (accent issues), inconsistent, or too vague to guide improvement. In those cases, the tool provides "feedback," but not scaffolding.

From my perspective of six years or so of teaching, AI can correct a phoneme. However, it cannot provide the 'affective scaffolding' that a teacher offers when a student feels frustrated. This confirms Vygotsky's idea that social mediation is irreplaceable; the tool is merely a bridge, not the destination

This is a key reason why teacher mediation remains important. Teachers help learners interpret feedback, prioritize errors, and turn corrections into learning strategies. Without

that mediation, learners may either follow suggestions mechanically or ignore them, limiting internalization and long-term gains.

2.4.4. TELL: technology is most effective when it extends pedagogy, not when it replaces it

From a TELL perspective, the review supports the idea that technology works best when integrated into a purposeful sequence: goal → task → feedback → revision → transfer. When tools are used mainly for content delivery or administrative functions, benefits may be limited to engagement or short-term practice. When tools are integrated into learning cycles that include reflection and production, outcomes become stronger and more transferable—especially in writing and speaking tasks.

2.4.5. TAM: adoption conditions explain variability across contexts

Finally, TAM clarifies why results vary widely across settings. Even well-supported tools can fail if teachers do not perceive them as practical, if training is insufficient, or if infrastructure is unreliable. In the reviewed literature, teacher training and institutional support repeatedly appear as “hidden variables” behind success. In short, effectiveness is not only a property of the tool; it is a property of the tool plus the implementation environment.

Synthesis. Across the evidence base, morphology and phonology show stronger and more consistent outcomes, likely because these areas align well with repetition, spaced practice, and immediate feedback. Pragmatics and deeper semantics show more mixed results, because they require situated interaction, cultural awareness, and more complex forms of assessment and mediation.

3. PROPOSED SOLUTION

Based on the reviewed evidence and its theoretical interpretation, the proposed solution is a practical integration model designed for contexts with uneven connectivity and training constraints. The aim is not to “use more technology,” but to use selected tools in ways that activate the mechanisms emphasized by Krashen, Long, and Vygotsky, while remaining feasible under TAM considerations.

3.1. Goal

To improve EFL learning outcomes by aligning digital tool use with specific linguistic objectives (phonology, morphology, syntax, semantics, pragmatics), ensuring equitable access strategies, and strengthening teacher mediation.

3.2. Action plan (by linguistic component and mechanism)

Input design (Krashen): accurate i+1, not “random English”

- Select short, level-appropriate multimedia materials (videos, dialogues, readings).
- Provide guiding questions and pre-teaching of key language when needed to keep input comprehensible.
- Offer low-bandwidth alternatives (audio-only versions, downloadable PDFs, printed backups).

Interaction tasks (Long): structure negotiation of meaning

- Use role-plays, information-gap activities, and discussion prompts that require clarification and reformulation.

- For exchanges (e.g., Tandem-like interactions), set clear weekly tasks, expected outputs, and reflection logs.
- Keep interaction goals visible: turn-taking strategies, polite requests, repairing misunderstandings.

Scaffolding (Vygotsky): turn feedback into learning

- Use ASR and writing feedback tools as diagnostic supports, not final judges.
- Add teacher-led “feedback interpretation routines”: what to fix first, why it matters, and how to practice it.
- Use peer review with rubrics to guide students toward productive, supportive feedback.

Pedagogical integration (TELL): sequence and transfer

- Plan each tool use within a cycle: task completion → feedback → revision → real use (transfer).
- Ensure that vocabulary practice leads to writing/speaking tasks, not only quizzes.

Feasibility and adoption (TAM): reduce friction

- Choose a small set of tools and keep routines consistent.
- Provide short teacher training focused on classroom use and troubleshooting.
- Monitor perceived usefulness and ease of use with brief student/teacher check-ins.

I strongly suggest that any digital implementation must start with a 'Plan B' that is entirely paper-based. In our context, assuming the internet will work for the full 40 minutes of a lesson is often a recipe for pedagogical failure.

