

# Research on the Application of Generative Artificial Intelligence in College English Teaching

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## ABSTRACT

Generative Artificial Intelligence, as a disruptive technology, is reshaping various industries with unprecedented depth and breadth, and the field of education is no exception. College English teaching, a crucial component of higher education in China, has long been plagued by challenges such as monotonous teaching models, lack of personalization, insufficient student practice opportunities, and outdated assessment methods. This paper aims to systematically explore the innovative application of Generative AI in college English teaching and analyze how it triggers a profound paradigm shift from a "teacher-centered" to a "student-centered" approach, and from "knowledge transmission" to "capacity building." The article begins by dissecting the core capabilities of Generative AI and its alignment with the objectives of college English teaching. Subsequently, it elaborately constructs specific application scenarios and implementation pathways for Generative AI across four dimensions: "teaching, learning, assessment, and management," including personalized content creation, intelligent tutoring, dynamic assessment, and teaching management optimization. Furthermore, this study objectively examines the ethical risks and practical challenges that may accompany the technological application process, such as academic integrity, technological dependency, data privacy, and the confusion of human-machine roles. Finally, the paper proposes a response strategy framework centered on "teacher as the core, ethics as the bottom line, and integration as the goal," advocating for the construction of a new human-machine collaborative teaching model that is "AI-enhanced" rather than "AI-replacing." Research indicates that the prudent, critical, and creative integration of Generative AI can effectively empower college English teaching, enhance its pertinence, interactivity, and effectiveness, and ultimately serve the comprehensive development of students' language application skills and cross-cultural communication literacy.

**Keywords:** *Generative artificial intelligence, College English teaching, personalized learning, Human-machine collaboration, Teaching paradigm shift, Educational ethics.*

## 1. INTRODUCTION

Entering the third decade of the 21st century, Generative AI technologies represented by ChatGPT, ERNIE Bot, Midjourney, and others have achieved breakthrough progress, marking the prelude to the era of strong artificial intelligence. These models, trained on massive datasets, can understand and generate natural language, code, images, and other multimodal content, demonstrating powerful capabilities in content creation, logical reasoning, and situational dialogue. Their impact has rapidly spread from the tech community to all levels of social life, and education—a cornerstone field related to the future

of the nation and individual development—is at the forefront of this transformation.

College English teaching holds a special position and mission within China's higher education system. It is not only an instrumental course for students to acquire international frontier knowledge and engage in cross-cultural communication but also a general education course for cultivating global perspectives, critical thinking skills, and humanistic literacy. However, while achieving significant accomplishments, traditional college English teaching also suffers from deep-rooted shortcomings: large-class teaching makes it difficult to accommodate individual student differences; the "one-size-fits-all" teaching content

and pace fail to meet diverse needs; classroom models dominated by teacher lectures and passive student reception inhibit learning initiative and creativity; language output practice, especially high-quality, immersive speaking and writing training, is severely lacking due to constraints in teacher resources and time/space; teaching assessment often relies on summative standardized tests, making it hard to comprehensively and dynamically reflect students' competency growth process.

The emergence of Generative AI offers new possibilities for solving these long-standing structural contradictions. It is no longer merely a simple tool to assist teaching but has the potential to become a "virtual co-teacher" with deep cognitive and interactive abilities, a "personalized learning partner," and an "intelligent assessment assistant." Through its powerful natural language processing capabilities, Generative AI can tailor learning materials for each student, provide 24/7 uninterrupted conversation practice, and offer immediate, detailed feedback on students' compositions and spoken language. This heralds a systematic reconstruction of college English teaching from its concepts and models to its evaluation system.

Therefore, based on the background of educational digital transformation, this study focuses on the deep integration of Generative AI and college English teaching. The core research questions include:

- What is the core educational value of Generative AI? How does it align with the goal system of college English teaching?
- In which specific aspects of college English teaching can Generative AI be applied? What are the application scenarios and implementation pathways?
- What potential risks and challenges does this deep integration face? How can we build effective risk prevention and ethical regulation systems?
- Looking forward, how can we build a sustainable, "AI-enhanced" new ecology for college English teaching?

Through an in-depth exploration of these questions, this study aims to provide frontline teachers, teaching administrators, and policymakers with a reference framework combining theoretical depth and practical operability, promoting the scientific, standardized, and innovative application

of Generative AI in the field of college English teaching, thereby truly improving teaching quality and empowering student development.

## **2. THE EDUCATIONAL EMPOWERMENT VALUE OF GENERATIVE AI AND ITS ALIGNMENT WITH COLLEGE ENGLISH TEACHING**

To effectively utilize Generative AI, it is a must first deeply understand its core capabilities that distinguish it from previous educational technologies and clarify its correspondence with the inherent needs of college English teaching.

