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# Exploration and Practice of AI-empowered Smart Teaching Model for College English

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***Abstract:*** *To address the issues of fragmented ability development, insufficient evaluation accuracy, and a monoculture of educational agents in college English teaching, this study constructs an AI-empowered smart teaching model. Grounded in the theoretical frameworks of the Production-Oriented Approach (POA) and the BOPPPS model, the proposed framework integrates artificial intelligence technologies to enable intelligent transformation throughout the entire teaching process. This is achieved through four key pathways: developing an AI-enhanced BOPPPS instructional model, designing a three-stage cultivation chain (foundational skills — applied practice — advanced innovation), establishing a data-informed evaluation system, and fostering a multi-agent collaborative education mechanism. Practical implementation has demonstrated that this model effectively enhances students' English proficiency in comprehensive application and ideological and political literacy. It provides a replicable teaching paradigm for cultivating outstanding engineers with both global competence and patriotic values, offering a valuable reference for the intelligent transformation of college English teaching.*

***Keywords:*** *AI-Empowered; Smart Teaching Model; Production-Oriented Approach; BOPPPS Model*

## 1. Introduction

The global wave of digital transformation has profoundly impacted the education sector, bringing both unprecedented opportunities and challenges to higher education. The 2024-2035 Master Plan on Building China into a Leading Country in Education emphasizes the need to "advance the development of smart campuses, explore effective models for digitally enabled large-scale individualized and innovative instruction, and proactively adapt to evolving learning methodologies"[1]. In this context of educational reform, college foreign language educators are compelled to address two critical questions: how to leverage artificial intelligence (AI) to develop innovative teaching models, and how to fully realize the potential of smart teaching tools in college English courses.

As a pivotal component of undergraduate education, college English undertakes the dual mission of strengthening students' language competence and reinforcing value-based education. It thus plays an indispensable role in cultivating high-quality talents who combine a global perspective with a sense of national commitment. At our university, where the core educational objective is to nurture "outstanding engineers for the capital region", there is an elevated demand for students' integrated English abilities, discipline-specific communication skills, and ideological-political awareness, all of which guide the ongoing reform of college English teaching.

Nevertheless, the current state of college English instruction at our university reveals several pressing issues. In terms of skill development, the cultivation process remains fragmented, with excessive focus on discrete language knowledge, uneven integration of ideological-political elements, and underdeveloped practical application skills. Rather than forming an organically connected system, language skills, ideological-political cultivation, and applied competencies exist in isolation, failing to construct a coherent developmental chain aligned with students' holistic growth.

Regarding evaluation, the system relies heavily on limited data resources and fails to integrate information across different teaching stages. This impedes comprehensive and dynamic monitoring of the learning process and skill development, resulting in inadequate diagnostic precision and hindering the implementation of differentiated, data-informed instruction. Consequently, teaching often lacks targeted effectiveness, leading to diminished student engagement and stagnated competency growth.

In terms of educational agents, collaboration remains limited. A notable absence of well-defined coordination mechanisms among English instructors, discipline-specific faculty and administrative staff

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results in a misalignment between language instruction and professional training goals. This fragmentation undermines the synergistic effort required to cultivate "outstanding engineers for the capital region", as outlined in our institutional educational objectives, ultimately failing to provide the integrated support for achieving the talent development goal.

To address these challenges, this study integrates AI technology to construct a smart teaching model for college English. Based on our university's existing experiences in differentiated-instruction reform and guided by the College English Teaching Guide (2020 Edition), the research is theoretically grounded in the Production-Oriented Approach (POA) and the BOPPPS model[2]. It emphasizes the cultivation of English disciplinary literacy, incorporates "English + Ideological and Political Education" as a pedagogical hallmark, and explores innovative pathways for interdisciplinary integration. It also refines diversified teaching approaches supported by dynamic monitoring mechanisms, establishes platforms for English academic competitions and language practice, and implements an AI-enhanced BOPPPS instructional framework in college English courses.