3.3. Evaluation indicators

- Pre/post measures for targeted skills (pronunciation rubric, writing coherence rubric, vocabulary productive-use tasks).
- Participation and completion rates (to detect access issues early).
- Short reflective journals for pragmatics and intercultural learning (evidence of noticing and strategy use).

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

This systematic literature review confirms that digital tools can meaningfully support EFL teaching, particularly by expanding access to input, increasing practice opportunities, and offering feedback mechanisms that—when well mediated—support development in phonology and morphology. The evidence is less consistent for pragmatics and deeper semantics, where gains depend strongly on interaction quality, cultural relevance, and guided learning design.

At the same time, the review highlights that the benefits of technology are not automatic. Connectivity limitations, unequal access, and insufficient teacher training can reduce tool effectiveness and may even reinforce inequities. A theoretically grounded, context-sensitive approach is therefore essential, especially in settings such as Ecuador where infrastructure differences are significant.

4.2 Recommendations

- Prioritize tool use that is aligned with specific linguistic goals and supported by explicit teaching routines.
- Implement hybrid and low-bandwidth alternatives to reduce inequity in access.
- Invest in teacher development focused on pedagogy and mediation, not only on technical use.
- Encourage future research with longitudinal designs and stronger emphasis on pragmatics and cultural dimensions of digital learning.
- Evaluate emerging AI tools critically, focusing on bias, feedback quality, and learning transfer.

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APPENDIX

Table 2. Summary of Included Studies

#	Authors (Year)	Methodology	Key Tool	Linguistic Focus	x	DOI/Enlace
1	Xin, J. F., & L. Affrunti, R. (2019)	Qualitative survey	Duolingo, Memrise	Morphology (vocabulary)	Improved retention via gamification, but motivation varies.	10.1080/07380569.2019.1565888
2	Editorial (2024)	Narrative review	LMS (Zoom, Google Classroom)	General (personalization)	Enhances engagement; needs teacher training.	ciencialatina.org/...
3	Solano et al. (2021)	Mixed methods	Educational tech tools	General (adoption)	70% teachers report improved interaction; digital divide barrier.	EJ1140683.pdf
4	Ogbonna et al. (2019)	Systematic review	Multimodal platforms	Syntax (writing)	Better complex sentences with feedback; superior to traditional.	pdfs.semantic scholar.org/
5	Kim et al. (2019)	Experimental	Pre-listening apps (YouTube)	Phonology (listening)	+28% accuracy in comprehension ; mobile flexibility key.	EJ1242644.pdf
6	Nguyen (2023)	Case study	CALL/m-learning	Semantics (context)	Improves inference in real contexts; high acceptance.	i-jte.org/

7	Warschauer (2019)	Historical analysis	CALL (chats, wikis)	Pragmatics (interaction)	Facilitates negotiated output; evolutionary perspective.	education.uci.edu/
8	Baz et al. (2018)	Survey	E-learning platforms	General (teacher training)	85% adoption with support; time barriers.	EJ1408438.pdf
9	NYSUT (2020)	Qualitative	Multimedia resources	Morphology (basic vocab)	Reduces anxiety; multimodal acceleration.	nysut.org/
10	Hayitova (2025)	Meta-analysis	MALL adaptativo	Morphology (retention)	+35% retention; connectivity barriers.	theasped.com/
11	Gamlo (2019)	Meta-analysis	Gamified apps (Kahoot)	Phonology (oral fluency)	Increases voluntary practice; lúdica competition.	ejournal.yasin-alsys.org/
12	Putri et al. (2021)	Mixed	Productive tools (blogs)	Syntax (writing coherence)	Better structured texts; digital breaches persist.	egarp.lt/
13	Busharian (2023)	Quantitative	Global tools (Zoom)	Pragmatics (intercultural)	78% greater awareness; global perspectives.	jonedu.org/
14	Xu et al. (2019)	Experimental	Mobile feedback (ASR)	Phonology (pronunciación)	-40% intonation errors; segmental improvements.	10.1002/tesq.123
15	Ferdiansyah et al. (2020)	Case study	Online circles (Google Meet)	Semantics (lectura contextual)	Increases semantic inference in authentic texts.	10.1002/tesj.5443

