

AI-Enabled College English Teaching: The Integration Path From Multimedia Technology to Intelligent Education^{*}

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From multimedia computer-assisted language learning (MCALL) to the in-depth application of artificial intelligence (AI) technology, college English teaching is undergoing a transformation from digitization to intelligence. Synthesizing relevant research literature, this paper reviews the theoretical foundations and major application forms of multimedia computer technology and AI in college English teaching, analyzes the practical challenges in the process of technology empowerment—such as the tendency towards instrumentalization, difficulties in teacher role adaptation, and students’ over-reliance on technology—and proposes optimization paths from four dimensions: curriculum integration, teacher literacy, blended teaching, and evaluation reform, with a view to providing references for the intelligent transformation of college English teaching.

Keywords: artificial intelligence, college English teaching, multimedia computer technology, blended teaching, information literacy

Introduction

As an important public foundational course in the higher education system, the quality of college English teaching is directly related to the improvement of college students’ comprehensive literacy and the realization of the goal of cultivating internationally competent talents. For a long time, traditional teaching has faced difficulties such as insufficient teaching resources, single educational methods, and weak language output ability among students, and the teacher-centered “cramming” teaching model has struggled to effectively stimulate students’ interest in learning (Zhai, 2018). Since the 1990s, Multimedia Computer-Assisted Language Learning (MCALL) has emerged (Yang, 2000). Since the Ministry of Education launched the college English teaching reform in 2004, it has explicitly proposed a “multimedia foreign language teaching model based on computers and classrooms” (Chen, 2006). Entering the era of artificial intelligence, intelligent learning apps, virtual reality technology, and other innovations continue to emerge, injecting new momentum into college English teaching.

Against this backdrop, this paper traces the evolutionary trajectory from early computer-assisted instruction to today’s AI-driven intelligent learning systems, adopting a multi-dimensional framework that encompasses theoretical, practical, and institutional perspectives.

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Theoretical Foundations

Constructivism and Self-Directed Learning Theory

The integration of multimedia computer technology into English teaching is grounded in a robust pedagogical theoretical framework. Constructivism posits that knowledge is not passively transmitted by teachers, but actively constructed by learners through meaning construction—drawing on the assistance of others and available learning resources—within specific contexts, thus advocating for learner-centered instruction (Zhang & Yu, 2011). Self-directed learning theory, meanwhile, foregrounds the central agency of students. Multimedia computer technology furnishes both technical infrastructure and resource support for students' autonomous learning, enabling them to organize their study flexibly and unconstrained by the limits of time and space. As Gu Shimin (2011) observes, context constitutes a core dimension of the learning environment; the virtual learning environment generated by multimedia technology can deliver near-authentic communicative scenarios for language learners.

From a constructivist perspective, the value of multimedia lies not in delivering information more efficiently, but in creating immersive environments where learners actively construct knowledge through exploration. Technology should serve as a cognitive tool that scaffolds higher-order thinking, empowering students to take greater ownership of their learning and fostering self-regulation essential for lifelong language development.

Krashen's Second Language Acquisition Theory

The effectiveness of multimedia computer technology in college English teaching finds its theoretical rationale in Krashen's theory of second language acquisition. Drawing on the Input Hypothesis and the Affective Filter Hypothesis, Jiang Suqin (2010) explores the theoretical foundations of multimedia-assisted English listening teaching. The Input Hypothesis posits that language acquisition requires comprehensible language input at the “*i+1*” level, while the Affective Filter Hypothesis contends that affective factors such as learners' motivation, self-confidence, and anxiety influence the extent to which language input is absorbed. Multimedia technology can simultaneously provide multimodal input including images, audio, and text, enriching both the forms and content of input. Meanwhile, its engaging and interactive features reduce learner anxiety and enhance learning motivation, thereby lowering the affective filter and facilitating language acquisition (Jiang, 2010). AI technology further amplifies this advantage: intelligent tutoring systems can provide personalized learning paths and feedback based on students' learning data, making “*i+1*” input more precisely tailored.