The empirical results demonstrate that the proposed model not only effectively alleviates the aforementioned pedagogical challenges but also significantly enhances students' comprehensive English proficiency and ideological-political awareness. More importantly, it lays a solid foundation for cultivating outstanding engineers who combine patriotic dedication with global competence. By supplying high-quality applied talents to support the development of the capital region, this approach offers both theoretical insights and practical value in advancing the intelligent transformation of college English education.

## 2. Theoretical Foundations

### *2.1. Production-Oriented Approach (POA)*

The Production-Oriented Approach (POA) is a pedagogical methodology developed in China by Professor Wen Qiufang. It is built on three core educational principles: learning-centeredness, the integration of learning with application, and whole-person education. The teaching-learning process in POA follows a cyclical structure of "motivating – enabling – assessing", in which the teacher acts as a scaffold, guiding students through continuous feedback and evaluation to improve the quality of their language output[3].

POA addresses the persistent issue of the "separation between learning and application" in college English teaching. By introducing output-oriented tasks, it stimulates students' interest and motivation, provides structured support for knowledge and skill acquisition, and facilitates learning through a combination of peer and teacher assessment, thereby enhancing both learning outcomes and instructional effectiveness[4].

A central tenet of POA is "learning for application", which advocates the deep integration of language instruction with quality education, affective education, and competency development, thereby advancing broader humanistic educational goals. Within this framework, learning effectiveness is evaluated through tangible, measurable output outcomes. Instructional design is also required to align closely with students' learning needs, ensuring that classroom content remains closely tied to teaching objectives. All teaching methods and activities are designed to support effective learning, while assessment is embedded throughout the instructional process, forming a closed-loop feedback mechanism.

### *2.2. BOPPPS Model*

Rooted in constructivist learning theory and communicative language teaching principles, the BOPPPS model organizes the teaching process into six sequential phases: Bridge-in, Objective, Pre-assessment, Participatory Learning, Post-assessment, and Summary[5].

As a closed-loop instructional framework that supports teacher-student interaction and real-time feedback, the BOPPPS enhances both teaching efficiency and learning outcomes through clearly defined objectives, students' active engagement, and continuous evaluation. It promotes deeper learning by systematically guiding students through cognitive processes.

In the context of college English instruction, the BOPPPS model improves structural coherence in the classroom through systematic implementation: Bridge-in captures students' interest with contextualized introductions; Objective clarifies learning goals using SMART criteria; Pre-assessment

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identifies knowledge gaps through diagnostic tasks; Participatory Learning encourages collaborative learning and knowledge internalization; Post-assessment evaluates learning outcomes through performance-based measures; and Summary strengthens knowledge retention through metacognitive reflection. This structured sequence enables students to complete a holistic learning cycle—from interest activation and conceptual understanding to applied practice and refinement through feedback —within a single class session. Meanwhile, the sequence fosters a learning environment featuring comprehensive student engagement and active inquiry, which helps teachers impart knowledge and skills in a systematic manner, address key and difficult teaching points with precision, and thus ensure the effectiveness of classroom instruction.

POA addresses the learning-application gap through output-driven design, providing a goal-oriented direction for AI integration. The BOPPPS model, in turn, counteracts instructional fragmentation with its closed-loop teaching architecture, offering a procedural framework for the implementation of AI-enhanced pedagogy. The combination of these two models results in an AI-facilitated, output-oriented, closed-loop teaching system, achieving a synergistic integration of theoretical principles, technological empowerment, and teaching practice.

## 3. Pathways for Practical Innovation

### *3.1. Constructing AI-Empowered BOPPPS-Integrated Teaching Model for College English*

This study integrates AI with college English pedagogy to develop a comprehensive smart teaching framework: the AI-empowered BOPPPS-integrated teaching model for college English (Figure 1). The model embeds AI across all six phases of the BOPPPS framework — Bridge-in, Objective, Pre-assessment, Participatory Learning, Post-assessment, and Summary—enabling intelligent enhancements in instructional resource allocation, interactive processes, and outcome evaluation. It thus provides both theoretical support and a practical paradigm for improving the quality and efficiency of college English teaching.

