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Research Article

Development and Application of MOOC System for English Intercultural Communication Courses Using Neural Network

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Presently, many researchers are focusing on the English intercultural communication course. However, these courses face serious challenges, such as individual student variances in conventional English cross-cultural teaching, fostering students' cross-cultural communication abilities, and enhancing teaching quality. These problems need to be solved; therefore, this paper aims to explore the development and application of the Massive open online courses (MOOCs) system in the English cross-cultural communication course based on neural networks. Firstly, the overall function modules of the MOOC system for the English intercultural communication courses are described, with emphasis on the student function module, teacher function module, administrator function module, and system database design of the MOOC system. Second, the MOOC system's teaching technique in an English intercultural communication course is based on a genetic algorithm, and the MOOC system's teaching quality index in an English intercultural communication course is chosen using principal component analysis. We conducted several tests to demonstrate that the MOOC system of the English intercultural communication course using the neural network suggested in this work is resilient and may successfully increase teaching quality. The experiment proves that the MOOC system of the English intercultural communication course based on the neural network developed in this paper has efficient results as compared to existing studies. In addition, it can effectively improve the teaching quality and can train students' intercultural communication skills and their ability to adapt to intercultural communication.

1. Introduction

In recent years, many scholars around the globe have carried out research and discussion based on the theory of cross-cultural communication ability. English cross-cultural communication ability includes both cross-cultural and communication abilities. Among them, the English intercultural courses are designed to prepare English learners to have a strong awareness of English culture and be able to critically assess the similarities and contrasts between their own culture and foreign cultures. The primary goal of English communicative competency is to develop high-quality and high-level skills, so that they can speak successfully with foreigners and have a certain level of cultural confidence. Besides that, the demand for high-quality skills in the social environment has grown up due to the fast expansion of the social networks and social economy. Yet, even at universities and colleges, there are certain issues with the teaching approach of English intercultural communication programs. They are unable to effectively utilize available instructional materials to improve students' overall growth. Since new technologies and web application platforms arise regularly, they have been utilized and enhanced in all aspects of our everyday environment [1]. Furthermore, the network's use in education has steadily increased and begun to be used in the teaching of English intercultural communication programs, which has undermined the conventional face-to-face teaching style [2].

Web-based interactive education is a form of learning that blends system resources with conventional teaching

techniques. The benefits of web-based cooperative learning have been more apparent with the entrance of the web 2.0 age. It is of considerable importance for increasing students' learning techniques, cooperation capability among pupils, and innovation skills [3, 4]. By merging the web-based cooperative learning paradigm with the conventional face-to-face teaching technique, this innovative learning style has significantly encouraged the change of the existing teaching paradigm. It can enhance the teaching environment in a variety of ways, including increasing students' enthusiasm for learning and increasing their learning performance [5]. As a result, the web-based cooperative education paradigm has significant theoretical implications for improving individual capacity and social advancement. Therefore, numerous online learning tools and forms of communication have evolved progressively in the existing social context of network infrastructure and teaching demands [6]. Google is among the quickly rising Internet powerhouses in the twenty-first century, offering cloud storage to Internet customers. Google Scholar, Google Earth, and Google Maps services are extensively utilized worldwide, offering considerable ease to people's lives, studies, and business [7]. The MOOC online learning system is a network platform with huge online courses available based on online teaching that also expands students' education pathways at all levels. However, the management of these platforms necessitates a high level of skill and money, making them challenging to establish and manage in institutions [8]. This study uses English teaching innovation as an example and proposes an innovative English teaching method focused on the Google collaborative platform and MOOC platforms to give students a different type of easy, comprehensive, and effective learning channels. This research will set the groundwork for advancing educational reform and organization effectively and efficiently in the classroom.

With the aforementioned rapid growth of Internet technology, this research formulates approaches based on the status of students' English knowledge in intercultural communication classes. It uses the students' English learning characteristics as a foundation to assist students in learning English intercultural communication effectively. In addition, we have developed a MOOC system for English intercultural communication classes based on neural networks. The MOOC system replaces traditional face-to-face teaching with online classroom learning. MOOC system is also a new development in distance education. People do not need to carry out aggregated classroom learning activities in the same place and time as traditional ones. It takes the form of open educational resources. It offers several advantages, including vast openness and scales, and has steadily developed a major component of modern investigation. The innovations of this paper are as follows:

(1) Explain the overall functional modules of the MOOC system in English intercultural communication course, with emphasis on the student and teacher functional modules, administrator functional modules, and system database design of the MOOC system. The initial weights of the neural network are optimized step by step based on the genetic algorithm, which can efficiently decrease the feature dimension and increase the effectiveness of students in learning English cross-cultural communication.

(2) Compared with the traditional English intercultural communication teaching system, the MOOC system has better overall robustness, can effectively improve the teaching quality, and can cultivate students' intercultural communication skills and their ability to adapt to intercultural communication.

The rest of this paper is organized as follows. Section 2 highlights the related work of national and foreign researchers. Section 3 explains the MOOC system for the English intercultural communication course. Section 4 describes our planned MOOC system. Section 5 presents the experimental work and testing of the proposed system, and Section 6 concludes the study.

2. Related Work

Large-scale open courses have revolutionized digital education around the world, enabling people ready to obtain information to acquire well-known courses online, and making the certification a reality. Zhang's particle swarm optimization and support vector machine-based assessment model of the teaching effect of English intercultural communication may significantly enhance accuracy. Based on the relevant theory, the paper of [1] establishes a multi-index evaluation system of the teaching effect of English intercultural communication with English teachers and students as the main body and takes the evaluation index of the teaching effect of English intercultural communication as the input sample of Support Vector Machine to achieve the evaluation of the teaching effect of English intercultural communication. The particle swarm optimization approach is used to solve the support vector machine kernel function and the regularized optimal solution, as well as to optimize the SVM classifier evaluation process. The experimental results show that the accuracy of this method is higher, but the overall testing time is longer. To improve the evaluation accuracy of English intercultural communication teaching quality, Chuai Q inputs parameter weights and implied layer bias coefficients from the initial state of the model and applies the GWO-ELM algorithm to the MOOC system quality evaluation of English intercultural communication course.