What makes digital technologies particularly relevant to Krashen's theory is their unique ability to provide dynamically adjustable input that responds to learners' performance in real time. Unlike traditional textbooks, which present decontextualized language items linearly, AI systems can ensure learners are consistently challenged at an appropriate level without feeling overwhelmed, while also offering immediate corrective feedback that supports long-term development.

Ecological Perspective on Curriculum Integration

Chen Jianlin (2006) reexamines the concept of computer-assisted foreign language teaching from an ecological perspective, putting forward the view of comprehensive integration between computer networks and foreign language curricula. He points out that traditional computer-assisted instruction treats computers merely as a demonstration tool for teachers, without fundamentally altering the teaching structure and content, thus

falling short of the goals of educational reform. From an ecological perspective, computers should not be reduced to auxiliary teaching tools; rather, they must become an indispensable organic component of foreign language curricula. Only through the full integration of technology and curriculum can deep-seated transformation in college English teaching be truly advanced.

The ecological perspective draws an analogy between natural ecosystems and educational systems: both require interdependence and balance. When technology is introduced as a superficial supplement rather than a fundamental restructuring element, it creates an ecological imbalance—modern on the surface but unchanged underneath. This explains why many technology initiatives fail: they treat technology as a standalone solution rather than recognizing its effectiveness depends on transforming the entire teaching and learning ecosystem.

From Multimedia to AI: Application Forms of Technology-Enabled Teaching

Traditional Forms of Multimedia Computer-Assisted Language Learning

Multimedia Computer-Assisted Language Learning (MCALL) represents the initial form of technology-enabled foreign language teaching. Yang Chunhui (2000) summarizes the core characteristics of MCALL into five dimensions: individualized learning environments, exploratory learning processes, engaging multimedia integration of text and images, timely feedback for enhanced learning efficiency, and student-centered classroom instruction. At the application level, Dong, Sun, and Tian (2002) found through controlled experiments that computer-assisted language teaching is as effective as traditional classroom instruction for students at key universities, and can fully substitute for part of traditional classroom teaching given consistent teaching content and progress. Corpus technology offers a new approach to vocabulary and reading teaching: by retrieving the usage of specific words in authentic contexts, students can understand lexical collocations and polysemy, thereby achieving exploratory learning (Ma & Zhang, 2019). Automatic essay scoring systems have also demonstrated remarkable effects in writing instruction. Featuring five distinctive advantages—ease of use, real-time feedback, sentence-by-sentence correction, plagiarism detection, and common error analysis—the interactive teaching model combining these systems with MOOCs has effectively improved students' writing proficiency (Sui & Cheng, 2019).

These early MCALL applications laid crucial groundwork for later developments, establishing evidence that technology could support individual learning needs, provide immediate feedback, and enhance engagement. From CD-ROMs to today's cloud-based platforms and mobile apps, while tools have evolved dramatically, the fundamental pedagogical principles underlying effective technology integration have remained remarkably consistent.

Practical Innovations Driven by AI Technology

The rise of artificial intelligence technology has propelled the informatization of college English teaching to new heights. AI-powered translation apps are currently the most widely used intelligent tools among college students for English learning. A survey of 232 vocational college students by Bi Jiaxuan (2024) shows that over 90% (92.68%) hold a positive attitude towards using translation apps, and 59.91% use them frequently. Their enhancement effects are mainly reflected in three dimensions: boosting learning confidence, meeting personalized learning needs, and advancing teaching reform. The application of educational robots in oral English teaching has also begun to emerge, offering students a low-anxiety environment for oral practice. When conversing with robots, students do not fear being ridiculed for making mistakes and thus become more willing

to speak up (Ling, 2019). The integration of AI and VR technology has further opened up a new paradigm for contextualized autonomous learning. Combining AI speech recognition with VR enables the creation of virtual reality scenarios tailored to different teaching objectives, providing students with authentic language learning environments. In addition, mobile social tools such as WeChat have provided new carriers for the integration of self-directed and collaborative learning (Chen, Li, & He, 2015), while mind-map-assisted discourse teaching offers an effective tool for learners to construct their cognitive structures (Ma & Chen, 2008).