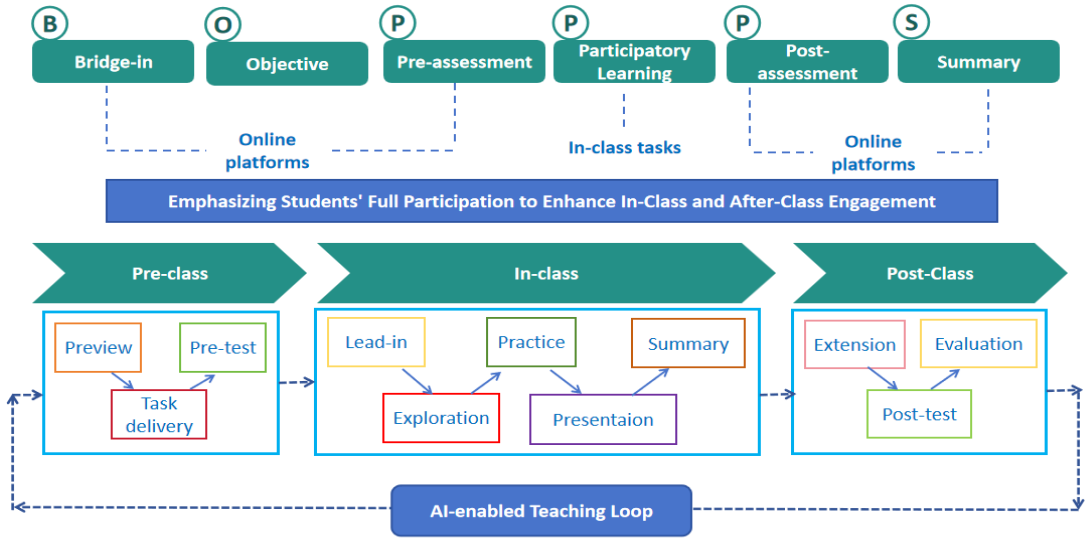


*Figure 1: AI-Empowered BOPPPS-Integrated Teaching Model for College English.*

#### *3.1.1. Pre-Class Preparation Phase*

The pre-class phase serves as the starting point of instruction, leveraging AI tools and online platforms to activate students' learning interest and motivation to explore through diversified preview strategies. This phase aims to accurately diagnose students' cognitive baseline, thereby laying the groundwork for targeted in-class teaching. Specific implementation strategies include the following: First, AI-generated background materials or situational cases related to the teaching theme are used to embed abstract language knowledge into concrete contexts, enhancing students' emotional engagement and knowledge retention while effectively stimulating intrinsic motivation. Second, a problem-oriented approach is adopted: open-ended questions are posted via online platforms to guide students' reflection and discussion, while AI tools statistically analyze responses in real time to help teachers identify

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students' initial cognitive levels. Third, platform-based voting and Q&A functions are utilized to collect real-time feedback on preview content. Fourth, AI-recommended multimedia resources (e.g., short videos, animations) are incorporated to simplify complex language points and reduce the difficulty of pre-class learning. Finally, situational simulations and role-playing exercises are deployed in a collaborative online environment, which allow students to gain prior familiarity with target tasks, thereby ensuring a more interactive preview experience.

These multi-dimensional strategies help students gain an initial understanding of new knowledge, laying a solid foundation for subsequent in-class learning.

#### *3.1.2. Pre-Assessment and Resource Recommendation Stage*

In this stage, teachers design pre-assessment tasks covering core grammar, vocabulary, and reading comprehension through the AI teaching platform. Upon completion, the platform instantly generates personalized diagnostic reports that identify knowledge gaps and learning weaknesses. Concurrently, AI-based data analysis tools perform cluster analysis on students' responses, highlighting common class-wide learning difficulties and individual variations, thereby providing data-driven support for instructional adjustments.

