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MODERN TECHNOLOGIES IN ENGLISH LANGUAGE EDUCATION: A COMPREHENSIVE REVIEW OF CURRENT TRENDS, EFFECTIVENESS, AND FUTURE DIRECTIONS

Abstract: *this article examines five categories of technological innovations in English language education: artificial intelligence and machine learning, mobile-assisted language learning, virtual and augmented reality, game-based learning and gamification, and blended learning and flipped classroom models. The article analyzes empirical evidence on the effectiveness of these technologies, including a comparative study of mobile and traditional instruction, systematic reviews of AR/VR and K-12 EFL, as well as experimental data on the use of ChatGPT for developing speaking skills. The article discusses implementation challenges, including the digital divide, lack of teacher training, algorithmic bias, risks of plagiarism, and linguistic homogenization. Finally, it formulates conditions for the responsible integration of AI: the development of AI literacy, human-in-the-loop pedagogy, and the design of tasks that require critical thinking rather than mere output generation.*

Keywords: *artificial intelligence, mobile-assisted language learning, virtual reality, gamification, blended learning.*

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СОВРЕМЕННЫЕ ТЕХНОЛОГИИ В ОБУЧЕНИИ АНГЛИЙСКОМУ ЯЗЫКУ: ВСЕСТОРОННИЙ ОБЗОР ТЕКУЩИХ ТЕНДЕНЦИЙ, ЭФФЕКТИВНОСТИ И НАПРАВЛЕНИЙ НА БУДУЩЕЕ

Аннотация: *в статье рассматриваются пять категорий технологических инноваций в обучении английскому языку: искусственный интеллект и машинное обучение, мобильное обучение, виртуальная и дополненная реальность, игровое обучение и геймификация, а также смешанное обучение и перевёрнутый. Анализируются эмпирические данные об эффективности этих технологий: сравнительное исследование мобильного и традиционного обучения, систематические обзоры по AR/VR и по K-12 EFL, экспериментальные данные о применении ChatGPT для развития разговорных навыков. Обсуждаются вызовы внедрения: цифровое неравенство, недостаточная подготовка учителей, алгоритмическая предвзятость, риски плагиата и языковой гомогенизации. Формулируются условия ответственной интеграции ИИ: развитие AI-грамотности, педагогика с участием человека («human-in-the-loop»), дизайн заданий, требующих критического мышления.*

Ключевые слова: *искусственный интеллект, мобильное обучение, виртуальная реальность, геймификация, смешанное обучение.*

1. *Introduction.*

The landscape of English language education is undergoing a profound transformation driven by rapid technological advancement. From the early days of computer-assisted language learning (CALL) to the current era of generative artificial intelligence (GenAI), immersive virtual environments, and sophisticated mobile applications, technology has progressively reshaped how English is taught and learned. The development of educational technology (EdTech) and artificial intelligence has brought about a revolution in English learning by providing flexible, effective, and customized solutions.

If 2024 and 2025 were the years of exploration and pilot projects using GenAI in the classroom, 2026 represents the year of more guided integration as institutions consolidate frameworks and strengthen AI literacy. This evolution reflects a broader shift in educational paradigms-from teacher-centered, one-size-fits-all instruction toward learner-centered, personalized, and technology-mediated approaches that leverage the unique affordances of digital tools.

This article synthesizes current research on five major categories of technological innovation in English language education: artificial intelligence and machine learning, mobile-assisted language learning, virtual and augmented reality, game-based learning and gamification, and blended learning models. For each category, we examine empirical evidence of effectiveness, pedagogical affordances, implementation challenges, and implications for practice. The article concludes with recommendations for educators, policymakers, and researchers seeking to harness technology's potential while mitigating its limitations.

2. *Artificial Intelligence and Machine Learning in English Language Teaching.*

2.1. *The Rise of AI-Powered Language Instruction.*

Artificial intelligence and machine learning represent perhaps the most transformative technological force in contemporary English language education. These tools enable educational processes to be personalized according to the individual needs of each student, facilitating interactive environments, automatic feedback, and adaptive plat-

forms that enhance language skills. AI has advanced in education from simple computer-assisted language learning to complex AI-driven platforms like chatbots and intelligent systems for teaching.