### ***2.1 Core Educational Empowerment Value of Generative AI***

#### ***2.1.1 Unlimited Content Generation and Context Creation Capability***

Generative AI can instantly generate texts, reading comprehension questions, dialogue scripts, writing samples, and other textual materials according to any topic, difficulty level, and genre requirement, even generating accompanying images, audio, and video descriptions. This breaks the static nature and limitations of traditional textbook content, enabling teaching resources to be infinitely enriched and dynamically updated, and can simulate near-authentic language use contexts (e.g., business negotiations, academic conferences, asking for directions while traveling), providing students with a high-quality source of "comprehensible input."

#### ***2.1.2 High Degree of Personalization and Adaptive Support***

AI can quickly diagnose a student's learning level, interest preferences, and knowledge weaknesses through dialogue and interaction, and dynamically adjust the difficulty, style, and domain of the generated content accordingly. This ability for "teaching students according to their aptitude" makes personalized learning paths—"one plan per person"—possible, effectively solving the "lockstep" dilemma in large-class teaching.

### 2.1.3 *Immediate, Accurate, and In-depth Feedback Mechanism*

In writing and speaking output activities, Generative AI can go beyond simple grammar correction to provide detailed, formative evaluations and revision suggestions across multiple dimensions such as lexical diversity, syntactic complexity, discourse structure, logical coherence, content relevance, and even stylistic register. This immediate feedback breaks the bottleneck of delayed and infrequent feedback in traditional teaching, greatly accelerating the student's "learning loop."

### 2.1.4 *Never-Tiring Dialogue and Tutoring Partner*

Generative AI can role-play different characters (e.g., interviewer, foreign friend, debate opponent) to engage students in continuous, safe, low-anxiety conversation practice. This is of irreplaceable value for overcoming "dumb English" and enhancing language fluency and communicative confidence.

## 2.2 *Deep Alignment with College English Teaching Objectives*

The "College English Teaching Guide (2020 Edition)" emphasizes that the goal of college English teaching is to cultivate students' comprehensive English application ability, especially listening and speaking skills, enhance their cross-cultural communication awareness and competence, and simultaneously develop autonomous learning ability and critical thinking skills. The characteristics of Generative AI are highly aligned with these goals:

- **Alignment with Application Ability Cultivation:** The immersive dialogues and authentic situational tasks provided by AI direct learning towards "use" rather than just "study," strongly supporting the improvement of application ability.
- **Alignment with Cross-cultural Communication Competence:** AI can simulate interlocutors from different cultural backgrounds, explain cultural phenomena, and generate cross-cultural conflict cases, becoming a "sandbox" for students to understand cultural differences and practice cross-cultural communication.
- **Alignment with Autonomous Learning Ability:** As an always-available learning partner, AI empowers students to explore

knowledge autonomously and manage their own learning process, promoting the shift from "giving a fish" to "teaching how to fish."

- **Alignment with Critical Thinking Cultivation:** By asking the AI to generate pros and cons for a certain issue, or by having students fact-check and analyze logical fallacies in its generated content, highly effective critical thinking training activities can be designed.

## 3. **CONSTRUCTION OF SPECIFIC APPLICATION SCENARIOS FOR GENERATIVE AI IN COLLEGE ENGLISH TEACHING**

Based on the above alignment, we can systematically construct application scenarios for Generative AI across the four core processes of "teaching, learning, assessment, and management".

### 3.1 *Teaching Preparation and Content Generation: From "Standardized" to "Personalized"*

#### 3.1.1 *Intelligent Lesson Plan and Courseware Generation*

Teachers can input parameters such as teaching objectives, unit themes, and student levels to the AI, instructing it to generate a preliminary lesson plan framework, classroom activity designs, and accompanying PPT outlines and scripts. For example, inputting "Design a 60-minute discussion class on 'AI Ethics' for first-year non-English majors, requiring vocabulary warm-up, debate, and summary sessions," the AI can provide a structurally complete and content-rich draft, which the teacher can then refine personally, greatly improving lesson preparation efficiency.

#### 3.1.2 *Graded Reading and Listening Material Customization*

For the same theme, teachers can ask the AI to generate reading passages and listening scripts at different difficulty levels (e.g., CET-4, CET-6, IELTS level), and automatically generate reading comprehension questions and vocabulary lists, achieving differentiated instruction within the class.

### 3.1.3 *Multimodal Context Creation*

Teachers can use the AI's image/video generation or description functions to create vivid visual contexts for language points. For example, when explaining the "present continuous tense," ask the AI to generate a picture or detailed description of "various activities people are doing in a park," allowing students to do picture talk, making grammar learning contextualized and fun.