Pre-assessment tasks are designed to integrate real-world cases, evaluating not only knowledge comprehension but also initial application skills. After completing the assessments, students can access detailed explanations and extended learning advice to facilitate self-evaluation. Furthermore, based on pre-assessment performance and learning preferences, the AI platform intelligently recommends personalized resources, such as targeted grammar micro-lessons, thematic reading materials, and discipline-specific English lectures, along with usage instructions and reflective questions to encourage autonomous and in-depth learning.

#### *3.1.3. In-Class Participatory Learning Phase*

This phase focuses on fostering active participation, knowledge internalization, and comprehensive competency development through AI-supported immersive and interactive classroom experiences. Instructors analyze pre-class data to identify students' knowledge bases, learning preferences, and latent needs, thereby designing relevant bridge-in activities. AI-curated multimedia resources are used to create emotionally and cognitively engaging scenarios that capture attention, stimulate motivation, and ensure content relevance.

When students encounter difficulties in understanding new content, they interact with AI-aided systems under teachers' guidance. Instructors supplement or refine AI-generated explanations to ensure accurate and thorough comprehension. During writing exercises, students use AI essay evaluation systems to receive feedback on grammar, logic, structure, and style, along with specific suggestions for revision. Teachers incorporate this AI feedback to further tailor writing instruction. In speaking tasks, AI speech assessment tools provide real-time metrics on pronunciation, intonation, and fluency, with visual reports to help students track progress. During summary sessions, digital tools such as mind maps and interactive platforms help visually organize knowledge structures, reinforcing retention and understanding.

#### *3.1.4. Post-Class Extension and Evaluation Stage*

Centered on the dual goals of "deepening knowledge application and facilitating competence transfer", post-class extension activities not only enable students to achieve in-depth internalization of English knowledge and systematic development of their comprehensive application abilities, but also provide teachers with a scientific basis for adjusting their teaching strategies[6]. Based on integrated pre-class and in-class data, AI helps construct a hierarchical extension system. For instance, students with oral proficiency gaps are provided with situational practice modules that offer real-time feedback on pronunciation, intonation, and prosodic features. Similarly, real-world tasks, such as drafting professional emails or composing cross-cultural commentaries, are assigned, with AI providing feedback on formatting, expression, and logical coherence to guide iterative improvement.

In the post-class evaluation stage, AI synthesizes process-wide learning data to generate quantitative reports and competency development curves, offering a clear visualization of student progress. Teachers then complement this data-driven insight with their professional expertise by evaluating students' extended outputs, such as research reports and essays, based on criteria including content depth and language accuracy. This dual approach not only helps mitigate potential biases in AI-generated data but also captures nuanced aspects of student thinking, thereby uncovering implicit learning value. Meanwhile, based on unit-specific reflective scales, students perform self-evaluations to diagnose their own strengths

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and weaknesses across areas such as knowledge comprehension, skill application, and learning engagement. Through activities such as maintaining learning logs and participating in online reflective discussions, students are guided to systematically review their learning experiences, assess the effectiveness of their study strategies, and exchange learning insights with peers. This structured reflective practice not only fosters critical thinking and metacognitive skills but also strengthens collaborative relationships between instructors and students, as well as among students themselves, contributing to the development of a supportive and progressive learning community.

This multi-dimensional evaluation model provides teachers with precise guidance for instructional improvement while empowering students to enhance their metacognitive awareness through diversified feedback. As such, it establishes a robust framework for transforming AI-enhanced college English teaching from a model focused on knowledge transmission to one dedicated to competency development.

