

Practical Paths and Optimization Strategies of Smart Teaching Platform Empowering Autonomous College English Classrooms

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Abstract: The deep integration of information technology and college English teaching is the concrete implementation of the national education digitalization strategy in higher education. *College English Teaching Guide (2020 Edition)* clearly states that college English teaching should construct a new online-offline blended teaching pattern and focus on cultivating students' autonomous learning ability and comprehensive English application ability. As a teaching tool integrating resource sharing, real-time interaction, process data monitoring and personalized push, the smart teaching platform provides key technical support for solving pain points in traditional college English classrooms such as "teaching replacing learning", "disrupted teacher-student interaction" and "delayed learning situation feedback". Based on the construction logic of autonomous classrooms, this paper deeply analyzes the technical mechanism of smart teaching platforms empowering autonomous learning, and constructs a closed-loop autonomous learning mode of "goal-process-evaluation" in the whole process before, during and after class. Meanwhile, in view of the practical dilemmas in current applications such as superficial platform functions, lack of students' autonomous awareness and formalistic evaluation system, this paper puts forward optimization strategies including deepening function integration, optimizing task design, constructing a multi-dimensional evaluation system and strengthening teacher training, aiming to provide a replicable and promotable practical paradigm for college English teaching reform.

Keywords: Smart teaching platform; College English; Autonomous classroom; Autonomous learning ability

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1. Introduction

1.1. Research background

With the extensive penetration of artificial intelligence, big data and other technologies in education, student-centered personalized teaching has become the core issue of higher education reform^[1]. Traditional college English classrooms have long been faced with the dilemmas of homogenized teaching content, one-way teaching mode, and single evaluation results. Students are mostly in a passive acceptance state in class, lacking

opportunities for active planning and exploration, leading to the common phenomena of “dumb English” and “exam-oriented learning”^[2]. How to use modern information technology to break the barriers of time and space and truly return the initiative of the classroom to students has become an important topic of college English teaching reform^[3].

1.2. Research significance

The smart teaching platform provides a visual, data-based and interactive teaching ecology for autonomous classrooms through digital means. By exploring the specific application paths of the platform in college English teaching, this study can not only effectively improve students’ autonomous learning awareness and ability, but also provide accurate learning situation analysis for teachers to optimize teaching decisions. In addition, the research results also have important reference value for other liberal arts courses to carry out teaching reform with the help of smart platforms^[4].

2. Theoretical basis and core advantages of smart teaching platform empowering autonomous classrooms

2.1. Theoretical basis

- (1) Constructivist Learning Theory: It emphasizes that learning is a process in which learners actively construct meaning. The diverse resources and interactive scenarios provided by the platform support students to actively explore and collaborate in different situations to complete the internalization and transfer of knowledge.
- (2) Autonomous Learning Theory: Zimmerman’s autonomous learning cycle model points out that autonomous learning includes planning, monitoring, control, reflection and other links. The platform helps students establish a complete autonomous learning closed-loop through task decomposition, data feedback, self-assessment and other functions.
- (3) Blended Learning Theory: It integrates online autonomous learning and offline face-to-face teaching, gives full play to the flexibility of online learning and the sociality of offline learning, and achieves a teaching effect of “1 + 1 > 2”^[5].

2.2. Core advantages

The smart teaching platform has the following significant advantages in empowering college English autonomous classrooms^[6-8].

Table 1. Core advantages of smart teaching platform supporting autonomous learning

Advantage Dimension	Specific Function Description	Support for Autonomous Learning
Ubiquitous Resources	Supports uploading and cloud storage of various resources such as micro-lectures, audio, original readings and question banks.	Students can access resources anytime and anywhere as needed to realize fragmented learning.
Real-time Interaction	Includes functions such as quick answer, voting, bullet screen, group discussion and real-time Q&A.	Breaks classroom silence, enhances sense of participation, and realizes instant feedback and ideological collision.
Data Visualization	Automatically collects behavioral data such as students’ check-in, homework, tests and interactions, and generates learning situation portraits.	Both teachers and students can accurately grasp weak links and realize targeted learning.

Multi-dimensional Evaluation	Supports the combination of formative and summative evaluation, and introduces peer evaluation and teacher evaluation.	Diversified evaluation motivates students to maintain long-term learning motivation and pay attention to the learning process.
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3. Practical paths of smart teaching platform empowering college English autonomous classrooms

This paper constructs a trinity practical mode of autonomous classrooms: “goal-oriented preview before class – interactive inquiry during class – reflective expansion after class”^[9–11].

3.1. Before class: Platform-driven, targeted preview

Traditional preview is often formalistic, and students lack direction and supervision. With the smart teaching platform, the preview link becomes goal-oriented, task-driven and process-controllable.