The work in [9] establishes an evaluation index system for the quality of English intercultural communication teaching based on teachers' qualities, attitudes, modes, effects, and contents and then takes the evaluation index and the quality type of English teaching as the vector of input and output of ELM model. Therefore, a teaching quality evaluation method based on the GWO-ELM model for the MOOC system of English intercultural communication courses is constructed. Experiments show that this model can effectively enhance the evaluation correctness of teaching quality of English intercultural communication compared with other models, but the improvement of

teaching quality is not obvious. To effectively realize the accurate evaluation of English cross-cultural communication teaching, Wang Y improves the teaching dilemma of English teaching in cross-cultural communication.

The early work of [10] constructs a GWO algorithm with optimal click-through and random convergence factors, establishes an evaluation index of English cross-cultural communication classroom teaching by using the analytic hierarchy process and cross-cultural competence, combines the rating score data and competence level of English cross-cultural communication teaching as input and output vectors, and constructs an evaluation model of English cross-cultural communication classroom teaching based on IGWO-SVM. The IGWO-SVM model has a very high convergence rate and stability in the evaluation of English intercultural communication classroom teaching, but it has the problem of inefficient English intercultural communication learning. With the deepening of the integration of information technology and education, the MOOC system plays an important role in network teaching and mixed teaching. The complexity of the MOOC-based educational environment for English intercultural communication is interconnected and interactive.

The construction of a mixed-mode of English teaching is a new form and feature of the development of English education in China. It can effectively promote the harmonious development of the teaching environment, but the process of this method is complex, resulting in lower learning efficiency [11]. Therefore, this paper aims to explore the development and application of the MOOC system in the English cross-cultural communication course based on neural networks.

3. MOOC System for English Intercultural Communication Course

3.1. Analysis of MOOC System Function Modules. A massive open online course (MOOC) is a public web-based online training product developed for huge groups of students from various locations. It might be based on a university or college course. Whereas these courses may not often provide academic credit, they may provide a certification, improve work possibilities, or lead to additional study. MOOCs are mostly utilized for higher education and job growth. However, as a result of the coronavirus outbreak, several public schools and undergraduate degree programs have made MOOCs the new standard. The MOOC system of English intercultural communication course is divided into login control module, intercultural communication course resource management module, intercultural communication interactive learning module, and system management module according to the system requirements. Figure 1 explains the functional modules of the MOOC system for English intercultural communication courses.

In the figure, the login control function is mainly used to register the user in the English cross-cultural communication MOOC system. The system function responds to the access of user rights. If the user fails to recall the login key, the login key can be altered by key management, and the user key data of the background catalog can be updated automatically. Resource management functions can be divided into English cross-cultural communication course management and other teaching resource management [12, 13].

Online teaching function: administrators or teachers in the MOOC system can publish and update announcements of English intercultural communication courses in the News Center, other college news, and online teaching links and provide students with access and reference and learning.

Interactive learning function: the interactive learning function of the MOOC system includes the functions of discussion and answer in an English cross-cultural communication course. Interactive learning is a very typical feature of a MOOC system. It uses the interactive learning function to complete the formation of a learning network among learners and improve the communication between instructors and pupils.

System management functions: MOOC system has some characteristics such as plainness, sharing of resource, and multiuser right of entry. Data security issues and role differences need to be considered. For this reason, system management function settings in MOOC systems include user info administration, role administration, and security administration functions [14, 15].

3.1.1. Student Module. This module assists the students in obtaining knowledge in a more organized and organized manner. That unit is one of the instructional resources that have been thoroughly and systematically organized. In addition, it contains a series of prepared learning opportunities meant to assist students in comprehending specified educational objectives. Based on the module analysis of the above MOOC system, the MOOC system can be divided into the foreground and background structures. The foreground is specific for English cross-cultural communication students, while the background is for administrators to achieve and retain the MOOC scheme. Based on student membership analysis, the MOOC system of English cross-cultural communication is distributed into student functional diagrams as revealed in Figure 2.

In the figure, on the first page of the website, students who have registered for the MOOC system in the English intercultural communication course can log on to the system page by entering their username and password in the login interface. News Center: all students who access the MOOC scheme can access and browse the news information in the MOOC system [16, 17].

(i) Course Center: students can click on the online learning in the MOOC system, carry out online learning, or evaluate the learning courses after they log on to the MOOC system.

(ii) Resource Center: after students log on to the MOOC system, they can search through keywords for English intercultural communication, courseware, or