Guided by the Production-Oriented Approach (POA) and the BOPPPS teaching model as core theoretical foundations, this study constructs a progressive AI-empowered intelligent teaching closed-loop system for college English, consisting of pre-class preparation, in-class participation, as well as post-class extension and evaluation. The six components of the BOPPPS model are organically integrated into the entire teaching chain: Bridge-in and Objective stages are advanced to pre-class preview and the commencement of in-class teaching, achieving the preliminary teaching design of motivating students and clarifying learning objectives; Pre-assessment runs through the pre-class preparation phase, accomplishing precise teaching preparation via cognitive diagnosis and data-driven support; Participatory Learning acts as the core in-class segment, facilitating in-depth learning featured by knowledge exploration and competence internalization; Post-assessment and Summary are extended to the final part of in-class instruction and after-class evaluation, contributing to a holistic teaching closed-loop centered on learning effectiveness assessment and reflective improvement. Such an integrated design not only ensures the systematicity and integrity of classroom structure, but also enables the in-depth integration of artificial intelligence (AI) technology and standardized teaching procedures.

### *3.2. Designing a Three-Tier Progressive Training Chain for Holistic English Competency Development*

To address the fragmentation of language knowledge, ideological-political literacy, and professional application skills, this study constructs a three-tier progressive training chain: Foundational Skills→ Applied Practice→Advanced Innovation to achieve holistic integration of language competencies.

Foundational Skills Tier: This tier employs a blended learning approach to strengthen students' language foundations through leveled vocabulary acquisition, grammar exercises, AI-aided pronunciation training, and reading and listening comprehension tasks. The focus is on ensuring mastery of core language elements in a structured and supportive environment.

Applied Practice Tier: Building on in-class thematic units, this tier scaffolds language practice through cross-cultural scenario simulations and case-based discussions centered on topics such as "The Maker Movement", "Resource Conservation", and "AI Applications". It simultaneously integrates ideological-political elements, including the "craftsmanship spirit" and "a sense of social responsibility", to ensure that language practice is aligned with value-based education.

Advanced Innovation Tier: In the extended learning phase, students advance their language skills through thematic competitions such as "Telling China's Stories", "Intercultural Competence Contests", and "Foreign Language Proficiency Competitions". Further tasks, including translating abstracts from cutting-edge research papers, participating in English volunteer services, and undertaking Undergraduate Research Training Program (URT) in English, are designed to bridge the gap between basic competence and advanced application. This stage is thus marked by a clear transition from foundational application to innovative practice.

This tiered framework systematically weaves value guidance with competency development, embedding core tenets such as the craftsmanship spirit, the engineering ethics, the national identity, and the sustainability principles throughout the educational process. The result is a holistic model that cultivates both language mastery and character formation, directly supporting national strategic objectives for developing globally competitive and ethically responsible professionals[7].

### *3.3. Constructing a Data-Integrated Teaching Evaluation System*

Through multi-platform data integration and analysis, this study develops a unified framework for

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evaluating English competencies that is data-informed, process-transparent, and progress-trackable. This system correlates quantitative learning behavior data with qualitative instructor evaluations, forming a three-level assessment model supported by a four-dimensional data structure, thereby achieving cohesive and pedagogically meaningful data integration (Figure 2).

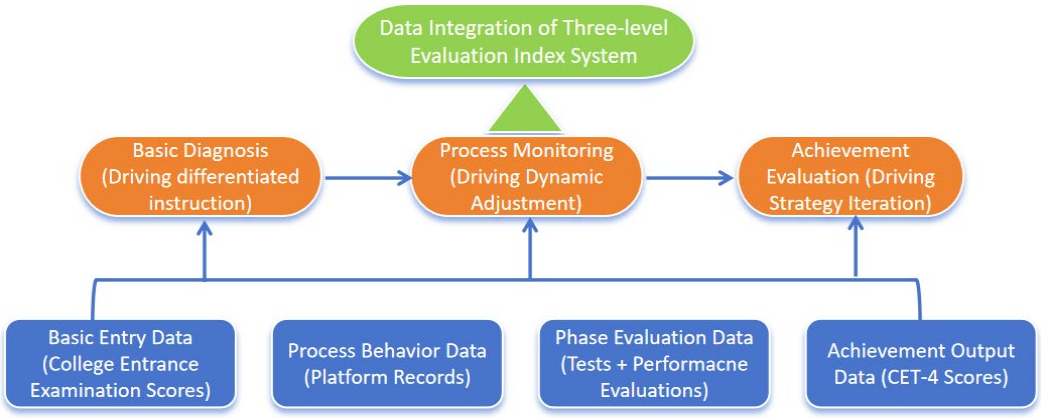


*Figure 2: Three-Level Evaluation System Driven by Four-Dimensional Data Integration.*

