

# Research on Innovative Practice of College English Teaching Mode under the Background of Internet+Education

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**Abstract.** With the popularization and deepening of "Internet+Education", the educational work in colleges and universities is accelerating the integration with digital information technology, and gradually completing the innovation of educational objectives, teaching concepts and teaching models. In this regard, this paper will take English majors in colleges and universities as the research object, and aiming at the disadvantages of the outdated content, the single form and the lack of practical application level, put forward a set of mixed teaching mode based on the network teaching platform, so as to promote the reform and development of English majors in colleges and universities. The teaching platform under the mixed teaching mode is designed and developed by Javaweb technology, and its function modules and application services will be closely related to the traditional offline classroom, so that teachers and students can efficiently and conveniently complete many systematic teaching tasks such as knowledge learning, skill training, communication and teaching evaluation through online operating system. Practice has proved that the mixed teaching mode based on the network teaching platform can realize the integration of teaching resources and elements, highlight the advantages of the two teaching forms, and promote the fundamental change of college English teaching mode and teaching structure.

**Keywords:** Internet +; college English major; mixed teaching; online teaching platform; computer application

## 1 Introduction

Nowadays, China's economic and social development has entered a new stage of high-quality development. Scientific and technological progress and industrial upgrading have prompted changes in the talent demand structure, which in turn has made it necessary for the education system to carry out comprehensive and in-depth reform and transformation. [1] Under the current situation, higher education institutions, as the training positions and output windows of professional talents, urgently need to rebuild the modern education system supported by digitalization, and promote the traditional education and teaching mode to complete innovative practice, which has become the key factor to realize the leap-forward development of educational informatization.

As a new development trend of digital education, "Internet+Education" can make full use of the Internet platform and digital information technology to open up new channels for college

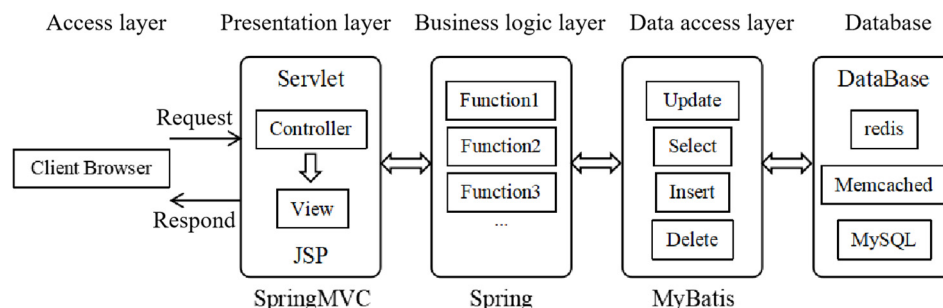
education and teaching practice, and form a new educational ecology based on the Internet. Compared with traditional teaching, "Internet+Education" has outstanding advantages in breaking through the limitation of time and space conditions, integrating a large number of teaching resources and elements, adjusting teaching processes and links, and updating teaching methods and means. It can effectively make up for the shortcomings of traditional education and teaching, such as outdated content, single form and insufficient practical application level, and gradually derive a set of mixed teaching mode combining online and offline, which promotes fundamental changes in teaching methods and teaching structures. [2] In view of this, according to the current research situation of mixed teaching at home and abroad, combined with the influence of mixed learning on English learning proposed by Natalia Holovatska[3] and the optimization approach of mixed teaching quality management proposed by Zhao Wei [4], this paper puts forward a set of construction scheme of mixed teaching mode for English in colleges and universities, which effectively promotes the innovation and practice of educational objectives, teaching concepts and teaching modes for English majors in colleges and universities. The development and deployment of college English online teaching platform is the basis for the application of mixed teaching mode for English majors in colleges and universities. The design idea of the platform will change from "teachers as the main body" to "students as the main body", and the setting of functions and services will be more in line with the actual needs of teachers and students. The technical route of the platform will also choose a mature Javaweb system in order to improve the teaching environment, increase the learning experience and enhance the teaching effect. Mixed teaching mode is an innovative reform of college English teaching mode, which can alleviate the contradiction among teachers, students and schools in the current teaching process and is beneficial to the improvement of college English modernization education system.

## **2 Development process**

The online English teaching platform in colleges and universities will select and determine the development tools and technologies based on the actual needs of users and the processes and tasks under the mixed teaching mode. The whole network teaching platform adopts B/S architecture, and the structural framework is shown in Figure 1. According to the development idea of "high cohesion and low coupling", the platform divides the system into five parts: access layer, presentation layer, business logic layer, data access layer and database layer. [5] The presentation layer directly faces the user and is closely related to the access layer, which is convenient for users to send interactive requests and obtain response results. The business logic layer is mainly aimed at the server side of the system, and its functions focus on the formulation of business rules and the realization of business processes. The data access layer directly faces the database, which can add, delete, modify and search data and provide data processing services for the business logic layer.