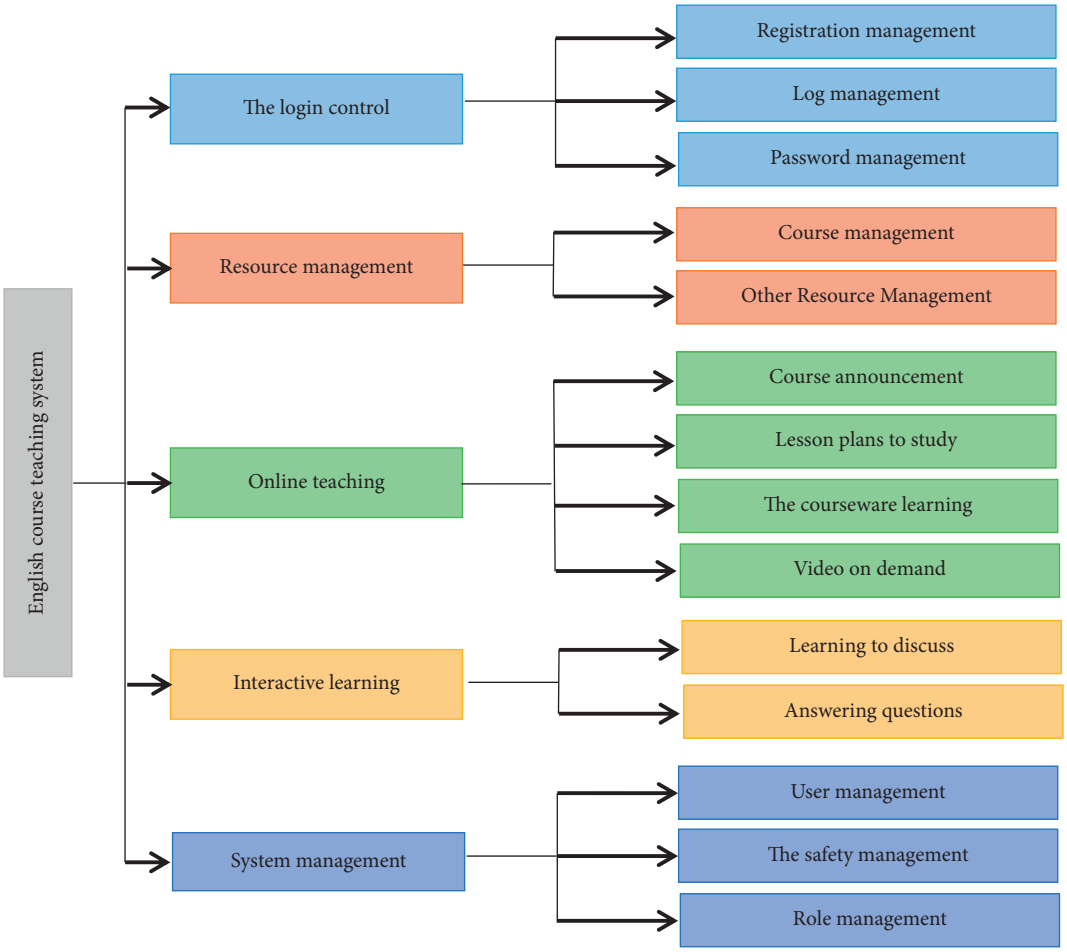

Figure 1: Functional modules of MOOC system for English intercultural communication.

other teaching resources they need and download them.

(iii) Personal Center: in the Personal Center module, pupils can see individual info, exercise plans, and learning development, post topics and comments, and access chat rooms with links.

3.1.2. Teacher Function Modules. This module enables instructors to draw direct connections to curriculum standards and guidelines, either through hyperlinks if they are available online or by stating the standards in the Learning Goals section. MOOCs can provide a chance to investigate, gather, produce, and create new information and skills. As a result, pre-service or in-service educators can cultivate a more diverse innovative perspective that enhances their educational position. Based on the analysis of the teachers' users, the MOOC scheme can be distributed into the teachers' function modules shown in Figure 3.

In the figure, the teacher module is divided into 5 units such as personal center, resource center, course center, News center, and Homepage. The details of each unit are discussed one by one here:

(i) Homepage: the primary goal of a homepage is to guide users through our system; thus, it is critical that our visitors could do so easily. Make a clear distinction between the choices and have a strong idea of what is underneath the connections. Teachers with rights of teacher enter usernames and passwords in the interface of the MOOC system for English intercultural communication courses. After successful login, the first page of the MOOC system for the English intercultural communication course appears.

(ii) News Center: teachers who have access to the English intercultural communication MOOC scheme can access and peruse the content in the system's news unit. It can also publicize the English intercultural communication training and other relevant information.

(iii) Course Center: teachers can publish and view the courses after they log on to the MOOC system of the English intercultural communication course and answer the questions raised by students [18, 19].

(iv) Resource Center: by making knowledge available, resource centers may help with a variety of active learning. After logging in, teachers can access and upload learning resources to the MOOC system. Personal Center: teachers have a personal center module that allows them to access the content they

