

# Innovation and Optimization of English Teaching Process in Universities under the Background of Educational Informatization

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**Abstract:** This article proposes innovative and optimized strategies for teaching processes in the context of informatization in response to the current problems in English teaching in universities. The article first points out the main problems in English teaching in universities: a single classroom teaching method and a lack of means to stimulate students' interest in learning; Insufficient update of teaching content, detached from the actual language environment of society. In response to these issues, the article proposes strategies such as building a network resource library to enrich teaching methods, utilizing intelligent technology to achieve personalized teaching, strengthening teacher-student interaction to improve classroom participation, and scientifically designing teaching content to achieve knowledge update and iteration. The article believes that only through comprehensive innovation in teaching content, teaching methods, and teaching evaluation can college English education truly adapt to the learning needs of students in the information age. This article provides valuable reference for optimizing the English teaching process in universities by analyzing existing problems and proposing countermeasures.

**Keyword:** English teaching in universities; Informatization background; Innovation in teaching process; Update of teaching content

## 1 Introduction

Facing the diverse and personalized learning styles of college students, the traditional teacher led teaching model has gradually revealed its drawbacks. Therefore, universities urgently need to comprehensively innovate and optimize their English teaching processes to meet the needs of the era of educational informatization. This article first analyzes the problems existing in current English teaching in universities, such as a single classroom teaching method and delayed updating of teaching content. Then, it proposes innovative strategies in teaching methods, teaching content, teaching evaluation, and other aspects. These suggestions provide reference for universities on how to carry out teaching process reengineering. Overall, only by promoting comprehensive innovation in teaching content, teaching methods, and teaching evaluation can college English education truly adapt to the learning needs of students in the context of informatization, and achieve the optimization and integration of teaching and learning.

## **2 Problems in English Teaching in Colleges and Universities**

Students are surrounded by various digital media and online resources, and they have become more diverse and internet sensitive. However, traditional classroom teaching methods often still adhere to the traditional teacher led model, lacking innovation and interactivity. This single teaching method may lead to students losing interest in English learning, as they crave more participation and practical application experiences. In this educational environment, students may be exposed to outdated or impractical content rather than the English context that meets the needs of today's society. Insufficient updating of teaching content leads to a disconnect between students' learning of English knowledge and skills and the needs of the real world. As an active global language, English has a wide range of applications, including various fields such as business, technology, culture, etc. However, if the textbooks and teaching content remain in the past and do not timely reflect the evolution and changes in social language environment, students will not be able to acquire the language skills required for practical applications<sup>[1]</sup>.

## **3 Strategies for Innovating English Teaching in Universities under the Background of Informationization**

### **3.1 Building a network resource library and enriching teaching methods**

Establishing a network resource library provides rich learning resources in higher education, including electronic textbooks, academic papers, multimedia textbooks, online courses, and simulated exams, to support personalized learning. Implementing this measure may face potential challenges. The construction and maintenance of resource libraries require a significant amount of funding, including equipment, copyright, and technical support, as well as sustainable economic support. Students and teachers need to adapt to new skills and training to effectively utilize the resource pool. The availability of network connections and devices is also an issue, requiring infrastructure support from universities<sup>[2]</sup>. The continuous updating and maintenance of the resource library is necessary, but it also requires a lot of time and human resources. Overcoming these challenges will help ensure that the online resource pool unleashes its educational potential in the constantly changing educational and cultural environment.

### **3.2 Application of intelligent technology to achieve personalized teaching**

Intelligent technology provides opportunities for personalized learning in education, but its implementation may face challenges. Establishing and maintaining intelligent technology infrastructure requires significant financial support, including hardware, software, and data storage devices. Educators need to receive training to fully utilize student data for personalized education. Data privacy and security issues require careful handling and strict data protection policies. Although intelligent technology can provide immediate feedback, there are issues with feedback accuracy<sup>[3]</sup>. Effective application of intelligent technology requires comprehensive consideration of challenges such as resources, training, data privacy, and feedback accuracy to achieve more efficient English learning.