Recent systematic reviews have documented the rapid integration of AI technologies in ELT settings. A 2025 systematic literature review focusing on AI technologies in English language teaching identified emerging trends and applications across diverse educational contexts. Similarly, the Journal of English for Academic Purposes dedicated a 2025 special issue to new digital technology and artificial intelligence in EAP, highlighting AI's impact on prominent areas of English language teaching and learning research.

2.2. *Generative AI and Large Language Models.*

The emergence of large language models such as ChatGPT and Google Gemini has opened new frontiers for language instruction. These tools can serve as conversational partners, writing assistants, grammar checkers, and content generators, offering learners unprecedented access to authentic language practice. Research has demonstrated that students who interacted with AI improved their language skills, with statistically significant differences between experimental and control groups in quasi-experimental studies.

A comparative study of Google Gemini and ChatGPT in Thai EFL contexts found that both tools effectively improved linguistic accuracy and essay structure, with Gemini performing better in multimodal feedback and source integration, particularly among rural learners. Qualitative findings suggested increased learner confidence and motivation, though overdependence and plagiarism risk were identified as concerns requiring instructor guidance and AI literacy development.

For speaking skills specifically, a human-AI interaction model using ChatGPT demonstrated significant improvements in the treatment group, with statistical analysis confirming that ChatGPT is a powerful, accessible tool for improving speaking skills, offering scalable solutions in EFL education. Students have reported moderate improvements, especially in writing, vocabulary, and grammar, while highlighting the value of real-time feedback and interactive exercises.

2.3. *Pedagogical Frameworks and Responsible Integration.*

The integration of AI into English language classrooms marks the beginning of a new era-one defined not by the replacement of the teacher, but by the empowerment of the entire educational ecosystem. Practical resources have emerged to support this integration, including the 2025 book «Artificial Intelligence, Real Teaching: A Guide to AI in ELT» by Paiz, Toncelli, and Kostka, which serves as a practical resource for teachers integrating generative AI into English language teaching.

Critical conditions for responsible AI integration include: 1) AI literacy for teachers and learners, including understanding limitations, hallucinations, and training data; 2) human-in-the-loop pedagogy, where teachers serve as final decision-makers and students are required to justify or critique AI outputs; and 3) task design that demands thinking rather than output, including comparison, reflection, and adaptation activities. Despite AI's potential, integration faces hurdles including algorithmic bias, data privacy concerns, the intensifying digital divide, and the risk of linguistic homogenization where diverse varieties of English are sidelined in favor of standardized norms.

3. *Mobile-Assisted Language Learning (MALL).*

3.1. *The Proliferation of Language Learning Apps.*

Mobile applications have democratized access to language learning, enabling millions of users worldwide to study English anytime, anywhere. Researchers have increasingly investigated the effectiveness of commercial MALL applications such as Duolingo, Babbel, Busuu, Memrise, and Rosetta Stone. The proliferation of these apps has raised important questions about their comparative effectiveness relative to traditional classroom instruction.

3.2. *Empirical Evidence of Effectiveness.*

A landmark 2025 study published in Language Learning & Technology examined the L2-English proficiency and lexical development of 337 L1-Spanish learners enrolled in either app-based (Duolingo) or classroom-based instruction over a 16-week period. Results demonstrated that both modes of instruction led to significant language gains. Notably, Duolingo learners outperformed classroom learners on measures of

general L2 proficiency and receptive vocabulary, while classroom learners showed significantly greater improvement in listening skills. Gains in productive vocabulary knowledge were comparable across both groups, and Duolingo learners indicated slightly higher levels of interest in the course. These findings suggest that app-based learning can support certain aspects of L2 development, particularly receptive grammar and vocabulary knowledge, while classroom-based instruction remains more beneficial for developing listening skills.

A separate study examining Duolingo and Memrise found that Duolingo demonstrated significantly better outcomes in terms of vocabulary expansion, lexical retention, and increased language confidence compared to other groups. Sentiment analysis of user reviews for Babbel and Duolingo revealed that Duolingo users appreciate gamification and simplicity of lessons, while Babbel users emphasize structured methodologies and cultural context, suggesting that different app designs may appeal to different learner preferences and learning styles.

3.3. *Implications for Pedagogy.*

The evidence on MALL effectiveness supports a complementary rather than replacement model: mobile apps can effectively support certain aspects of language development (particularly vocabulary and receptive grammar), while classroom instruction remains essential for developing interactive skills such as listening and speaking. The optimal approach likely involves strategic integration of both modalities, leveraging the strengths of each.