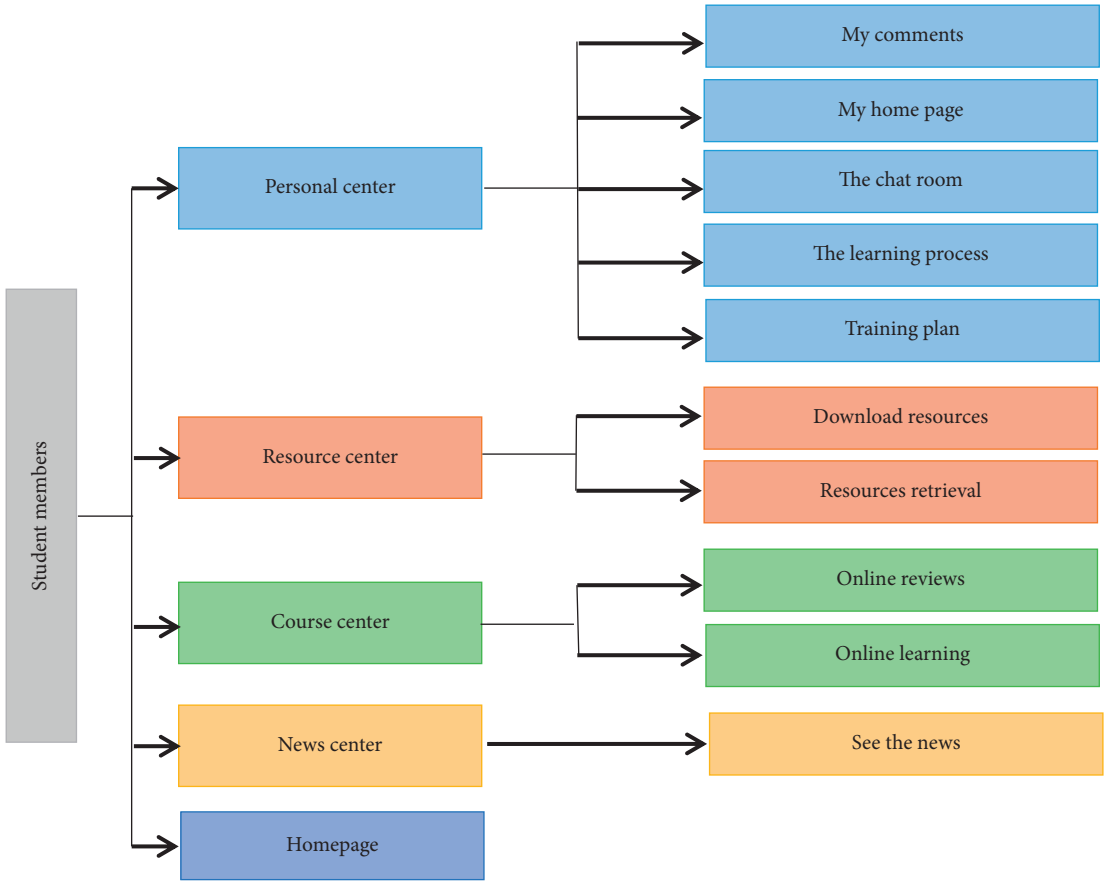

Figure 2: Student user function module diagram.

have published as well as the associated courses and teaching tools. Teachers can also access chat rooms.

3.1.3. Administrator Functions. Based on the functions of administrators, the MOOC system of English intercultural communication courses is divided into functional modules as shown in Figure 4.

The Administrator module, as shown in the diagram above, is made up of seven units: homepage, user management, news management, course administration, teaching supervision, resource management, and system maintenance. This section will go through each of these units one by one.

(i) Homepage: after the administrator logs on to the MOOC system page of the English intercultural communication course, after entering the username and password, the first page of the administrator's website appears and clicks into the administrator's background management interface.

(ii) User management: the administrator of MOOC system can effectively manage ordinary users, add or delete user information, and modify some operations.

(iii) News management: administrators have the right to publish campus news and bring up-to-date and achieve the campus news as per to the progress of English cross-cultural communication teaching.

(iv) Course management: administrators should audit video courses published to the system for students to study for characteristics such as file format, size, and legitimacy of the uploaded instructional videos. Furthermore, following approval, administrators should update the list of front-end display videos according to the success of English cross-cultural communication education [20, 21].

(v) Resource management: resource management is the process through which firms properly manage their numerous resources. These resources can be both intangible and tangible. It entails planning, so that the appropriate resources are allotted to the appropriate tasks. Plans and budgets for people, programs, technology, and supplies are all part of resource management. In our system, resource management is roughly the same as the above course management.

(vi) Teaching supervision: MOOC system administrators should not regularly monitor and inspect the learning of students, timely discover the information and statements published in the system that is not related to English intercultural communication courses, and punish the serious cases.