## 3.2 *Classroom Teaching and Interaction: From "Lecture-based" to "Inquiry-based"*

### 3.2.1 *Role-playing as a Virtual Interlocutor*

In the classroom, teachers can invoke the AI to play specific roles, conducting demonstrative dialogues with the teacher or students, or organizing whole-class Q&A interactions with the AI, increasing the novelty and interactivity of the class.

### 3.2.2 *Tool for Stimulating Critical Thinking*

The teacher can propose a controversial topic, have the AI generate supporting and opposing arguments respectively, and then guide students to analyze the rationality and logic of these arguments, thereby training their critical thinking.

### 3.2.3 *Real-time Language Support*

During group discussions or project-based learning, students can use terminal devices to query the AI for authentic expressions and acquire relevant background knowledge at any time, with the AI acting as an "instant knowledge base" and "language consultant."

## 3.3 *After-class Learning and Extension: From "Uniform" to "Adaptive"*

### 3.3.1 *Personal Exclusive Learning Partner*

Each student can have an AI-driven learning assistant. Students can engage in free conversation with it anytime to practice speaking; they can delve into any topic of interest, with the AI providing relevant vocabulary and expression support, realizing "learning by using."

### 3.3.2 *Intelligent Writing Tutoring and Feedback*

After completing a composition, students can submit it to the AI for an initial review. The AI can not only mark grammatical and spelling errors but also provide constructive suggestions from multiple dimensions such as "Content and Development," "Organization," and "Language Use," e.g., "The argument could be sharper; suggest stating it clearly at the beginning of the paragraph," or "Try using a non-finite verb structure here to make the sentence more concise." Students revise based on the feedback, forming an iterative "writing-feedback-revision" learning cycle.

### 3.3.3 *Personalized Learning Path Planning*

By analyzing students' conversation records, assignment performance, and self-test results, the AI can accurately map their "knowledge graph," identify weak areas, and automatically recommend or generate targeted practice materials (e.g., specialized vocabulary exercises, grammar consolidation exercises, reading materials on specific themes), achieving adaptive adjustment of learning paths.

## 3.4 *Teaching Assessment and Management: From "Summative" to "Formative"*

### 3.4.1 *Automated Assignment Grading and Data Analysis*

AI can undertake a large number of basic assignment grading tasks, such as multiple-choice questions, fill-in-the-blanks, and even preliminary scoring and comment generation for short essays. This not only liberates teachers but also, through big data analysis, presents the teacher with the class's overall knowledge mastery and common error types, providing data support for teaching intervention.

### 3.4.2 *Formative Assessment Portfolio*

The AI can record and analyze all of a student's interaction records, writing revision history, and speaking practice audio throughout the semester, automatically generating a dynamic, multi-dimensional "learning growth portfolio." This portfolio can more comprehensively and

authentically reflect the student's effort and progress than a single final exam.

### 3.4.3 *Teaching Management Decision Support*

The academic administration system can integrate AI to analyze college-wide English learning data, identify common teaching difficulties and blind spots in curriculum setup, and provide scientific decision-making basis for curriculum system optimization and teaching resource allocation.

## 4. **POTENTIAL RISKS, ETHICAL CHALLENGES, AND RESPONSE STRATEGIES**

While embracing the benefits of technology, we must maintain clear critical awareness, foresee, and guard against potential risks.

### 4.1 *Major Risks and Challenges*

#### 4.1.1 *Academic Integrity and Misconduct*

Students may directly use AI to complete assignments, write essays, or even take online exams, leading to the proliferation of academic fraud and distorting the learning process and assessment results. Defining the boundary between AI assistance and AI substitution becomes a major challenge.

#### 4.1.2 *Cognitive Inertia and Degradation of Critical Thinking*

Over-reliance on AI for ready-made answers and revision suggestions may cause students to become lazy in independent thinking and in-depth study, weakening their ability to solve problems autonomously and think critically.

#### 4.1.3 *Technological Dependence and Digital Divide*

Once teaching is deeply embedded with AI, pedagogical activities may stall if technology fails. Meanwhile, disparities in technology access and usage skills between different regions, schools, and families may exacerbate educational inequality.

#### 4.1.4 *Data Privacy and Algorithmic Bias*

Student interaction data is core privacy. Ensuring this data is stored securely, used compliantly, and prevented from leakage and misuse is an issue that must be taken seriously. Furthermore, the training data of AI models itself may contain cultural, gender, racial, and other biases, which may be unconsciously reflected in the generated content, misleading students.

#### 4.1.5 *Alienation of Teacher-Student Roles and Weakening of Emotional Connection*

If AI undertakes too many teaching functions, teachers may regress from knowledge transmitters and learning guides to mere technology operators. The authentic, profound emotional exchange and intellectual collision between teachers and students, and among students themselves, may be weakened, challenging the "educating" essence of education.