4. *Virtual Reality and Augmented Reality.*

4.1. *Immersive Technologies for Language Learning.*

Virtual reality (VR) and augmented reality (AR) have emerged as powerful tools for creating immersive, context-rich language learning environments. By simulating real-world scenarios or overlaying digital information onto physical spaces, these technologies offer learners opportunities for situated, experiential learning that traditional methods cannot easily replicate. The integration of AR and VR into language learning, particularly vocabulary learning, has been spotlighted by a growing body of research in recent years.

4.2. *Systematic Review Findings.*

A 2025 systematic review analyzing 37 empirical studies from 2020–2024 examined AR-assisted vocabulary learning (ARVL) and VR-assisted vocabulary learning (VRVL) across five dimensions: main characteristics, vocabulary learning process, effectiveness, benefits, and limitations. Key findings revealed that while VRVL studies employed head-mounted displays more frequently, ARVL studies greatly outnumbered VRVL counterparts, with predominant academic interest in non-wearable AR. Higher education was the main focus of research, with elementary education coming in second.

Most studies on ARVL and VRVL indicate that learners in AR/VR-supported environments achieved significantly greater vocabulary gains than those using traditional methods. Additionally, the dual measurements of vocabulary gain and retention in VRVL studies have been examined more rigorously, and the impact of VRVL has been found potentially more effective than that of ARVL.

4.3. *K-12 Applications.*

A systematic review focusing specifically on K-12 EFL education from 2019–2023 identified 30 peer-reviewed papers meeting inclusion criteria. The findings revealed specific types of AR and VR tools being used in K-12 classrooms to assist students with language learning and their respective efficacies. Studies revealed learners' positive experiences and emotions related to various tools, though potential limitations and detrimental impacts were also noted. The review emphasized that while these tools have enormous potential to provide unique learning experiences and increase students' engagement, the benefits depend on appropriate implementation and use.

5. *Game-Based Learning and Gamification.*

5.1. *Digital Game-Based Vocabulary Learning.*

Digital game-based vocabulary learning (DGBVL) integrates key game elements such as Challenges, Rewards, Human-Computer Interactions (HCI), Multimedia, and Fantasy. Although the overall effectiveness of digital games in enhancing EFL vocabulary knowledge development is well-established, research has increasingly focused on understanding the specific roles of individual game elements.

A study of 50 Chinese university students used eye-tracking technology, pre-post-delayed tests, and semi-structured interviews to examine how different game elements contribute to engagement and vocabulary acquisition. Results indicated that Challenges significantly engaged learners, while deep engagement in HCI and limited engagement in Fantasy positively influenced vocabulary knowledge development. The findings refined existing theories by elucidating how game elements individually and collaboratively facilitate learner engagement and vocabulary knowledge development across phases of learning.

5.2. *Gamified Platforms in Practice.*

Gamified platforms such as Quizizz have gained traction in language education. Drawing on Self-Determination Theory and Krashen's Affective Filter Hypothesis, research has examined how game elements such as immediate feedback, point-based competition, and accessible design satisfy learners' psychological needs for autonomy, competence, and relatedness, enhancing intrinsic motivation and reducing anxiety. Research demonstrates that Quizizz promotes both learner engagement and vocabulary retention, offering a valuable tool for fostering deeper vocabulary learning when integrated within learner-centered pedagogical frameworks.

5.3. *Broader Applications.*

Scrabble has been systematically examined as a game-based learning tool for English vocabulary mastery, with research confirming its effectiveness. Other studies have explored innovative applications such as Tic-Tac-Toe mechanisms integrated into competitive vocabulary learning platforms, examining relationships among learning interest, gameplay anxiety, and flow experience. The growing body of evidence supports the integration of gamification into classrooms not only to enhance vocabulary learning but also to encourage creativity and problem-solving skills, making foreign language acquisition a more dynamic and enjoyable process.

6. *Blended Learning and Flipped Classroom Models.*

6.1. *Integrating Digital and Face-to-Face Instruction.*

Blended learning combines traditional face-to-face classroom experiences with web-based or online teaching. This approach offers a flexible framework for leveraging

technology's affordances while preserving the valuable interpersonal elements of classroom instruction.