English online teaching platform adopts the development mode of separating the front end and the back end, so that the front end and the back end can be independently developed, tested and deployed. At the same time, the Node.js middle layer is used to replace the traditional back-end template rendering, which promotes the decoupling between the front-end and the back-end, and only retains the necessary data interface. [6] The front end architecture is based

on JSP pages, combined with Ajax, JSON, WebAPI and other technical components to complete the design and deployment, while the back-end architecture relies on SSM framework to complete the construction.



**Fig. 1.** Platform structure framework

SSM framework is not a single Web application development framework, but is integrated by Spring MVC, Spring and Mybatis framework. Among them, Spring MVC corresponds to the presentation layer and is mainly responsible for the forwarding of user requests and the management of View. Spring corresponds to the business logic layer and can realize the logical application design of business modules. Mybatis corresponds to the data access layer, and as the persistence engine of data objects, it can complete the encapsulation of JDBC to simplify the data application management process, thus optimizing the operating efficiency of the platform. [7]

According to the application specifications of the above development technologies, the requirements for the development environment configuration of the college English network teaching platform include: the underlying operating system Linux CentOS 7.0, the Web server Tomcat 8.5, the development toolkit JDK 1.8.0\_281, the integrated development tool IntelliJ IDEA Ultimate 2018, and the database server MySQL 5.7. For the process of building the development environment, we need to create a new Project under IntelliJ IDEA, and then create a new Webapp under Maven. After completing the corresponding settings, the project is created. Under the framework of the program, four Jar packages, namely bean, service, dao and controller, are created under Main to store Java classes, define functional interfaces, database interfaces and provide control in turn. [8] Then, add dependencies and modify the configuration under the Pom file to complete the SSM framework setting. The detailed code is shown below. After completing the above settings, deploy the configuration file to the project, and complete the overall development environment after setting up the server.

```
<!-- Spring and spring-mvc -->
<dependency>
  <groupId>org.springframework</groupId>
  <artifactId>spring-webmvc</artifactId>
  <version>${spring.version}</version>
```

```

</dependency>
<!-- Mybatis -->
<dependency>
    <groupId>org.mybatis</groupId>
    <artifactId>mybatis</artifactId>
    <version>${mybatis.version}</version>
</dependency>

```

### 3 Functional implementation

#### 3.1 Student side

##### A. Registration and login

Under the mixed teaching mode, college English online teaching platform will become an important supplement to the traditional classroom teaching form, which is responsible for pre-class preparation, resource expansion, after-class consolidation, communication, teaching management and other links in the overall teaching process. In the process of design and development, the platform presupposes two roles of students and teachers in advance according to the actual needs of users. When users log on to the platform for the first time, they need to register their accounts, and complete the division of user roles and the granting of functional rights according to the registration information. Table 1 shows the user registration and login flow chart of college English online teaching platform. According to the operation flow of this table, users of different roles can be registered and logged in.

**Table 1.** Platform user registration and login process table

Function name	User registration and login
Function declaration	Users submit application materials online to complete registration and login
Role distinction	Students, teachers
Basic operation	1. Click the registration button to enter the registration interface
	2. Display the user information Form, registration and login buttons
	3. Support the users to input the information and complete the registration
	4. Submit the information and return the verification results
	5. Enter the account number and password to complete the system login
Post operation	Exit button, exit the login
Exception handling	Alert information prompt, web page roll back refresh

##### B. Course learning

Under the course learning module, students can learn the contents of college English courses independently. The learning content is synchronized with the off-line teaching content of college English, and the display means are mostly in the form of video, audio, animation, graphics and text, so as to stimulate students' interest in learning, meet the needs of contemporary college students for "network" learning, enhance students' autonomy in college

English learning, and achieve the teaching purpose of preview before online class. In addition, the system also provides a large number of extra-curricular expansion resources, including excellent English works, original English films and documentaries, which not only broadens students' horizons, but also makes education more entertaining and enhances students' enthusiasm for college English learning.

### C. Key breakthroughs

Under this functional module, the platform will support students to practice five basic abilities: listening, speaking, reading, writing and translation. There is a pre-set item bank subsystem in the online English teaching platform of colleges and universities, which includes CET-4, CET-6, TOEFL, IELTS and other test questions with different levels of difficulty, so that students can conduct online simulation tests conveniently. The realization of this function mainly depends on the data interface between the front-end interactive page and the back-end function control of the platform, for example, self. single = singlehoicesubject (), self. single list = self. single. getdata () represents the selection, publishing and answering of multiple-choice questions, and the declaration and definition of data recovery interfaces and methods. Table 2 shows the design of the test table in the database. [9] In addition, the platform can automatically score after online simulation test. Formula 1 shows the calculation formula of the report score of CET-4 test simulated by the platform, where S stands for the report score, X stands for the original score, M stands for the mean value, and D stands for the standard deviation. Table 3 shows the simulated test scores of student users.