These AI-driven innovations represent a paradigm shift. Whereas early MCALL delivered pre-packaged content, AI systems dynamically adapt to individual learners' needs, enabling personalized learning pathways. As natural language processing and adaptive algorithms advance, the boundary between human and machine-mediated learning continues to blur, opening new possibilities as well as new challenges for language education.

Practical Challenges

The Tendency Towards Instrumentalization of Technology

Despite the growing prevalence of technology application, the tendency towards the instrumentalization of technology remains highly prominent. Chen Jianlin (2006) observes that multimedia teaching in many colleges and universities is merely a digital replica of the "blackboard and chalk" model: teachers explain texts word by word and sentence by sentence using CD-ROMs, with computers serving only a demonstrative function, leaving the essence of teaching unchanged. Zhai Linlin (2018) also points out that multimedia presentation relies primarily on video and audio. While this approach simplifies teaching content, it overlooks communication with students and neglects students' needs for practical exercises in speaking, writing, and other skills. As a result, technology application remains superficial and formalistic.

This tendency often stems from a narrow understanding of integration. Many institutions measure success by quantifiable indicators—numbers of multimedia classrooms, adoption rates of learning platforms, or volumes of digital resources—rather than by qualitative changes in teaching processes. This focus on inputs over outcomes creates superficial modernization, sometimes leading to "technology theater": conspicuous digital tool use for its own sake without clear pedagogical rationale.

Teacher Role Adaptation and Insufficient Information Literacy

In multimedia and network environments, teachers' roles have shifted from knowledge transmitters to guides, designers, and supervisors of learning, yet this transformation is no easy feat. A survey by Ma Junbo (2003) reveals that among college English teachers, 33% rate their computer proficiency as "very poor", 53% as "average", and only 14% as "relatively good". While the situation has improved two decades later, the rapid iteration of new technologies has placed even higher demands on teachers. Bi Jiaxuan (2024) points out that the new round of information revolution has upended teachers' dominant position: mobile apps can provide a vast reservoir of learning resources, and the appeal of traditional instruction continues to wane. Zhu Fudao (2004) emphasizes that in a student-centered online teaching environment, the leading role of teachers should by no means be diminished—on the contrary, it needs to be strengthened. However, many teachers, accustomed to traditional lecture-based teaching and lacking proficiency in information technology, find themselves trapped in a disconnect between technology application and teaching practice.

The accelerating pace of change compounds this challenge. By the time teachers master one set of tools, new platforms emerge, creating a "digital treadmill" effect. Teachers must develop not just technical skills but

also the ability to critically evaluate new technologies. Moreover, the shift from knowledge transmitter to facilitator requires not just new skills but a fundamental reorientation of professional identity—a transition requiring sustained support beyond one-time training workshops.

Students' Over-Reliance on Technology and Insufficient Self-Directed Learning Ability

While technological tools offer convenience, they also bring risks of over-reliance. According to Bi Jiaxuan's (2024) survey, 74.14% of students exhibit dependence on translation apps, and their independent translation ability declines noticeably when separated from such devices. Some students copy app-generated translations verbatim, which not only fosters learning inertia but also constrains the development of independent thinking skills. In their experiments, Dong et al. (2002) find that newly enrolled college freshmen have relatively weak self-study ability and a strong tendency toward dependence. Gu Shimin (2011) also observes that the effect of self-directed learning in virtual learning environments is far from satisfactory: without supervision, students are prone to procrastination, distractibility, and other issues. Furthermore, current AI technology still has notable limitations. A total of 80.17% of respondents indicate that AI-generated translations still require manual revision, and AI performs poorly in handling polysemous words in English (Bi, 2024).

This over-reliance reflects a broader tension between digital convenience and the development of fundamental cognitive skills. While AI tools can reduce effort for tasks like translation or grammar checking, they risk creating “cognitive outsourcing”—students depending on technology for skills they should internalize. This is particularly acute in language learning, where deliberate practice is essential for long-term proficiency. Balancing technology use with foundational skill development remains a central pedagogical challenge.