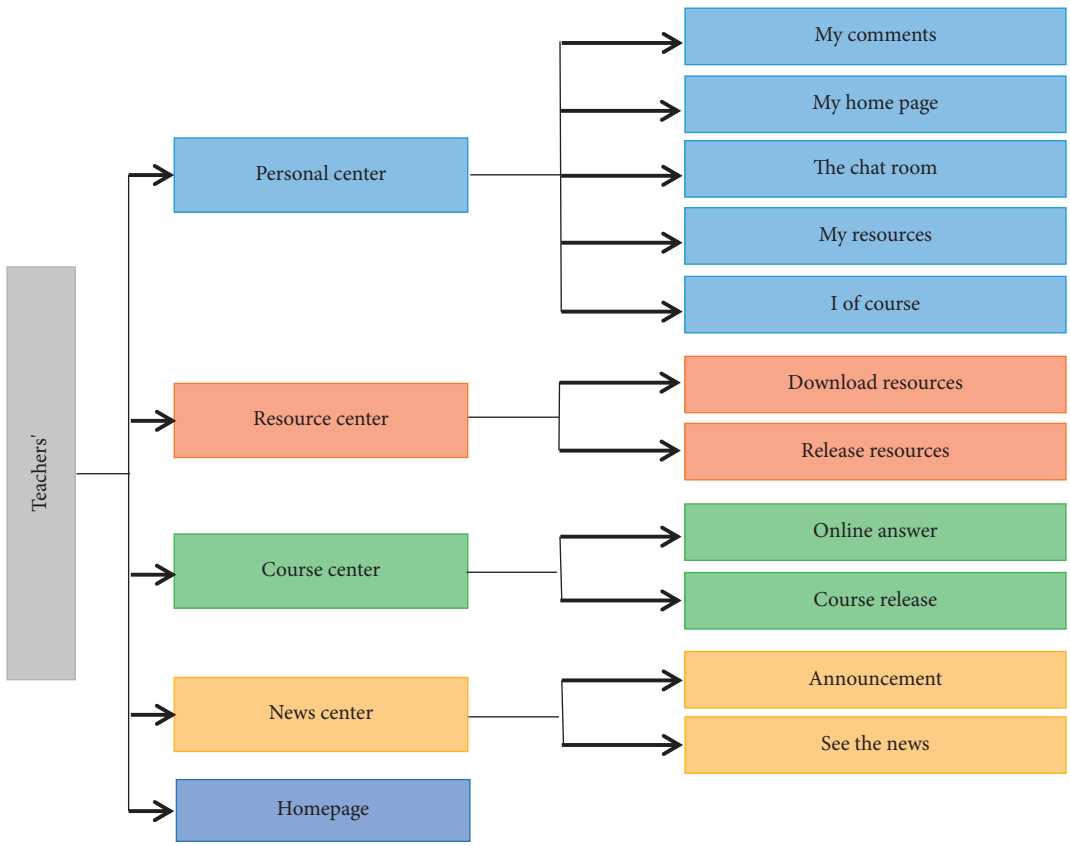

Figure 3: Functional structures of teacher users.

(vii) System Maintenance: it is an overall term for several types of computer maintenance necessary to keep a system working. Corrective and preventative maintenance are the 2 fundamental components of maintenance services. MOOC system administrators must maintain the MOOC system at irregular intervals, find out problems in time, and analyze and solve the problems thoroughly so as to make the MOOC system of English intercultural communication course run stably.

3.2. Database Design. The MOOC system for English intercultural communication courses includes many databases and user data, so the amount of data in the MOOC system is relatively large. The data description of the English intercultural communication course, as well as how the data is arranged and stored, will have a direct impact on the database system's efficiency. As a result, MOOC system databases must emphasize data integration and various types of data analysis. The MOOC system for English intercultural communication courses includes user information as well as a variety of other data such as teaching courses, course catalogs, system keywords, and learning levels. When students or teachers log into the MOOC system, a large amount of operational data is created, as illustrated in Table 1.

4. Proposed MOOC System for English Intercultural Communication Course Based on Neural Network

In the neural network, the output layer is the weighted amount of the input English cross-cultural communication course data after using the activation function of the hidden layer. A radial basis function (RBF) is a form of neural network that is effective when data is categorized in a nonlinear manner. They operate by adding the Radial basis function as a neuron and matching input data to training data. The RBF and dynamic weights are the solutions to the neural network, and the radial basis function is expressed by

$$R\left(x_p - c_i\right) = \exp\left(-\frac{\left\|x_p - c_i\right\|^2}{2\sigma^2}\right). \quad (1)$$

Here, $\|x_p - c_i\|$ denotes the $x_p - c_i$ norm, and x_p denotes the input sample data in the output layer of the MOOC system. In addition to the above, c_i denotes the radial basis function center, while σ denotes the width of RBF.

Equation (2) expresses the neural network output after specifying the network weights and radial basis function parameters of the MOOC system.

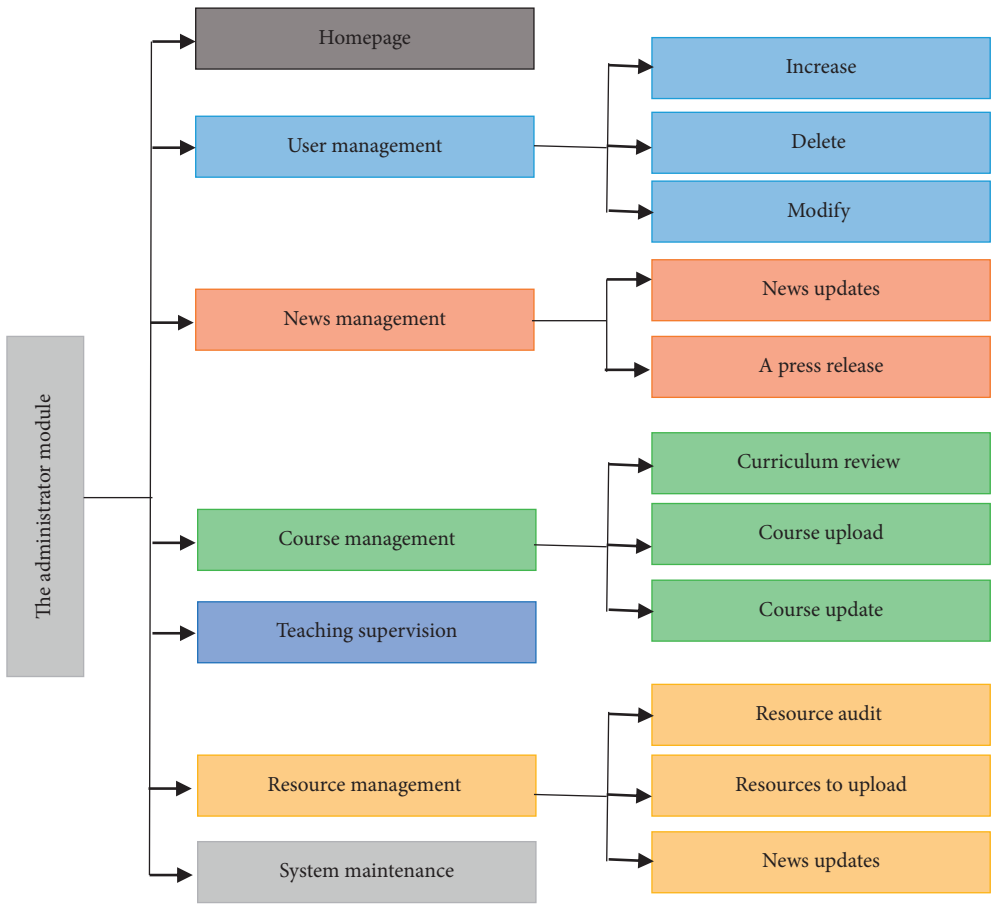

Figure 4: Administrator function module diagram.