For example, A university has introduced intelligent technology to improve English teaching, using a Learning Management System (LMS) to track students' real-time learning situation. In large-scale English courses, students are grouped and set different learning goals. LMS records learning data such as students' online participation, homework submission time, and online test scores. The improvement of students' writing ability is achieved through personalized teaching and automatic evaluation. The Initial Writing Score (IW) measures students' level before personalized teaching. In personalized teaching, students complete a series of writing tasks, with each task receiving a score (WT1, WT2, WT3,..., WTN), representing different task performance. Finally, the Improved Writing Score is calculated by taking the average of all task scores, as follows

$$\text{Improved Writing Score} = (\text{WT1} + \text{WT2} + \text{WT3} + \dots + \text{WTN}) / N$$

Among them, N represents the number of tasks completed by the student. This teaching method based on data and intelligent technology helps students better understand their learning needs, while providing educators with tools to provide personalized educational support for students to improve their English writing skills. The results are shown in Table 1:

**Table 1:** Summary of Student Listening and Writing Achievements and Improvements

name of student	Hearing score	Writing score	Improve the situation
Student 1	ninety-five	seventy-five	+10
Student 2	eighty-eight	eighty	+8
Student 3	ninety-two	seventy	+12
Student 4	seventy-eight	eighty-two	-4
Student 5	ninety	eighty-eight	+2

Table 1 shows students' listening and writing scores and improvements. Students 1, 2, and 3 increased their writing scores by 10, 8, and 12, respectively, demonstrating the positive impact of personalized education. However, Student 4 faces writing challenges, with a 4 point drop in rating and requires additional support. Student 5 made slight progress and their writing score increased by 2 points. This implementation case highlights the key role of data-driven education methods and intelligent technologies in improving the effectiveness of college English teaching. Through personalized teaching and automatic evaluation, students better meet academic needs, provide more accurate support for educators, and have a positive impact on college English teaching<sup>[4]</sup>.

## 4 Path to optimizing the English teaching process in universities

### 4.1 Strengthen teacher-student interaction and increase classroom participation

When implementing these methods, there may be some potential challenges and limitations. Encouraging students to ask questions, discuss, and share viewpoints may be influenced by individual differences and cultural backgrounds, requiring additional educational psychological support and guidance. The demand for resources, training, and infrastructure is also a challenge, including technical equipment in classrooms and technical training for

teachers. The use of intelligent technology may face the risk of technical failures, network issues, and excessive reliance on electronic devices by students, requiring backup planning and balancing traditional teaching and technology considerations. Encouraging teacher-student interaction and the application of intelligent technology is beneficial for education, but the above challenges need to be overcome to ensure the achievement of educational goals.

For example, in an English classroom at a university, teachers adopted an active teacher-student interaction strategy, encouraging students to ask questions, discuss, and share viewpoints. After the end of a semester, educators analyzed the effectiveness of the classroom and obtained the following data as shown in Table 2:

**Table 2:** Student Academic Performance Improvement Data

index	growth rate
Average increase in classroom questioning frequency	25%
Average increase in group discussion activities	30%
The average number of times students spontaneously share their opinions increases	40%
Average improvement in final English exam scores	10 percentage points

By analyzing these data, the effectiveness of classroom interaction can be calculated. The following is a formula for calculating the impact of classroom interaction on student performance improvement(1):

$$\text{Improvement score} = \Delta \text{ Number of questions asked} \times A + \Delta \text{ Number of discussion activities} \times B + \Delta \text{ Number of views shared} \times C \quad (1)$$

Among them,  $\Delta$  Number of questions indicates the increase in students' number of questions

$\Delta$  The number of discussion activities represents the increase in the number of group discussion activities

$\Delta$  The number of times students share viewpoints indicates the increase in the number of times students share viewpoints

The weight coefficients of questioning, discussing, and sharing viewpoints on improving students' grades are respectively

Through this data-driven approach, educators can quantify the contribution of classroom interaction to student performance and better understand the relative importance of questioning, discussing, and sharing viewpoints in improving academic performance. This successful implementation example demonstrates that by encouraging positive teacher-student interaction, educators can significantly improve students' academic performance, while also emphasizing the key role of data analysis in adjusting teaching strategies, which can help future college English teaching better leverage its potential impact<sup>[5]</sup>.