Optimization Pathways

Promoting Deep Integration of Technology and Curriculum

To overcome the instrumentalization of technology, the key lies in achieving the organic integration of technology and foreign language curricula. Chen Jianlin (2006) points out that the core of the new college English teaching model is not “computer-assisted instruction”, but the comprehensive integration of computers and the curriculum. This entails systematic reconstruction across multiple dimensions—curriculum objectives, teaching content, teaching methods, and evaluation approaches—as well as deep integration of AI technology into the curriculum ecosystem, so as to foster a new form of blended online-and-offline teaching.

Achieving deep integration requires more than individual teacher initiatives; it demands institutional commitment, curriculum redesign, and sustained support. Technology must be embedded not as an optional extra but as a core component shaping objectives, content, activities, and assessment. When done well, technology becomes invisible in the best sense, receding into the background so teachers and students can focus on what matters most—the process of learning itself.

Enhancing Teachers' Information Literacy and Intelligent Teaching Competence

Teachers are the critical variable in technology-enabled teaching. College English teachers should proactively adapt to technological changes driven by artificial intelligence and other emerging technologies, actively participate in teaching training focused on information technology integration, and update their teaching philosophies and methods. Teachers need to not only improve their own technology application skills but also guide students to rationally utilize new technological tools to solve learning problems, thereby achieving the

collaborative enhancement of information literacy for both teachers and students (Bi, 2024). Zhu Fudao (2004) systematically discusses the leading role of teachers in web-assisted teaching from four perspectives: teaching model design, interaction mechanism facilitation, teaching process monitoring, and individualized support. In the AI era, teachers are not merely knowledge transmitters; they serve as designers, guides, and facilitators of learning.

Developing teacher competence is a long-term investment. Rather than relying solely on one-time workshops, professional development should adopt a continuous, embedded approach—integrating technology training into regular teaching, providing on-the-job coaching, and creating communities of practice where teachers share experiences and learn from one another.

Constructing a Blended Teaching Model Integrating Self-Directed and Collaborative Learning

The introduction of multimedia and AI is not intended to replace traditional classroom teaching, but rather to complement it. Research by Zhang Rong and Yu Zhehui (2011) shows that web-assisted instruction does not mean abandoning classroom teaching entirely; instead, it enhances classroom teaching efficiency with network support. The integrated model combining online learning and classroom instruction represents the true direction of educational reform. Gu Shimin (2011) proposes a teaching model that organically integrates self-directed learning and collaborative learning—self-directed learning serves as the foundation for collaborative learning, while collaborative learning provides support and motivation for self-directed learning. Through multi-level design, students can both exercise their individual autonomy and receive help and motivation through collaborative interaction.

This blended model represents a balanced approach: self-directed learning supported by technology allows students to progress at their own pace and pursue individual interests, while collaborative learning provides interaction and peer feedback essential for communicative competence. When effectively integrated, these modes create synergy—individual preparation enhances group interaction quality, while collaboration deepens individual understanding.

Improving the Assessment System and Strengthening the Orientation of Formative Assessment

The frequent use of intelligent tools such as AI translation by students seriously undermines the accuracy of traditional assessment results. To truly reflect students' English literacy and improve their language application ability, the focus of the assessment system should shift toward formative assessment—increasing assessment frequency, enriching assessment forms, and improving assessment dimensions (Bi, 2024). A regularized assessment mechanism should be established through frequent small-scale tests, reducing the weight of final examinations in the overall grade. Meanwhile, language practice activities that do not rely on mobile apps—such as viewpoint presentation and situational dialogue—can be added to classroom instruction and incorporated into the assessment system, so as to build a multi-dimensional evaluation framework covering both language skills and core subject competencies.

The shift toward formative assessment reflects a deeper transformation in how learning is conceptualized. Rather than serving only as a summative judgment, evaluation becomes integrated into the learning process itself, providing ongoing feedback. Aligned with AI and learning analytics capabilities, this approach enables personalized, timely support—though it must be balanced with careful attention to student privacy and ethical data practices.

