

# Research on College English Independent Learning System Based on Constructive Teaching

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**Abstract.** Under the development trend of economic globalization, the trade exchanges between countries become more and more close, and the social development puts forward higher requirements for college students' English level. In order to adapt to the new social environment and meet the requirements of the country and society for talent cultivation in the new era, the education department of Our country proposes to speed up the pace of college English education innovation and make rational use of modern educational technology.

**Keywords:** Constructivist teaching; College English; Autonomous learning; Neural network algorithm

## 1. Introduction

Although more than 80% of colleges and universities in China have built the campus network, but in addition to the promotion of information technology courses and the opening of electronic library, all technology applications are reflected in student performance, educational administration management, financial statements, office automation system, and not reflected in the practice of teaching work. From the current situation of college English teaching, it is mainly to promote teacher-centered and student-centered teaching modes. Among them, before the 1990s, the teaching mode was mainly teacher-led, which could not only give full play to the leading role of teachers, but also facilitate teachers to monitor and manage the whole teaching activities. However, it ignores the cognitive main role of students and is not conducive to cultivating students' innovative thinking and ability. The student-centered teaching mode requires students to change from passive recipients to knowledge collectors and creators, while teachers are knowledge narrators and activity organizers. They should use the latest teaching mode and teaching ideas to build diversified teaching systems for students. However, this model overemphasizes the principal role of students and ignores the leading role of teachers[1.2].

Some foreign countries have already begun to pay attention to students' autonomous learning, and combine traditional education with network technology, and more and more independent learning knowledge systems have been developed. For example, Clinton put forward the educational Technology action in the mid-1990s. After entering the 21st century, all classrooms and libraries have truly realized the network processing, and every college student can receive the education of technology and culture, among which 75% can provide network education, there are more than one hundred universities, can use the network for distance education; In April 2001, MIT announced that it would make all of the institute's course material available online until 2010, with free access for all. Up to now, the United States as the main education information construction platform, almost all schools carry out online education throughout the country. More than 800 universities around the world offer online degree programs using web-based technology, with Cambridge, MIT, Harvard and others allowing foreign students to enroll online and study remotely. Nowadays, most international exams will be conducted online, such as Microsoft certification, Cisco certification, Pratt & Whitney certification, etc., which are conducted in real time using the network. Blackboard is a curricular integrated online teaching environment that allows teachers to design online courses and students to learn independently based on their interests. Between students and teachers and students can communicate communication, according to teaching demand, the overall platform of teaching the course as the center, each course will involve four relatively

independent functional modules, the first refers to the function of online communication, second is refers to the content resource module, here refers to the system management functions, the last is refers to the assessment and management functions[3.4].

In the 1990s, China opened China education research network, in the 21st century, through a round of "school to school" project, the comprehensive implementation of primary and secondary information drive education modernization, and strive to achieve the leapfrog development of basic education. There are many domestic tests will use the online model for processing, such as driver's license simulation, vocational English online test. In many online examination systems, the topic type will basically choose multiple choice questions, online examinees only need to pass, click the correct option to complete the exam, and the system will be saved according to the correct option, accurate calculation of students' exam results. It should be noted that this examination system can only realize the judgment of students' level at the current point, but cannot help improve students' skill level. Compared with foreign online teaching platforms, the details are shown in Table 1 below.[5]

Table 1 Comparison results of existing online teaching platforms in Chin

	Scope of application	Resources	Range of application	Technical characteristics
Speech lab system	Developed by language studio manufacturers, only limited to the internal network for English listening, answering contact	Resource sharing management is not performed	As a student self-study class contact	Only in the voice of the simple processing
Network English learning system	Developed by language lab manufacturers, with simple test and other application functions	The resources are simply shared, but it is not convenient for courseware organization	Student autonomous learning	LAN software products
Open English learning system	Developed by professional technology manufacturers, combined with the characteristics of current teaching, has a relatively perfect function, but also reflects the characteristics of individual learning	Comprehensive management of resources, with certain intelligence and personality characteristics, but there is no analysis and evaluation of students' skills, lack of humanization	Autonomous learning and interactive teaching	LAN and Internet applications
English autonomous Learning Platform based on constructivist Teaching model	According to the actual needs of teachers, directional development, perfect function, outstanding evaluation and intelligence, fully meet the characteristics of current English teaching and teaching reform needs	Automatic organization of resources according to user level ability, characteristics and other factors, and learning tracking and machine memory functions	Step, independent interaction, personality and intelligent learning, embodies; Pay equal attention to teaching; The characteristics of	LAN and Internet applications