### *3.3.1. Baseline Entry Data*

This dimension takes students' English scores from the National College Entrance Examination (NCEE) as the core reference, supplemented by results from placement tests. These placement tests assess proficiency in vocabulary, grammar, listening, and reading, alongside demographic details such as hometown, major category, and learning expectations. By integrating quantitative metrics (e.g., NCEE and diagnostic test scores) with qualitative descriptors (e.g., "weak oral proficiency requiring targeted reinforcement"), students are systematically categorized into foundational, intermediate, and advanced tiers. This stratification provides an evidence-based foundation for implementing differentiated instruction strategies.

### *3.3.2. Process Behavior Data*

This dimension compiles learning behavior logs from digital platforms including Mosoteach, Welearn, Unipus, and FIF Oral. It continuously monitors metrics related to learning engagement, participation intensity, and interaction frequency. For instance, platforms like Welearn and Unipus collect comprehensive instructional data: textbook-based metrics (e.g., vocabulary mastery rates, time dedicated to complex sentence analysis, replay counts of audio texts), exercise performance (including accuracy on textbook assignments and error patterns in CET-4 practice tasks), and resource utilization behaviors (such as click-through rates and viewing duration of recommended micro-lectures and audio materials). These inputs are automatically synthesized into class-wide and individual learning profiles, enabling real-time monitoring and data-informed support throughout the learning process.

### *3.3.3. Stage Evaluation Data*

This dimension synthesizes outcomes from periodic assessments, including in-class quizzes, unit tests, midterm, and final examinations, with qualitative insights gathered through classroom observation. By integrating quantitative results with descriptive feedback, it facilitates a holistic analysis of knowledge acquisition and skill progression across learning phases. Furthermore, teachers supplement this data with personalized guidance delivered via WeChat or platform-based comments, addressing aspects such as class participation, assignment completion, and performance trends in staged evaluations.

### *3.3.4. Achievement Outcome Data*

This dimension utilizes CET-4 pass rates to establish benchmark models derived from the 2022 and 2023 student cohorts, providing an empirical foundation for evaluating both institutional and individual learning outcomes. At the conclusion of each semester, the teaching team conducts dedicated analytical sessions to examine these benchmarks in depth. By comparing actual class performance against the established norms and integrating evidence from the four-dimensional data architecture, the team identifies key influencing factors and designs targeted intervention strategies, thereby forming a complete closed-loop management process for continuous improvement.

The framework implements a three-level evaluation model—comprising baseline diagnosis, process

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monitoring, and outcome verification—to shift the focus of assessment from knowledge retention to competency development. This structure enables a transition in instructional intervention from experience-based intuition to data-informed practice, allowing for responsive and individualized support. By integrating quantitative analytics with qualitative insights, the model represents an AI-enhanced pedagogical innovation aligned with competency-based education principles. In doing so, it contributes to national strategic objectives of cultivating globally competitive talents.

### *3.4. Establishing a Multi-Agent Collaborative Education Mechanism*

The multi-agent collaborative education mechanism serves as the fundamental guarantee for the effective operation of the smart college English teaching model[8]. It is designed to overcome traditional barriers among instructors, students, academic departments and administrative units by fostering in-depth collaboration across four key dimensions: teaching coordination, teacher-student interaction, cross-disciplinary integration, and multi-role management. This integrated approach generates synergistic educational effects, comprehensively improving instructional quality and the effectiveness of talent development.