Conclusion

From multimedia computer-assisted language learning to AI-empowered smart education, college English teaching has undergone a profound transformation from digitization to intelligence. Technological development has not only enriched teaching resources and innovated instructional methods, but also advanced the shift in educational philosophy from “teacher-centered” to “student-centered”. Emerging technological forms such as AI translation tools, intelligent essay scoring systems, educational robots, and AI+VR situational teaching have injected strong momentum into college English teaching.

Nevertheless, issues such as the instrumentalization of technology, difficulties in teacher role adaptation, students’ over-reliance on tools, and the inherent limitations of technology itself have constrained the full realization of technology’s educational value. To address these challenges, it is essential to uphold the fundamental principle that “technology serves education” and to exert coordinated efforts across multiple dimensions: deep curriculum integration, enhancement of teacher competence, construction of blended teaching models, and reform of the assessment system. Looking ahead, regardless of how technology evolves, cultivating students’ language application ability, intercultural communicative competence, and critical thinking skills remains the core objective of college English teaching. Only through the organic integration of technological rationality and humanistic care can high-quality development of AI-empowered college English teaching be truly achieved.

As generative AI, immersive virtual environments, and adaptive algorithms continue to advance, the success of these technologies will ultimately depend not on their technical sophistication, but on how thoughtfully they are integrated into the educational ecosystem. By keeping learners at the center and balancing innovation with humanistic values, college English teaching can harness AI to achieve genuine educational improvement.

References

- Bi, J. X. (2024). A survey on the current status of app-based translation-assisted vocational college English teaching in the context of artificial intelligence. *Policy & Scientific Consult*, 16(16), 200-204.
- Chen, H. Q., Li, S., & He, W. K. (2015). The application of WeChat in English assisted teaching. *Software Guide*, (1), 183-184.
- Chen, J. L. (2006). On the integration of computer and internet into foreign language teaching program—From an ecological point of view. *Technology Enhanced Foreign Language Education*, 12(6), 3-10.
- Dong, Z., Sun, Q. D., & Tian, D. M. (2002). A comparison of the effects of computer-assisted language learning and traditional classroom instruction in college English teaching. *Foreign Language World*, (2), 65-70.
- Gu, S. M. (2011). On auxiliary college English teaching model in virtual learning environment: Quest for integrated framework of autonomous learning and cooperative learning. *Technology Enhanced Foreign Language Education*, (6), 23-29.
- Jiang, S. Q. (2010). Krashen’s SLA theory and multimedia-assisted English listening instruction—An empirical study based on reformed college English teaching. *Foreign Language Research*, (3), 140-143.
- Ling, M. (2019). A study of constructional design models in teaching spoken English aided by educational robots (Master’s thesis, Central China Normal University).
- Ma, J. B. (2003). A questionnaire survey of college English teachers’ computational competence and their practice in the field of CALL. *Technology Enhanced Foreign Language Education*, (1), 56-60.
- Ma, W. L., & Chen, Y. (2008). Theoretical research on the application of mind map in English discourse analysis in senior middle school. *Modern Educational Technology*, 18(3), 55-58.
- Ma, Y. W., & Zhang, C. (2019). A study of corpus-assisted English reading and vocabulary teaching. *Journal of the Chinese Society of Education*, (S1), 84-85.
- Sui, X. B., & Cheng, L. L. (2019). Research on the validity of applying online automated essay scoring into college English writing interactive teaching mode. *China Educational Technology*, (2), 66-71.

- Yang, C. H. (2000). On the characteristics of multimedia computer-assisted English teaching. *Technology Enhanced Foreign Language Education*, (1), 46-47.
- Zhai, L. L. (2018). A tentative discussion on college English teaching under multimedia-assisted instruction. *English Square*, (10), 66-67.
- Zhang, R., & Yu, Z. H. (2011). A study on the effectiveness of web-assisted learning in English grammar teaching for foreign language majors at our university. *Education Science & Culture Magazine*, (5), 121-122.
- Zhu, F. D. (2004). The leading role of teachers in web-assisted college English teaching. *Foreign Language World*, (1), 48-53.