Hindawi
Mobile Information Systems
Volume 2022, Article ID 8152991, 11 pages
https://doi.org/10.1155/2022/8152991

Research Article

Development of Interactive English Teaching Online Platform Based on Collaborative Filtering Algorithm

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Received 2 August 2022; Revised 18 August 2022; Accepted 19 September 2022; Published 7 October 2022

Academic Editor: Shadi Aljawarneh

In order to better promote the development of Interactive English teaching, we develop the existing online teaching platform on the basis of an improved collaborative filtering recommendation algorithm and construct an online English teaching platform that can meet the needs of teaching interaction. With the help of the "hierarchical learning" mode, an interactive teaching model in the form of self-study is constructed to provide users with the most suitable English learning resources. A new method is used to search the nearest neighbor set intelligently for the target user as a supplement to its similarity. This algorithm can be used well in interactive English teaching mode. On this basis, the system module of this study mainly includes a communication page, course evaluation, collaborative editing, and resource sharing. This study also investigates the actual use of students. The results show that the interactive English online teaching platform can meet most of the students' needs. In this study, the interactive English online teaching platform developed based on a collaborative filtering algorithm has a significant effect, which enhances the interactivity of teaching, improves the quality of English teaching, and increases the breadth of teaching.

1. Introduction

The new English Curriculum Standards mention that the overall goal of English teaching is to cultivate students' comprehensive language ability. Therefore, in the actual situation of English teaching, it is necessary to reasonably control the form and content of classroom teaching scientifically and effectively [1]. The cultivation of English learning interests can cultivate students' self-confidence. Therefore, teachers should not only pay attention to knowledge supplement, but also guide their interest intention, study, and explore their interest points in English, so that students can gain more [2]. This study argues that language interaction is a joint activity that involves senders and receivers of information based on paragraph context and article, and establishes a triangular relationship between the three. The interactive process not only receives information, but also publishes information. It must be a collaborative process [3]. The premise of interaction is that the subjects on both sides of the communication must have certain interests and communication tendencies. This study argues that language interaction (often translated as "interaction") refers to the process in which two or more people can transmit information and interact with each other in a specific environment, and can influence each other [4]. For English learning, language is used for communication and interaction, so as the basis of communication, English is also the core of language teaching, so it is particularly important to improve language skills [5]. English classroom teaching as a kind of learning from each other communication modes, as well as between students and students, between teachers and students is given by the teacher material to understand and learn knowledge, so as the communication in the teaching process and teaching content, is a kind of to understand each other, mutual exchange and communication of dynamic interaction [6]. Therefore, it is necessary to let students participate in the classroom teaching process, always take students as the center, and earnestly carry out this teaching concept. Teachers need to understand, analyze, and master the individual differences of different students, design the most appropriate and effective

teaching content teaching methods according to their different learning abilities and interest points, and enhance the communication and communication with students in the course on the basis of satisfying students' knowledge learning, so as to improve classroom interaction [7, 8]. In this context, this study develops an interactive online English teaching platform based on the collaborative filtering algorithm. The application process of an online teaching platform is a process of continuous machine learning. Students search for the learning content and learning focus that they are interested in on the platform. After obtaining the user's permission, these data are recorded and used in the machine learning of collaborative filtering algorithm. Collaborative filtering algorithm is used to search historical behavior data mining and analyze students' interest in learning and learning situation, so as to interact with students in the learning process and recommend content related to their search. This can expand students' vision, expand the scope of learning, and improve learning efficiency. In the application process of the whole system, the main purpose of the collaborative filtering algorithm is to better recommend interactive English teaching to students on the online platform, so that they are interested in interactive English teaching methods. Interactive teaching and related content can bring a better learning experience to the students who use it. Teachers can also recommend students who are more suitable for this type of learning, so as to increase the convenience and comfort of each other's classrooms, and realize equal and frank classroom interaction based on the online platform and emotional communication between teachers and students. Through the collision of sparks of wisdom, it fully provides students with a space for personal expression, which can explore students' learning autonomy and improve the quality of teaching to a certain extent.

2. Related Work

According to the collaborative filtering algorithm, an improved version of the personalized recommendation algorithm is proposed in the literature. According to the basic attributes of the collaborative filtering algorithm, various thoughts of users are enhanced, such as the thought of trust, the thought of changing over time, and the related structuring thought, so as to optimize and improve the prediction and evaluation strategy of collaborative filtering algorithm [9]. On the original basis, the algorithm proposed for user interest changes can calculate the similarity according to the user's evaluation, optimization, and improvement strategies, which can distinguish user interest changes. It can be divided into historical changes and current changes and improve the accuracy of similarity between user application purposes [10, 11]. This study designs and implements a recommendation subsystem based on the collaborative filtering recommendation model, which mainly includes the design and implementation of the system logic function module, data acquisition module, collaborative filtering recommendation engine function, and other modules, and comprehensively realizes the construction of recommendation subsystem