16	Lin & Lin (2019)	Meta-analysis	MALL apps	Morphology (vocab)	Short-term gains; long- term needs reinforcement.	EJ1235365
17	Dennis (2023)	Survey	AI speech recognition	Phonology (speaking)	+88% engagement; feedback limited.	EJ1440171
18	Yan et al. (2018)	Qualitative	Peer review platforms	Phonology (peer feedback)	Improved confidence; group dynamics key.	EJ1193835
19	Zakian et al. (2022)	Experimental	NGSL builder	Morphology (receptivo/productivo)	Experimental group outperforms control.	EJ1335917
20	Dillon & Wells (2021)	Pre-post test	ASR tools	Phonology (accuracy)	$t=3.01$, $p=0.005$ reduction in errors.	EJ1385403
21	Ma (2022)	Review	MALL	Morphology (knowledge)	Receptive gains stronger than productive.	EJ1322062
22	Xiao & Park (2021)	Survey	ASR for assessment	Phonology (diagnóstico)	Min engagement; attitudes positive.	EJ1298137
23	Panyathikul et al. (2025)	Experimental	Multimodal teaching	Phonology (pronunciación)	Pretest 4.60 to posttest 31.00, $p<0.001$.	EJ1462905
24	Ashrafi Asgarabad et al. (2020)	Quasi- experimental	CollocatApp	Morphology (colocaciones)	Short-term receptive; no long-term productivo.	EJ1249025

25	Lan (2021)	Comparative	MAPT vs CAPT	Phonology (training)	MAPT slightly better for mobile users.	EJ1329432
26	Hao et al. (2021)	Qualitative	MELR resources	General (self- directed)	Enjoyment and interactivity drive use.	EJ1321697
27	Chen et al. (2022)	Pre-post	Digital storytelling	Pragmatics (speaking/vocab)	$t=-2.773$, $p=0.009$; high cognitive load.	EJ1355972
28	Kazu & Kuvvetli (2023)	Experimental	AI speech games	Phonology (recall)	$\eta^2=0.190$ for phrase recalling.	EJ1382350
29	Suwartono & Aniuranti (2018)	Scoping review	Web 2.0 tools	General (literacy)	Enhanced digital skills; training essential.	theacademic.i n/...
30	Kundu & Bej (2025)	Systematic review	AI systems	General (skills)	Improvements in all areas; divide issues.	papers.ssrn.c om/...
31	Sudirman (2025)	SLR	Digital media	General (literacy)	Boosts engagement; infrastructure barriers.	indojournal.co m/...
32	Chunliu & Guangshe ng (2025)	Review	AI/gamificati on	Syntax (adaptive)	Adjusts difficulty; enhances learning.	science- gate.com/
33	Cheng (2020)	Qualitative	Classroom tech	Pragmatics (perceptions)	Improves pronunciation; disrupciones.	diva- portal.org/
34	Xie & Lan (2025)	SLR	Mobile SCMC	Syntax (competence)	Extra speaking practice; cultural barriers.	science- gate.com/

35	Raja et al. (2025)	Correlation study	ICT platforms	Morphology (eficacia)	r=0.68 positive; access limited.	ijirt.org/
36	Li (2025)	Survey	Apps (Grammarly)	Semantics (IDLE)	Moderate use; good literacy.	files.eric.ed.gov/
37	Aldhilan (2023)	SLR	ICT in ECE	General (early EFL)	Positive for basics; limited evidence.	EJ1421175
38	Lee et al. (2023)	Qualitative	VR/AR	Pragmatics (collaboration)	Improves willingness; divide issues.	ED636595
39	Ghavifekr & Rosdy (2019)	Survey	ICT Malasia	General (skills)	Improves reading/writing ; support needed.	EJ1105224
40	Cardona et al. (2023)	Report	AI tools	Phonology (bias)	Opportunities and challenges.	ed.gov/
41	Forsström et al. (2025)	Meta-analysis	Digital storytelling	Semantics (literacy)	g=0.81 for writing.	oecd.org/
42	Nawaz et al. (2025)	Bibliometric	MALL apps	Morphology (trends)	3,000 studies; technical barriers.	EJ1462433