## 2. Method

### 2.1 Neural network

Neural network is a complex network system formed by the extensive connection of multiple neurons, which directly maps a large number of basic features of human brain function. It is an extremely complex network system. From the perspective of practical application, neural network has the functions of self-adaptation, self-learning, self-organization and distributed storage, so it is very suitable for simultaneous processing of multi-thinking factors. The specific structure is shown in Figure 1 below[6.7]:

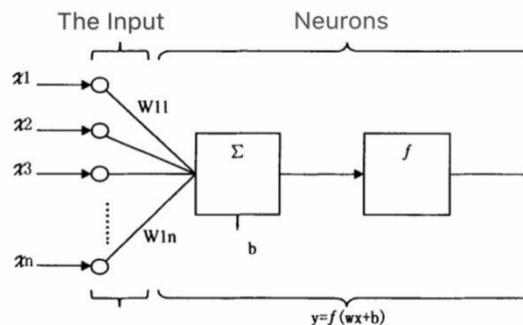


Fig. 1 Structure diagram of neuron model

As the basic unit of neural network, the features contained by neuron will affect the characteristics of the whole neural network to a certain extent.

The neural network corresponding to the radial basis function (RBF) studied in this paper belongs to a neural network algorithm composed of input layer, hidden layer and output layer. The specific structure is shown in Figure 2:

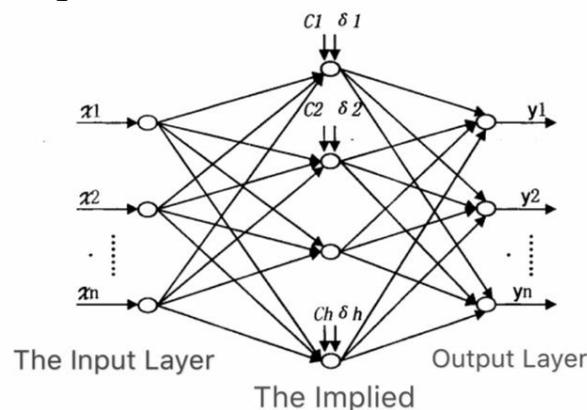


Fig. 2 Structure diagram of radial basis function

The input node of this function can be regarded as the input signal directly transmitted to the hidden layer. The transformation process from the input layer to the hidden layer has nonlinear characteristics. The hidden node is composed of certain function, and the hidden layer to the output layer has linear characteristics. At the same time, the weight between input hidden and hidden is fixed at 1, and only the weight between hidden and output layer can be adjusted.

RBF algorithm as the core of the construction is the English learning mode, refers to the design of the platform to add the basic ideas of relevant algorithms, in the writing of the code is to fully reflect the value of the algorithm, make it and construction is a learning mode, integration. This design can not only allow teachers to track the information of students, scientific arrangement of teaching plans, but also help students collect more learning information, a comprehensive grasp of their learning status. The specific structure is shown in Figure 3 below:

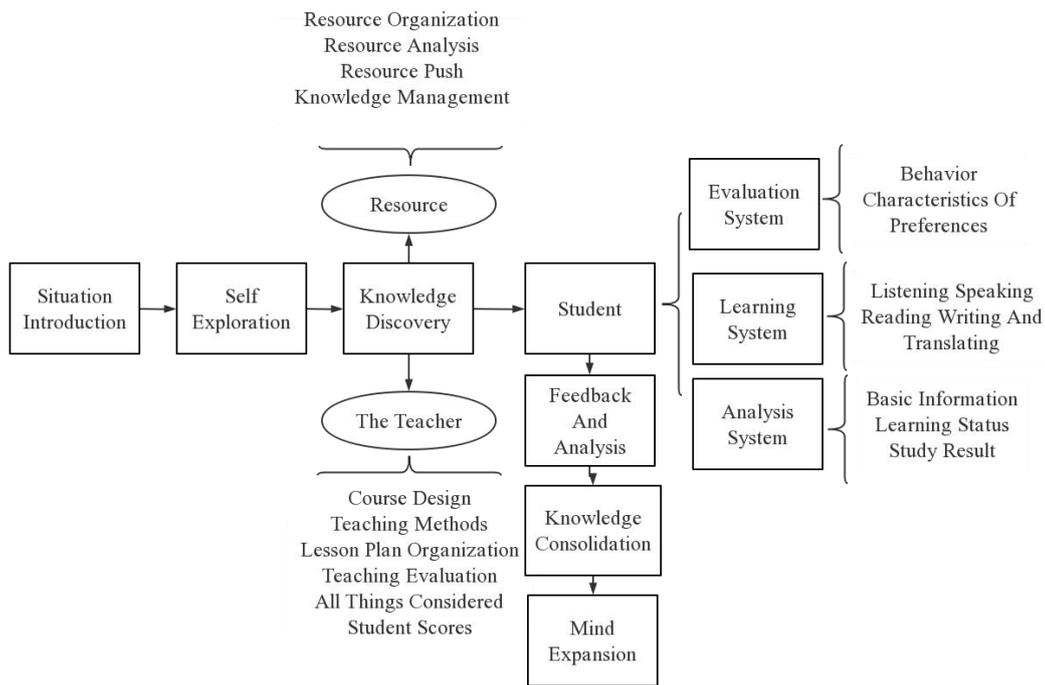


Figure 3 is a frame diagram of English learning mode based on RBF algorithm

### 2.2 Platform Design

The overall platform architecture diagram is as follows:

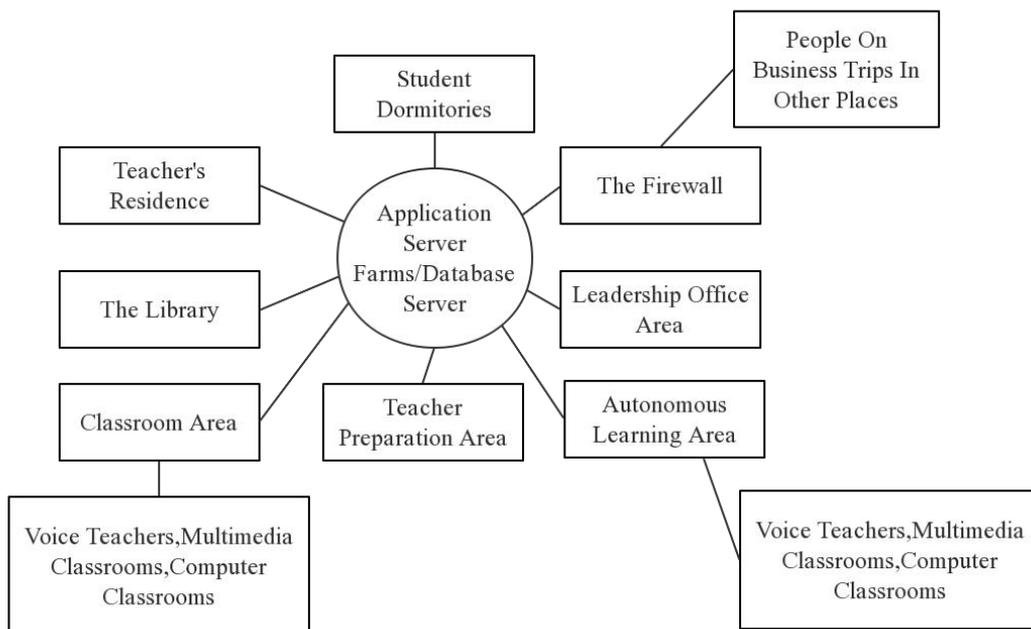


Fig. 4 Architecture diagram of system platform

Based on the above analysis, it can be seen that teachers, students and educational administration staff can build a close relationship on the platform, and students can obtain the services they need on the platform. From the Angle of system function, to construct the teaching as the core of independent learning platform, in addition to providing the function of routinization, also has the oral pronunciation training, situational teaching, problem solving, ditch the function such as communication, combining with the system function and system user logic classification, different

role, the user will enter into their own virtual module after login. The specific functions are shown in Figure 5 below[8.9]:

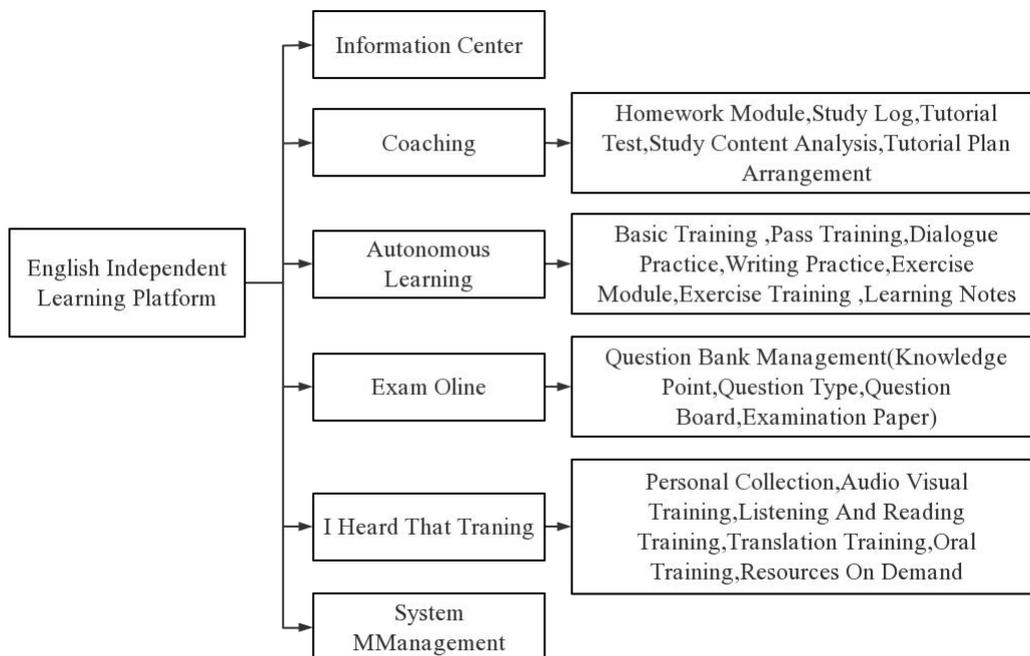


Figure 5 System functional structure diagram

At the same time, in the design of database, we should choose SQL Server, which belongs to the comprehensive and integrated data solution, can provide safe and reliable database for modern college English education, in line with the data management needs of modern college education.[10]

### 3. Result analysis

After the completion of platform development and production, evaluation and analysis should be carried out based on practical cases to improve the existing problems. In this paper, the platform system should be developed by using Microsoft Net technology, the learning resource plate should be designed by using the latest Web Service technology, and the software should be core with Net platform, Web Service network and SQL Server database technology. Table 2 shows the specific server environment conditions:

Table 2 Working environment of the server

The serial number	Category	Segmentation	Describe in detail	The number of
1	hardware	Database server	PC Server; 4 GB ram, 200 GB SCSI hard disk, dual CPU, GIGABit network adapter	1
2		Application server	PC Server; 4 GB ram, 200 GB SCSI hard disk, dual CPU, GIGABit network adapter	1
3	Software	Backup software	Veritas backup software	1
4		The system software	WinCC software	1
5		Operating system of the application server	MS Windows 2003Enterprise Edition	1
6		Database operating system	AIX5.3	2
7		Database software	Oracie 10g 50 users	1

On the one hand, functional testing. Use black box technology to analyze the results of graphical user interface or application interactions; On the other hand, performance test, to use automated testing tools, simulate a variety of normal, peak, abnormal load conditions, clear system performance indicators. According to this study, based on the excellent scores of English majors in colleges and universities in a certain region, and in combination with the regulations of cet-4 and CET-6, 425 points are taken as the benchmark line for passing the examination, and the passing rate of 2018 undergraduate students using the platform and not using the platform is compared and analyzed, as shown in Table 3 below:

Table 3 Comparison results

	The total number of	$\geq 425$ points (person)	$< 425$ points (person)	Pass rate (%)
Students using the platform	170	100	70	58.8
Students who do not use the platform	539	227	311	42.1
Note: $X^2 = 2.4233, P < 0.01$				

From the perspective of overall development, this system can not only realize the sharing of platform resources, independently complete tasks such as uploading information and playing videos, but also comprehensively record detailed information, making it more convenient for teachers and students to study their own performance changes. At the same time, the overall education platform has real-time and non-real-time communication functions, and the interaction between teachers and students is more frequent, which is more convenient for students to learn and train independently. It should be noted that the stability of the system has defects, sometimes code errors and other problems; The teaching courseware and teaching resources stored in the platform are less, so we should further enrich the platform's independent learning tools. It is best to design learning software based on students' pronunciation to gradually improve their speaking accuracy.

#### 4. Conclusion

The final results show that this platform can not only effectively improve students' awareness of autonomous learning, but also provide effective basis for their learning and training. Therefore, under the trend of economic globalization, education platforms at home and abroad present diversified characteristics in network technology innovation. How to give full play to the educational advantages of network platform and provide effective teaching resources for teachers and students has always been the focus of current education exploration. Although there are still many problems in the construction and promotion of the current platform, with the continuous development of information technology, it can not only improve the functional modules of the system, but also fully show the important role of the background administrator. This is also the core content of the following research scholars.

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