Table 1: System user data table.

The field name	Type	Primary key or not	The length of the
The class	Char	No	20
The name	Char	No	20
Gender	Char	No	20
The phone number	Char	No	20
E-mail	Char	No	30
WeChat	Char	No	20
QQ	Char	No	20
Major	Char	No	30
Department	Char	No	20
Password	Char	No	20
ID	Int	Is	4

$$y_i = \sum_{i=1}^{h} \omega_{ij} \exp\left(-\frac{\left\|x_p - c_i\right\|^2}{2\sigma^2}\right), j = 1, 2, \ldots, n. \quad (2)$$

In the above Equation, ω_{ij} signifies the indirect layer and output weight of MOOC structure. Based on the procedure of solving the neural network, the process of network optimization is to bring up-to-date the dynamic weight and radial basis function center and width gradually according to the training data of the English intercultural communication course until the neural network completes the approximation of the nonlinear function [22, 23].

The smaller the change amongst the network output value and the predictable value is, the more improved the matching chromosome is. The inverse of the error, which takes the expected output and individual mean square deviation in the population, is a function of the fitness of the genetic algorithm operation, expressed by

$$E = \frac{1}{\sum_{k=1}^{N} (T_k - Y_k)^2}. \quad (3)$$

In the aforementioned Equation, N denotes the number of chromosomes in the population of the MOOC system; y denotes the real output value of the MOOC scheme, and T denotes the predictable production value of the MOOC scheme.

Based on chromosome b_i, if the function value of MOOC scheme fitness is E_{b_i}, the optional probability can be calculated using

$$P(b_i) = \frac{E_{b_i}}{E}. \quad (4)$$

In the above Equation, E denotes the fitness function value of the chromosome population in the MOOC scheme. In comparison, chromosomal fitness influences the likelihood of chromosome selection [24, 25].

A biological operator called crossover is being used to change the coding of a chromosomal or genes from one

generation to another. Reproduction is achieved by crossover. 2 strings are selected at random from the selection pool to cross to generate superior progeny. The technique used is determined by the Encoding Scheme. Crossover operation is an important core of genetic algorithm optimization. In this paper, the setting of crossover probability of genetic evolution is calculated using

$$P_c' = \begin{cases} P_{c\max}, & E_{\max} \prec E_{\text{mean}}, \\ P_{c\max} - \dfrac{P_{c\max} - P_{c\min} \times \text{iter}}{\text{iter}_{\max}}, & E_{\max} \prec E_{\text{mean}}. \end{cases} \tag{5}$$

In the equation mentioned above, $E_{\max}$ denotes the extreme fitness function value of 2 chromosomes coming up for crossover in MOOC scheme, while E_{mean} denotes the function mean of chromosome fitness in MOOC scheme. Similarly, $iter$ denotes the amount of repetitions of genetic algorithm evolution, $itet_{\max}$ denotes the maximum amount of repetitions of genetic algorithm, and $P_{c\max}$ denotes the set crossover probability value.

The mutation probability is being used to evaluate whether or not to modify a gene every moment it is examined. As a result, small numbers guarantee that not many changes are assessed at the same time; however, this will rely on the set of genes for each member of a population. Depending on the way of setting the crossover probability, the setting of the mutation probability is carried out in

$$P_m' = \begin{cases} P_{m\max}, & E \prec E_{\text{mean}}, \\ P_{m\max} - \dfrac{P_{m\max} - P_{m\min} \times \text{iter}}{\text{iter}_{\max}}, & E \geq E_{\text{mean}}. \end{cases} \tag{6}$$

According to the Equation above, once the function value of chromosome fitness is lower than the mean, the set of mutation probability is smaller, which can preserve the better chromosome individuals and increase the local optimization ability of the genetic algorithm.

PCA improves in data interpretation although it may not always detect key patterns. The principal component analysis (PCA) technique reduces the computational difficulty of high-dimensional data while preserving themes and relationships. It achieves this by reducing the data to a lower dimensionality that serves as feature descriptions. PCA can comprehensively analyze the teaching quality of MOOC system in English intercultural communication courses, remove redundant elements, and generate new indicators for MOOC system teaching [26–28]. Set up a MOOC system for the original English intercultural communication course as an indicator set of teaching quality. It can be calculated using

$$X = \left(X_1, X_2, \ldots, X_p\right). \tag{7}$$

Here, p specifies the amount of MOOC system teaching indicators, and there is a big difference in data between the teaching quality indicators of English intercultural communication. In order to effectively reduce the impact of large data on small data, standardized processing of collected English intercultural communication data must be carried out using

$$\overline{x}_{ij} = \frac{x_{ij} - \overline{x}_j}{s_j}. \tag{8}$$

After standardization of MOOC system teaching quality indicators for English intercultural communication courses, the matrix of index correlation coefficients is calculated as

$$R = \left(r_{ij}\right)_{p \times p}. \tag{9}$$

In Equation (9), r_{ij} denotes the correlation coefficient between the i teaching quality sample and the j index.

The characteristic equation $\lambda u = Ru$ of MOOC system is established, and the eigenvalues and eigenvectors of the characteristic equation are calculated using (10) and (11), respectively.

$$\lambda = \left(\lambda_1, \lambda_2, \ldots, \lambda_p\right), \quad \lambda_1 \geq \lambda_2 \geq \cdots \geq \lambda_p \geq 0, \tag{10}$$

$$u = \left(u_1, u_2, \ldots, u_p\right). \tag{11}$$

The cumulative variance contribution to the teaching quality index components of MOOC system of English cross-cultural communication course is expressed as

$$\xi = \sum_{i=1}^{P} \alpha_i. \tag{12}$$

In the (12), α_i signifies the involvement of the i key module in the teaching quality index of MOOC system. The selected indicators based on principal module investigation are used as the vector of the new characteristics of English teaching quality, which can efficiently reduce the characteristic dimension and improve the efficiency of students' learning English cross-cultural communication, so as to complete the development and application of MOOC system of English cross-cultural communication course based on neural network.