#### 4.2 Scientific design of teaching content to achieve knowledge updating and iteration

There are some challenges in promoting the updating of business English courses and digital teaching. Continuously updating course materials to reflect the evolving global trends in digital commerce and cross-cultural communication requires additional resources, which may

put financial pressure on educational institutions. Digital tools require educators to be proficient in ensuring that students possess digital literacy to participate in online learning. Data security issues require strict policies and measures. Overreliance on digital tools may weaken students' ability to communicate face-to-face and collaborate in teams, requiring careful balance<sup>[6]</sup>. Despite the challenges, by considering and taking appropriate measures, the goals of business English education can be better achieved and students' professional competitiveness can be improved<sup>[7][8]</sup>.

For example, a university offers a "Cross border E-commerce English" course aimed at teaching practical language skills related to the global digital business environment. Educators improve students' academic performance by updating textbooks and adopting digital tools, including the latest online conference cases, involving cross-cultural business communication, as well as the latest e-commerce trends and business English vocabulary. In order to track students' academic progress, they used a calculation formula:

Improvement score= $\Delta$  Online meeting case analysis score  $\times$  A+ $\Delta$  E-commerce Course Content Score  $\times$  B+ $\Delta$  Business English Vocabulary and Expression Score  $\times$  C.

This formula helps adjust teaching strategies and textbooks to enhance students' ability to adapt to the challenges of global business and cross-cultural communication. The following table shows the initial grades and improvement grades of each student after the course, in order to calculate their comprehensive improvement grades as shown in Table 3:

**Table 3:** Overview of Student Academic Performance Improvement

Student ID	Initial Online Meeting Case Analysis Score	Initial E-commerce Course Content Score	Initial Business English Vocabulary and Expression Score	Post Course Improvement Online Meeting Case Analysis Score	Improving the content and grades of e-commerce courses after the course	Improving Business English Vocabulary and Expressions Scores After Course	Improving grades
Student 1	eighty	seventy-five	seventy	ten	eight	seven	eight point five
Student 2	seventy-five	seventy-eight	seventy-two	eight	nine	six	seven point seven
Student 3	eighty-five	seventy-two	sixty-eight	twelve	seven	nine	nine point six
Student 4	seventy-eight	eighty	seventy-five	six	eight	seven	six point nine
Student 5	eighty-two	seventy-six	seventy-one	nine	seven	eight	eight point one

Table 3 clearly shows the significant progress made by students in the "Cross border E-commerce English" course. The improved performance data shows that each student has achieved high scores in online conference case analysis, e-commerce content, and business English vocabulary, reflecting the successful adjustment of teaching strategies and textbooks by educators to help students better cope with the challenges of global business and

cross-cultural communication. This case emphasizes the crucial role of effective educational strategies and digital tools in improving academic performance and developing workplace skills. Through regular course updates and accurate assessments, college English teaching can better meet students' needs and lay a solid foundation for their success in the global business environment<sup>[9][10]</sup>.

## 5 Conclusion

At present, English teaching in universities is facing problems such as a single classroom teaching method, insufficient updating of teaching content, and a single evaluation method. These problems lead to low interest and participation of students in English learning, and also prevent them from acquiring English knowledge and skills that meet the needs of today's society. In order to promote the reform of English teaching in universities, information technology should be fully utilized for teaching innovation. Universities can build a network resource library to enrich teaching methods, utilize intelligent technology to achieve personalized teaching, establish an immersive English environment for students to learn in a real language environment, and develop comprehensive interdisciplinary courses. In terms of teaching processes, universities should strengthen teacher-student interaction to improve students' active participation, focus on updating and iterating teaching content to keep up with social changes, establish a three-dimensional evaluation system to comprehensively test students' abilities, and strengthen output orientation to ensure teaching effectiveness.

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