**Table 2.** Test table

Field name	Data type	Length limit	Allow to be empty	Description
Q ID	int	10	NO	Primary key, title number
Q Title	varcher	100	NO	Title
Q Ans	varcher	100	NO	Answer
Q Point	float	6	NO	Score
Q Type	varcher	20	NO	Title types
Q Analyse	varcher	100	YES	Title analysis

$$S = \left[ \frac{(X - M)}{D} \right] * 70 + 500 \quad (1)$$

**Table 3.** Student simulation test scores

CET-4 score	Aural comprehension	Read	Translate	Writing	Aggregate score
Report score	248.5	248.5	106.5	106.5	710
Paper score	35	35	10	20	100
Student's paper score	21	28	5	11	67
Student's report score	161	192.5	58.5	85.5	498

### D. Communication feedback

Under this module, students or teachers and students can have free forum-style communication, and the communication content is open to all users, which can attract different users to join. At the same time, the platform also supports class or group chat rooms,

and the chat content is limited to the public in the group. The opening of communication channels is convenient for students to communicate and share their learning experiences, and also to discuss and study learning problems, so as to build a good learning atmosphere and promote the mastery of college English knowledge and skills.

### 3.2 Teacher side

On the teacher side, teachers will also complete the login and use of the system through user registration. Compared with the user function experience of the student side, the teacher side pays more attention to the management and supervision of English teaching practice. Under the mixed teaching mode, teachers can complete teaching plan formulation, course resource management, targeted counseling, teaching process supervision and assessment with the help of online teaching platform.

#### A. Course release and resource upload

In the pre-class stage, teachers will publish the teaching objectives and teaching priorities, and upload supporting teaching resources for student users to preview. When a teacher user initiates online uploading of online teaching resources, he can select the file to be uploaded in the front-end interactive interface, and click the "Upload" button. The SSM framework at the back end of the platform will automatically receive the file and save it to the specified location. Table 4 shows the design table of teaching resources in the database. [10]

**Table 4.** Teaching resources table

Field name	Data type	Restrain	Description
ID	int	PRIMARYKEY,AUTO_INCREMENT	Major key
Name	varchar(50)		A Foreign Language
Size	int		22.3MB
Url	varchar(30)		-
Type	varchar(20)		02-Video
Subject ID	int		01- College English
Time	Datetime		-
Teacher ID	int		1004
Description	varchar(100)		-

In the after-class stage, teachers can also publish corresponding assignments, tests, training projects and other contents to help student users complete the consolidation of teaching content. Among them, teachers can set the deadline for submission when releasing homework, and can complete the correction of homework online. In addition, teacher users can also use the platform to organize periodic tests. Online testing directly reduces teachers' daily workload, and can quickly complete marking, analysis and statistics, thus improving teachers' work efficiency.

#### B. Teaching management

Under the mixed teaching mode, teachers need to use the platform to realize the supervision and management of online teaching process. The teaching management of college English online teaching platform mainly involves two aspects. One is to manage students' information, that is, teacher users have the right to view, add, modify and delete students' information. The

second is the management of students' online learning behavior, and the evaluation of students' learning effect is completed on this basis.

Based on the characteristics of online teaching, student users will have a variety of learning behaviors in the learning process, such as logging in, studying courses, completing homework, viewing materials, and interactive communication, which will leave "traces" in the system log and database. [11] Therefore, the system extracts multi-dimensional dynamic evaluation features according to various states of students' learning behavior, and completes the construction of online learning effect evaluation system by combining quantitative indicators and non-quantitative indicators. Table 5 shows the characteristics of students' learning behavior, which is divided into three dimensions: learning attitude, resource utilization and learning effectiveness. Table 6 shows the data generated by student users' simulation and the results of platform analysis and calculation. The simulation results show that the platform can be based on diversified learning behavior characteristics, and can make English online learning evaluation more scientific and convenient.

**Table 5.** Behavior characteristics of online learning

Dimension	Behavior characteristics
Learning attitude	1. Complete the study tasks according to the study plan
	2. Study independently, without delay and avoidance
	3. Actively complete the homework and take part in the tests
	4. Active communication and close information communication
Resource utilization	1. Teaching resources are widely used and are used more frequently
	2. The completion of key breakthroughs is high, and corresponding notes are taken
Learning effectiveness	1. Homework completion degree
	2. Test results
	3. Test bank simulation test results

**Table 6.** Property information table of the learning effect evaluation index

Learning behavior indicators	Indicator observation value	Minimum	Maximum	Mean	Standard deviation
System usage time	Field Time, long int, continuous value	28.01	53.26	40.55	7.17
Study duration	Field Time, long int, continuous value	26.10	40.03	33.57	6.04
Course completion degree	Field Properties, String, excellent, good and bad	1	3	2.66	0.45
Number of homework completions	Field Hits, int, continuous value	7	49	23.23	4.11
Test results	Field Grade, varchar, continuous value	49.64	83.19	67.65	6.83

## 4 Conclusions

In order to promote the reform of college English teaching mode, aiming at many problems faced by traditional teaching practice, this paper puts forward a set of construction scheme of mixed teaching mode based on network teaching platform, and emphatically analyzes the construction and functional application of network online teaching platform, which verifies the application effect of network teaching mode in college English majors and promotes the application of mixed teaching mode. In the follow-up research process, the platform will continue to improve the user interaction, optimize the functional service process, give teachers and students a better application experience, and promote the improvement of the modern education system in colleges and universities.

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