5. Experimental Result and Testing of System Function

5.1. Experimental Result. The rationality of the development and application of MOOC system for English cross-cultural communication course based on neural network is verified through experiments. Table 2 shows the experimental parameter settings.

This paper compares and analyzes the teaching effect of the method proposed in literature [11] with the MOOC system of English cross-cultural communication course based on neural network. Based on students' score of 500, the teaching scores of the two methods are compared, which is shown in Table 3.

As can be seen from Table 3, when the number of students is 200, the score obtained by the system under the method proposed in document [11] is 310; when the number of students is 1000, the score obtained by the system under the method proposed in document [11] is 270; when the

Table 2: Parameters of experimental work.

Project	Model
Server for host	IPC-610L
Central processing unit (CPU)	i5 9400F
Micro server	AMD opteron X3216
Storage	8 GB

Table 3: Comparative analysis of scores obtained by MOOC system under the two methods.

Number of students/person	In this paper, methods	Methods of reference [11]
200	452	310
400	486	290
600	489	286
800	476	276
1000	479	270

same number of students is 200, the lowest score obtained by the system under the method proposed in this paper is 452; when the number of students is 600, the highest score obtained by the system using the method proposed in this paper is 489 points. It is concluded that the MOOC system of English cross-cultural communication course based on neural network can better stimulate students' interest in learning English and improve their ability to adapt to cross-cultural contact. Figure 5 shows the teaching efficiency comparison between the traditional English cross-cultural communication course teaching system and the neural network-based English cross-cultural communication course MOOC system.

By analyzing the Figure, it can be seen that when the time is 10s, the teaching efficiency of the traditional English cross-cultural communication course teaching system is 59%, while the teaching efficiency of the neural network-based English cross-cultural communication course MOOC system is 84%, and when the time is 30 s, the teaching efficiency of the traditional English cross-cultural communication course teaching system is 60%, the teaching efficiency of MOOC system based on neural network is 95%. It can be seen that, at the beginning of the experiment, the teaching efficiency of the two systems is not very high, but because the MOOC system adopts neural network, the system quickly returns to the normal mode, which shows the rationality of the MOOC system of English cross-cultural communication course based on neural network. Taking the robustness of the system response as the test index, Figure 6 shows the comparison of the robustness test results between the traditional English intercultural communication course teaching system and the English intercultural communication course MOOC system based on neural network.

As can be seen from Figure 6, the MOOC system of English cross-cultural communication course based on neural network has good robustness, response ability, and convergence performance, while the traditional English cross-cultural communication course teaching system produces large oscillation, resulting in poor overall stability of the English cross-cultural communication course

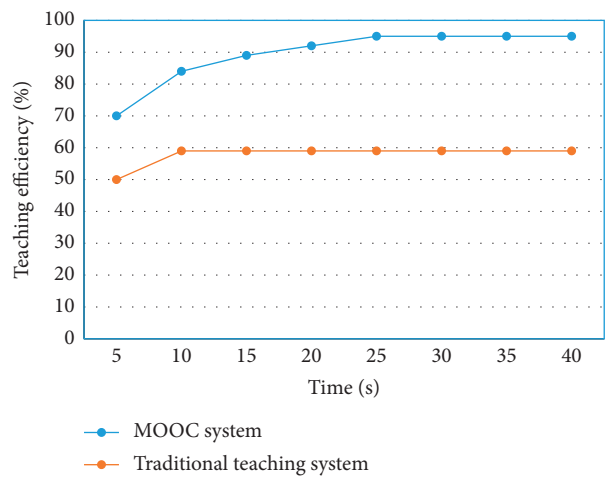

Figure 5: Comparative analysis of teaching efficiency of different systems.

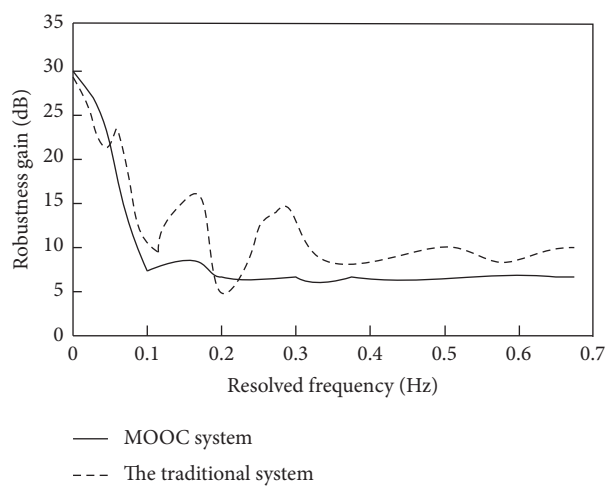

Figure 6: Comparison of robustness test results under different systems.

teaching system. The method proposed in this paper effectively improves this problem and improves the stability of the MOOC system. Figure 7 shows the comparison of teaching quality improvement between the traditional English intercultural communication course teaching system and the neural network-based English intercultural communication course MOOC system.