- (1) Accurate release of guidance tasks: Teachers release micro-lectures including core vocabulary, sentence structures and background knowledge on the platform, and set “preview task sheets”. For example, when teaching the unit “Living Green” in *New Progressive College English*, teachers push relevant English news reports, short videos on cultural differences with 5 preview questions.
- (2) Automatic diagnosis and feedback: Students complete vocabulary tests and reading comprehension questions on the platform, and the system automatically corrects and generates personal preview reports. Teachers view the class preview data through the platform background, accurately identify common errors (such as the usage of a certain preposition) and individual doubts, providing a basis for classroom teaching.
- (3) Entering class with questions: Students submit preview confusion in the platform message area, and teachers select and integrate them into classroom explanations. This “problem-oriented” preview mode transforms students from passive “knowledge containers” into active “problem finders”.

3.2. During class: Technology-enabled, inquiry-based interaction

During class, the platform is used to reconstruct the traditional “lecture-based” classroom into an “activity-based” classroom, improving students’ classroom participation and autonomy^[12–14].

- (1) Quick check-in and learning situation diagnosis: The two-dimensional code check-in function of the platform completes attendance instantly. Then a survey on preview difficulties is launched through the “voting” function (such as “What is the most difficult part of the subjunctive mood?”), and teachers dynamically adjust the teaching focus according to the voting results.
- (2) Group collaboration task-driven: Divide students into groups of 4-6 people, and release situational dialogues, debates or case analysis tasks based on the platform. For example, in the “workplace English” module, groups upload dialogue recordings or PPTs on the platform, other groups comment online, and teachers provide remote guidance and scoring on the platform.
- (3) Random spot check and instant test: The “random roll call” function of the platform motivates students to concentrate. Ten minutes before the end of class, in-class tests are released, which are automatically corrected with real-time data display. Teachers conduct “secondary explanation” for high-frequency wrong questions to achieve “digestion in class”.

3.3. After class: Data feedback, personalized consolidation

After class is a key stage for autonomous learning from “input” to “internalization”. The platform consolidates the learning effect through layered homework, expanded resources and self-reflection.

- (1) Layered homework and precise tutoring: Teachers assign three levels of homework (A: basic, B: improved, C: expanded) on the platform according to students’ abilities. Based on students’ test data, the system automatically pushes basic consolidation questions for students with learning difficulties and expanded real questions for advanced students.
- (2) Independent expansion and in-depth resource exploration: The platform pushes expanded resources such as CET-4/6 real questions, original English articles and English podcasts. Students can independently arrange time for in-depth learning according to their own interests and needs to cultivate cross-cultural communication ability.
- (3) Data portrait and self-reflection: Students log in to the platform to view personal learning data, including vocabulary growth curve, listening accuracy rate change, learning duration, etc. Guide students to write “learning reflection logs”, summarize gains and losses, formulate next-stage learning plans, and realize “self-monitoring” and “self-regulation”.

4. Analysis of existing problems in application

Although the platform has achieved remarkable results in the construction of autonomous classrooms, there are still the following problems in practical application ^[15].

4.1. Superficial application of platform functions

Some teachers have an incomplete grasp of platform functions, only staying at the basic level of “check-in, sending notices and handing in homework”, and insufficiently tap core functions such as data analysis, personalized path planning and learning behavior analysis. As a result, the platform becomes an “electronic exercise book” and fails to empower autonomous learning truly.

4.2. “Pseudo-autonomy” in students’ autonomous learning

Some students lack self-discipline, with phenomena such as “keeping the class online to clock up duration”, “copying homework,” and “offline learning in online mode”. Although the platform provides space for autonomous learning, students fail to truly achieve active planning and in-depth exploration, greatly reducing the effect of autonomous classrooms.

4.3. Imperfect evaluation system and incentive mechanism

Although formative evaluation has been introduced, the final assessment weight in some colleges is still too high, leading students to “focus on results rather than process”. The incentive mechanisms such as points and medals in the platform are not attractive enough to maintain students’ learning enthusiasm for a long time.

4.4. Insufficient integration of technology and teaching content

There is a phenomenon of “using technology for technology’s sake”. Some task designs are disconnected from teaching objectives, boring in content, fail to truly improve students’ language ability, and instead increase students’ learning burden.

5. Optimization strategies for smart teaching platform

In view of the above problems, the following five optimization strategies are proposed to improve the empowerment efficiency of the platform.

5.1. Deepen function integration and build an accurate teaching ecology

- (1) Make good use of data analysis to teach students in accordance with their aptitude: Teachers should skillfully use the “data cockpit” of the platform to analyze the learning behavior characteristics of the class (such as learning time distribution, error-prone points), build individual student portraits, and realize “tailored” teaching design.
- (2) Develop characteristic resource libraries: Encourage teachers to upload self-made micro-lectures, animations and interactive courseware combined with course characteristics, establish a teaching resource library with school characteristics, and improve the pertinence and attractiveness of resources.
- (3) Strengthen online-offline collaboration: Clarify the boundary of online learning, with online responsible for knowledge input and basic practice, and offline responsible for in-depth discussion and ability expansion, realizing the deep coupling of technology and teaching.