#### *3.4.1. Teaching Collaboration: Enabling Dynamic Optimization of Resources and Methods*

Centered around teaching teams, a regular teaching and research mechanism has been established based on a model of "online discussion + offline refinement", facilitating collaborative iteration of instructional resources and pedagogical approaches. On one hand, a collaborative lesson preparation space has been created within smart teaching platforms, allowing team members to share foundational resources such as courseware and lesson plans online. Through the platform's annotation features, teachers can add real-time comments and engage in discussions on key teaching points, challenging concepts, and instructional strategies, collectively building a dynamically updated repository of teaching resources. On the other hand, in response to the varied learning foundations and needs of students at different proficiency levels, a tiered teaching resource system has been jointly developed. This system includes basic consolidation modules, competence enhancement modules, and innovation expansion modules, illustrated by graded exercise sets, thematic case libraries, and micro-courses focusing on cross-cultural communication.

Meanwhile, regular offline teaching seminars are held, integrating student feedback and classroom performance data collected throughout the instructional process. These sessions focus on evaluating and refining both the teaching content and instructional methods. This process ensures continuous alignment with talent development goals while facilitating the ongoing adaptation of pedagogy to the evolving smart teaching environment.

#### *3.4.2. Teacher-Student Collaboration: Achieving Precision in Instructional Adjustment*

A multi-channel, real-time communication system centered on student needs provides the foundation for precise teaching adjustments. First, by leveraging instant communication tools such as WeChat and learning platforms, both "one-to-one" and "one-to-many" teacher-student communication channels have been established. These channels enable students to provide real-time feedback on learning difficulties and course suggestions, while teachers can conduct centralized Q&A sessions to address students' common challenges and offer personalized guidance tailored to their individual needs [9]. Second, a "Senior Student Experience Repository" has been developed, featuring curated digital resources from high-achieving senior students with proven English proficiency and practical competence. These resources, including learning methods, exam preparation strategies, and competition experiences, are shared with junior students through the smart teaching platform, fully leveraging the benefits of peer-led learning. Third, regular course satisfaction surveys and learning needs assessments are conducted with the help of online survey tools (e.g., Wenjuanxing). The collected data are statistically analyzed to quantitatively examine students' learning preferences, knowledge gaps, and competency development needs, which can generate visualized needs reports. These reports offer data-driven support for teachers to adjust instructional pacing, refine content, and innovate teaching formats, ensuring that pedagogical adaptations are both targeted and evidence-based.

#### *3.4.3. Cross-Disciplinary Collaboration: Integrating Professional Competencies with English Application*

With AI technology as a bridge, a collaborative mechanism between college English teaching and discipline-specific education has been established to integrate the "instrumental role of English" with "professional applicability"[6].

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First, AI-based data analysis facilitates the alignment of English teaching objectives with the talent development plans, core curricula, and occupational competency demands of different majors. This targeted alignment ensures that English instruction directly addresses the discipline-specific needs of each academic program.

Second, English instructors and discipline-specific faculty members collaborate to develop and share teaching resources, including professional English textbooks, industry-specific case libraries, and bilingual project guidelines. This joint effort effectively breaks down the traditional resource barriers between English teaching and discipline-specific instruction, fostering greater integration of language learning and professional knowledge acquisition.

Finally, through coordinated guidance, students are supported in participating in practical activities such as the Undergraduate Research Training Program (URT) , "Internet +" College Student Innovation and Entrepreneurship Competition, the National English Competition for College Students, and international discipline-specific contests. Students are further encouraged to apply English in professional scenarios, including academic research projects, academic presentations, and international exchanges, thereby achieving the simultaneous improvement of both professional capabilities and English application skills.

#### *3.4.4. Multi-Role Administrative Collaboration: Building a Closed-Loop Management and Service System*

Under the leadership of the Associate Dean of Teaching, a cross-departmental and multi-role collaborative management mechanism has been established to provide organizational support for multi-stakeholder education. This mechanism operates through the following two primary channels. First, a cross-departmental communication group has been formed, involving the Academic Affairs Office, discipline-specific departments, and smart teaching technical support units, with clearly defined responsibilities for collaborative education. Second, a closed-loop management process of "teaching feedback → administrative support → targeted intervention" has been implemented. In this process, English instructors report challenge, such as resource shortages, technical failures, or interdisciplinary collaboration barriers through the communication platform. The relevant administrative departments respond promptly by allocating resources, providing technical assistance, and facilitating cross-unit coordination. Once issues are resolved, feedback is provided to the instructors and follow-up evaluations are conducted to support the continuous improvement of management services.