Through the analysis of above Figure, it can be seen that although the traditional English cross-cultural communication course teaching system has also improved the teaching quality, the maximum is not more than 40%. At the beginning of the experiment, the MOOC system of English cross-cultural communication course based on neural network has improved the teaching quality by 53%, which is higher than the traditional teaching system. With the gradual improvement of English cross-cultural communication teaching resources, the teaching quality of English cross-cultural communication is also gradually improved, which shows that the MOOC system in this paper can

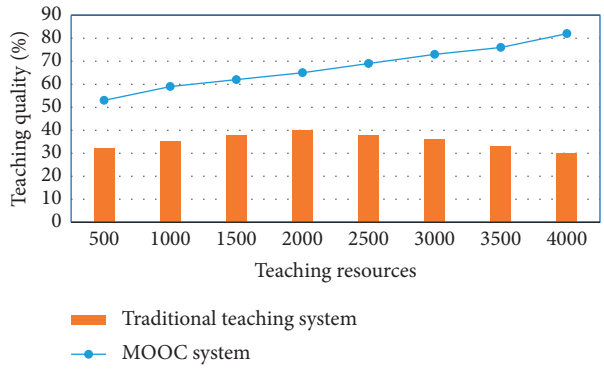

Figure 7: Comparison of teaching quality improvement under different systems.

effectively cultivate students' cross-cultural communication skills, their attitude towards different cultural understanding, and their ability to adapt to cross-cultural contact.

5.2. Test for System Function. The performance testing item involves the full study's validity, comprising stability analysis, dependability, throughput and workload, etc. Various performance testing techniques are utilized to emulate the system's real-world application situation. The performance state of the system may be acquired by the study of various factors, such as the usual condition of scheme use, the unusual load of a control system, recorded max value, and lower peak value. Pressure testing and load tests are common test techniques. Figure 8 depicts the system's efficiency test scenarios.

In this work, the scheme time of response is investigated by varying the number of simultaneous users and the number of queries. The testing is performed with 50 people on the Internet, 100 people on the Internet, 150 people on the Internet, and 200 people on the Internet. The test outcomes demonstrate that the system performs consistently, and the scheme load is reduced during operations. The quicker the system responds, the smaller the response time is, and the average response is even less than 2 seconds whenever the number of simultaneous users is fewer than 200. In general, this type of process uses less system resources and completely meets the requirement that the time of response of the 200 users' basic operating system is fewer than 3 seconds. Simultaneously, the system is put in a hostile situation for the scheme boundary test. The login page, registration, and so on are all part of the assessment object. The system performs well and can satisfy the design specifications.

5.3. Test for System Response Time. Time of response relates to the overall amount of time that users spend sending requests and receiving services once the system responds. A system's reaction time is the overall time it takes to transfer the initial byte from the client to the last byte. Scheme ability testing: the reaction time and processing capacity of the system are used to determine system capacity. The system throughput per unit time is primarily measured, and the

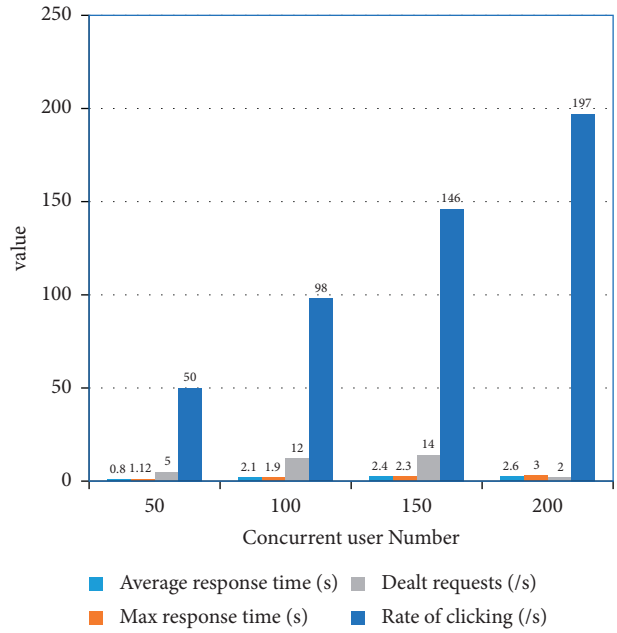

Figure 8: System's efficiency.

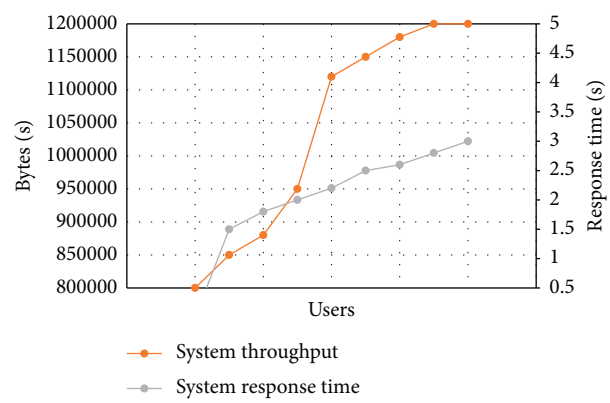

Figure 9: Handling capability test result.

system's handling capacity is then estimated based on the traffic volume. The handling capability test result of the system established in this work is shown in Figure 9.

As per the figure above, the system can do seven activities every minute. The system's response time will rise as the number of network users grows. The system's processing capability is relative to the amount of system users; however, as the number of users grows, the system's processing capability will eventually decline.

6. Conclusions

Keeping in mind the value of education, this study combines English teaching ideas and methods using the MOOC system of neural network-based intercultural communication courses to improve the learning of English knowledge points. MOOC courses are not limited to university-specific term and semester samples. So, they can start at any moment and go on at any time. As a result, MOOCs are attractive for

short-term courses that focus entirely on a topic or for courses that can lead to a better understanding of the academic field. The learning model teaches English international communication skills using neural networks. It enhances the interesting nature of English cross-cultural communication and helps improve the teaching effect and quality of English cross-cultural communication.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that there are no conflicts of interest for publication of this paper.

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