## 4.2 *Response Strategies and Path Construction*

Addressing the above challenges requires building a comprehensive governance system involving multiple stakeholders and simultaneous measures.

### 4.2.1 *Conceptual Remodeling: Establishing a "Teacher-Centered, AI-Empowered" Human-Machine Collaboration View*

It must be clear that AI is a tool to enhance, not replace, teachers. The core value of teachers lies in their emotional care, charismatic influence, experiential wisdom, and instant judgment in complex teaching situations, which are irreplaceable by AI. The future teaching model should be "AI handles repetitive, standardized tasks, while teachers focus on creative, emotional, and inspiring activities."

### 4.2.2 *Institutional Innovation: Constructing Assessment and Academic Norms that "Promote Strengths and Avoid Weaknesses"*

Reform Assessment Methods: It is necessary to reduce reliance on closed-book memorization and standardized answers, and adopt more project-based learning, oral defenses, group collaboration,

process portfolios, and other assessment methods that focus on students' thinking processes, innovative insights, and collaborative abilities—areas where AI finds it difficult to substitute.

**Clarify Academic Norms:** Schools should issue clear regulations on the use of Generative AI, defining what constitutes "reasonable use" (e.g., brainstorming, grammar checking) and what constitutes "academic misconduct" (e.g., full-text substitution). Encourage students to declare their use of AI and explain its specific role in their learning process.

#### 4.2.3 *Capacity Building: Conducting "AI Literacy" Education for Both Teachers and Students*

**Teacher Training:** Schools should systematically train teachers not only to master the skills of using AI tools but also to develop the ability to design AI-empowered teaching activities, discern the quality of AI-generated content, and guide students in the critical use of AI.

**Student Education:** There is a must to incorporate "AI Literacy" into general education, cultivating students to become "shrewd users" of AI who know how to ask precise questions, critically evaluate AI output, and use it as a tool for enhancement rather than a substitute for their own thinking.

#### 4.2.4 *Technology Governance: Establishing a "Compliant, Reliable, Transparent" Technology Application Framework*

**Data Security:** It is necessary to choose educational technology products that comply with national data security and privacy protection regulations, clarifying data ownership and usage boundaries.

**Algorithm Auditing:** There is a must to encourage bias detection and correction in educational AI models to ensure the fairness and neutrality of their output.

**Developing Localized and Specialized Models:** It is of great value to promote the development of specialized models based on corpora of Chinese English learners and compliant with Chinese syllabus requirements to enhance their relevance and reliability.

## 5. FUTURE PROSPECTS AND CONCLUSION

### 5.1 *Future Prospects*

The integration of Generative AI and college English teaching is an exploratory path full of promise and challenges. Looking ahead, we can anticipate the following development trends:

First, AI will be more deeply integrated into the learning ecosystem, combining with Learning Management Systems (LMS), Virtual Reality (VR)/Augmented Reality (AR) technologies to build highly immersive and intelligent language learning environments.

Second, AI models will become more specialized and contextualized, with vertical models emerging specifically for sub-fields such as Academic English, Business English, and English for Science and Technology, providing more in-depth disciplinary language support.

Finally, human-machine collaboration will give rise to new pedagogies. New teaching models such as "AI-driven Project-Based Learning" and "Flipped Classroom 2.0" (where AI delivers foundational knowledge pre-class, and the classroom focuses on higher-order thinking training) will become the norm.

### 5.2 *Conclusion*

This study systematically demonstrates the immense potential and implementation pathways for the application of Generative AI in college English teaching. Research indicates that through its unparalleled content generation, personalized adaptation, and immediate feedback capabilities, Generative AI can effectively address the long-standing dilemmas in college English teaching regarding resources, personalization, practice, and assessment, promoting a fundamental paradigm shift towards student-centeredness and competency orientation.

However, the advancement of technology is not a guarantee of educational success. The application of Generative AI is a double-edged sword; while it brings efficiency and a personalization revolution, it also accompanies severe challenges such as academic integrity, cognitive inertia, and data privacy. The key to success lies in whether we can uphold a wisdom of critical integration. We must adhere to the core philosophy of "educating people as the foundation," clarify the irreplaceable leading

role of teachers, and through a four-pronged strategy of conceptual remodeling, institutional innovation, capacity building, and technology governance, build a healthy and sustainable "AI-enhanced" new teaching ecology.

Ultimately, the goal is not to cultivate "questioners" dependent on AI, but "thinkers" and "creators" skilled in utilizing AI. Through the organic collaboration of humans and intelligence, it is hoped to cultivate a new generation of talents who are not only proficient in English language skills but also possess exceptional autonomous learning abilities, profound critical thinking, and broad international perspectives. This is the fundamental mission and value of college English teaching in the age of artificial intelligence.

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