This closed-loop mechanism effectively bridges the gap between teaching delivery and administrative support, significantly enhancing both instructional efficiency and the overall quality of talent development.

## 4. Outcomes of the Reform Initiative

The development and implementation of the smart college English teaching model have significantly enhanced the quality of talent cultivation, as evidenced by notable improvements in students' language proficiency, competition performance, and innovative research capabilities.

### *4.1. Enhanced Language Proficiency*

Through the provision of tiered teaching resources and precision-oriented instructional support, students' performance on the College English Test Band 4 (CET-4) has improved consistently. Among the undergraduate cohorts of 2021–2023, the first-attempt pass rate increased by 11.5 percentage points compared with the pre-reform period, demonstrating a positive trend of improvement across all score bands. Notably, the most substantial progress was observed among students with relatively weak foundations—specifically those scoring between 100 and 105, whose pass rate rose by 43.8 percentage points. These results indicate that the smart teaching model, through its tailored instructional strategies, has effectively promoted balanced language skill development among students of diverse proficiency levels, laying a solid foundation for their future academic pursuits and global communication.

### *4.2. Excellence in Language Competitions*

Student participation and performance in foreign language competitions have improved significantly. Since the implementation of the reform in 2021, students have won 192 awards, including 1 national,

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25 provincial, and 166 other prizes, in prestigious contests such as the National English Talent Competition for College Students, the English Talent International Competition, and the National Cross-cultural Competence Contest. These achievements serve as a testament to the model's role in fostering not only enhanced English application skills but also advanced critical thinking and cross-cultural communication capabilities.

### *4.3. Advancement in Interdisciplinary Research*

Through platforms such as the URT and disciplinary competitions, students have further integrated their English proficiency with specialized knowledge and research innovation capabilities. Since 2021, students have independently applied for 50 English-related URT projects, including 9 national, 21 municipal, and 20 university-level initiatives, with over 200 participants involved. Among these, 12 were recognized as university-level excellent projects. Characterized by a clear "English + Discipline" orientation, these projects explore topics such as the efficacy of AI-assisted college English learning, the design of digital instructors integrating SAMR and AIGC technologies, and the development of Chinese-language guided tours for Greco-Roman mythological artifacts in museums. These efforts collectively demonstrate students' growing ability to tackle complex challenges through interdisciplinary approaches.

## 5. Conclusions

This study conducts an in-depth exploration and practical implementation of the AI-empowered intelligent teaching model for college English, with the Production-Oriented Approach (POA) and the BOPPPS model as its theoretical underpinnings. By constructing an AI-enhanced BOPPPS instructional framework, a three-tier progressive competency development pathway, a data-driven evaluation system, and a multi-agent collaborative education mechanism, this study has effectively addressed the long-standing challenges in our university's English teaching practice, including the fragmentation of competence cultivation, the inadequacy of precise assessment, and the lack of collaboration among educational agents.

College English teaching reform must strike a more deliberate balance between technological integration and humanistic education. This requires, first, establishing robust safeguards for data security and privacy protection in digital teaching by clarifying the data collection scope, the usage boundaries and the storage standards to prevent technological misuse from leading to an over-quantification of learning[10]. Second, and more importantly, efforts must refocus on the core of foreign language education: using AI to foster students' intercultural communicative competence, sharpen their critical thinking, and deepen their humanistic insight.

Future research will continue to refine the proposed teaching model, with particular emphasis on exploring the advanced applications of AI in areas such as the generation of personalized learning pathways and the development of intelligent cross-cultural scenarios. The ultimate goal is to establish a replicable and scalable framework for smart reform of college English education — one that effectively cultivates high-quality talents equipped with both global competence and a strong sense of national identity.

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