5.2. Stimulate endogenous motivation and cultivate autonomous learning literacy

- (1) Formulate clear learning norms: At the beginning of the semester, release *an Autonomous Learning Guide to students through the platform, clarifying the requirements, assessment standards*, and reward and punishment mechanisms of online learning.
- (2) Introduce gamification incentives: Optimize the platform incentive mechanism, set honors such as “Learning Medal”, “Star of Progress” and “Vocabulary King”, which are linked to the usual score of the final exam. Organize online English competitions, vocabulary PK contests and other activities to enhance learning fun.
- (3) Strengthen learning strategy guidance: Regularly carry out online lectures or push learning method tweets through the platform to guide students to use time management tools and memory skills to improve their autonomous learning strategies.

5.3. Build a multi-dimensional evaluation system and guide formative learning

Reform the single evaluation mode and establish a multi-dimensional evaluation system of “process + result + ability”. This system takes the learning process as the evaluation core, and guides students to pay attention to long-term learning effects through data-based and visual evaluation methods.

Table 2. Multi-dimensional evaluation system of autonomous college English classrooms

Evaluation Dimension	Evaluation Content	Suggested Weight	Evaluation Subject
Formative Evaluation	Platform preview completion rate, interaction participation, homework quality, learning duration	30%	Platform automatic statistics + teacher comments
Classroom Performance	Group collaboration, class speeches, presentation results	20%	Teacher evaluation + peer evaluation
Periodic Tests	Unit tests, oral tests, writing correction	20%	Teacher evaluation + system assessment
Summative Assessment	Final written test, comprehensive project	30%	Unified assessment

5.4. Optimize task design and improve teaching content quality

Adhere to the principle of “teaching as the core, technology as the tool”.

- (1) Situational task design: Platform task design should be closely integrated with real-life scenarios and vocational needs, such as simulating workplace interviews and business negotiations, to improve students’ language application ability.
- (2) Strictly control task quantity and quality: Avoid assigning excessive and repetitive online tasks, ensure the quality and depth of tasks, and truly consolidate knowledge and cultivate abilities.

5.5. Strengthen teacher training and improve information-based teaching ability

- (1) Carry out systematic training: Regularly organize special training on smart teaching platforms and blended teaching workshops, invite experts for guidance, and improve teachers’ platform operation skills and teaching design ability.
- (2) Establish a teaching and research community: Form an information-based teaching team of college English teachers, carry out collective lesson preparation, lesson polishing and achievement sharing activities, share high-quality resources and teaching cases, and promote teachers’ professional growth.

6. Practical effects and case analysis

Two parallel classes (60 students in total) of the School of Economics and Management, Grade 2025, were taken as experimental objects for a one-semester teaching practice. The experimental class (30 students) adopted the autonomous classroom model empowered by the smart teaching platform, and the control class (30 students) adopted traditional lecture-based teaching.

6.1. Comparison of students’ autonomous learning ability

Through the evaluation of *the College Students’ English Autonomous Learning Scale before and after the semester*, the scores of the experimental class in autonomous planning, autonomous monitoring, and autonomous strategy use increased by an average of 18.5%, significantly higher than 5.2% of the control class. Students’ feedback indicated that the personalized resources and real-time feedback provided by the platform made them “learn with direction and practice with goals”.

6.2. Improvement of classroom participation and academic performance

At the end of the semester, the classroom attention rate and interactive speech times of the experimental class reached 92% and 85%, respectively, a significant increase from the beginning of the semester. The final unified examination results showed that the average score of the experimental class was 78.5, compared with 69.2 of the control class. The excellent rate (above 80 points) of the experimental class reached 52.5%, much higher than 27.5% of the control class.

6.3. Optimization of teaching efficiency

Through platform data, teachers saved an average of 10 minutes per class for attendance and homework explanation, and could devote more time to in-depth interaction and Q&A, effectively improving teaching efficiency.

7. Conclusion

The smart teaching platform provides strong technical support for the construction of autonomous college English classrooms. By constructing a whole-process practical path of “goal-oriented preview before class – interactive inquiry during class – reflective expansion after class”, supplemented by strategies such as deepening function integration, optimizing the evaluation system, and strengthening teacher training, it can effectively stimulate students’ learning internal drive and improve autonomous learning ability and classroom teaching quality. In the future, with the development of artificial intelligence technology, smart teaching platforms should further introduce functions such as intelligent recommendation, affective computing and VR/AR immersive learning to create a more intelligent, personalized and immersive autonomous learning environment. At the same time, cross-disciplinary and cross-platform data interoperability should be strengthened to realize a wider range of sharing of educational resources, contributing to the cultivation of high-quality applied talents in the new era.

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