6.2. *Flipped Classroom Applications.*

The flipped classroom (FC) model, in which students engage with instructional content at home and apply knowledge through interactive activities in class, has been increasingly integrated with digital tools. A 2025 study explored the effects of an FC approach using Canva and Moodle on first-year secondary students' ESL reading comprehension. Findings suggested that the integration of FC methodologies with digital tools can significantly enrich ESL reading development, encourage independent learning, and support easier transition to secondary school. The visual and interactive features of Canva and Moodle were particularly valued by students, who reported enhanced motivation, engagement, and satisfaction.

6.3. *Systematic Review Evidence.*

A systematic literature review synthesizing evidence on the impact of ICT and flipped classroom models on student motivation, engagement, and English language proficiency found favorable outcomes across multiple studies. Similarly, technology-mediated task-based language teaching (TBLT) research has demonstrated that integrating technology in English language teaching has helped modernize traditional teaching methods, fostering technology skills in learners while developing their English language skills. Technology-mediated TBLT represents a robust and effective approach for contemporary language teaching, though further longitudinal and mixed-methods research is needed across diverse educational contexts.

7. *Challenges and Considerations.*

7.1. *The Digital Divide.*

Despite the potential of modern technologies, their full integration faces significant structural barriers. In Latin American settings, for example, limited connectivity, lack of teacher training, and insufficient curricular adaptation have been identified as major obstacles. The rapid evolution of technology has intensified the «digital divide»

that leaves under-resourced communities behind. Addressing these challenges is critical to ensuring effective, equitable, and sustainable implementation in today's education systems.

7.2. *Teacher Training and Professional Development.*

Research on ICT integration in ELT reveals that although many teachers-both novice and experienced-show high confidence in using ICT tools, difficulties in pedagogical application and lack of practical training remain main barriers. Other inhibiting factors include lack of access to technology, limited infrastructure, and resistance to change among more experienced educators. A more holistic approach to preparing educators for technology integration, including improved professional training focusing on developing pedagogical skills in ICT use and stronger institutional support, has been recommended.

7.3. *Ethical and Pedagogical Concerns.*

The use of AI and other technologies raises important ethical considerations: algorithmic bias, data privacy, intellectual property concerns, and the environmental footprint of AI, including massive energy and water consumption, e-waste, and resource extraction. In addition, the risk of overdependence on technology, plagiarism, and the potential for linguistic homogenization require ongoing attention.

8. *Future Directions.*

Several directions for future research and practice emerge from this review. First, there is a need for more longitudinal research on technology-mediated task design, implementation, and assessment in English language teaching. Second, future research on AR and VR could benefit from integrating both technologies to create a synergistic approach that further supports vocabulary learning. Third, more rigorous research is needed on vocabulary retention in ARVL and VRVL contexts, as well as on wearable device applications.

Fourth, the ongoing development of AI literacy frameworks and ethical guidelines for technology use in language education remains essential. Fifth, comparative studies of emerging technologies and their effectiveness across different learner populations,

proficiency levels, and educational contexts will help refine pedagogical recommendations. Finally, as 2026 continues the shift toward guided integration of GenAI in classrooms, the consolidation of institutional frameworks and the strengthening of AI literacy for both teachers and students will be critical priorities.

9. *Conclusion.*

Modern technologies have fundamentally expanded the possibilities for English language education. AI-powered tools offer personalized, adaptive learning experiences and real-time feedback; mobile applications provide accessible, engaging platforms for vocabulary and grammar development; immersive technologies create rich contexts for experiential learning; gamification enhances motivation and engagement; and blended learning models optimize the integration of digital and face-to-face instruction. Empirical evidence increasingly supports the effectiveness of these approaches, though the relative benefits vary depending on learning outcomes, contexts, and populations.

However, technology alone is insufficient. Successful integration requires thoughtful pedagogical design, adequate teacher training, attention to issues of equity and access, and ongoing critical reflection on the ethical implications of technology use. When implemented responsibly, modern technologies empower rather than replace teachers, creating richer, more engaging, and more effective English language learning experiences for diverse learners worldwide. The integration of AI into the English language classroom marks the beginning of a new era, one defined not by the replacement of the teacher, but by the empowerment of the entire educational ecosystem.

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