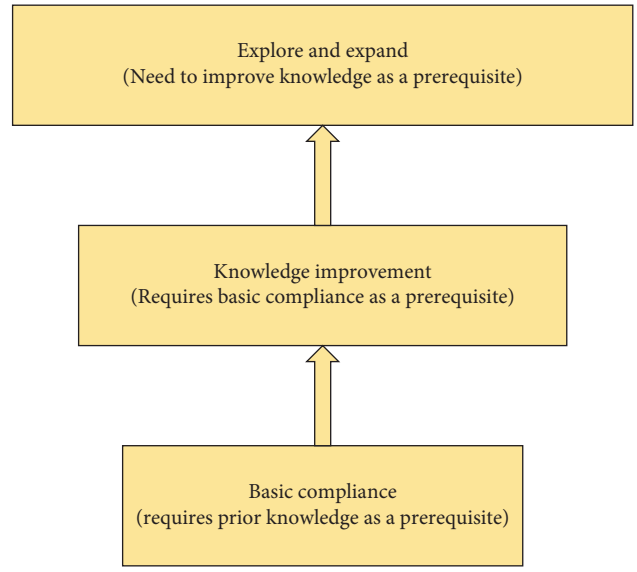


Figure 1: Three levels of learning model (student section).

[12]. The literature establishes a personalized recommendation model based on collaborative filtering technology, analyzes the requirements and functions of the personalized recommendation system, and designs simulation experiments to test the system functions and algorithms [13]. Based on collaborative filtering technology, the personalized recommendation system can solve a series of complex technical application problems. For example, it can make a targeted personalized recommendation to users in the digital campus platform, comprehensively grasp the course learning progress, and improve the accuracy and effectiveness of learning resource push. The learning efficiency of each user is improved at an exponential level [14]. The literature designs a linear model for the fusion of a variety of collaborative filtering algorithms and uses the least square method to solve the weight [15, 16]. According to the importance of data automatic training of each algorithm, the fusion model can reduce the prediction error of fixed scores. In order to improve the accuracy of recommendation in terms of learning resources, based on the trust model of users' rating of courses and recommendation times, this study organically combines the model with a collaborative filtering algorithm to improve the accuracy of the collaborative filtering algorithm to a new height [17, 18].

3. Development and Design of Interactive English Teaching Online Platform

3.1. Interactive Teaching Needs. The basic core layer, the knowledge and skill development layer and the exploration and expansion layer are the three structural levels of the learning model, which are conducive to improving students' basic and higher-order abilities and realizing the purpose of hierarchical teaching. In the process of self-directed learning in class, students need to conduct hierarchical English learning according to the logical sequence shown in Figure 1. Only after mastering the knowledge content of developing

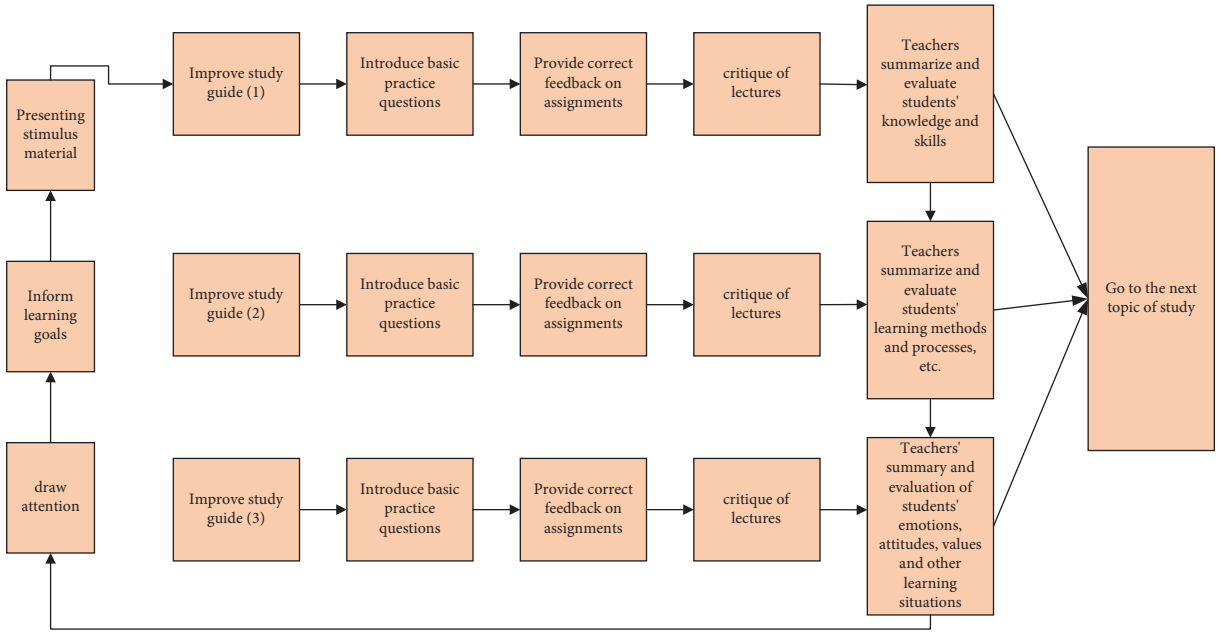


Figure 2: Interactive teaching model based on autonomous learning (teacher section).

basic knowledge and skills we can further reach the highest level of exploration and expansion of the learning stage. That is, students should learn to recognize and strictly understand the meaning of each specific concept, rule, and concept. Figure 1 shows three levels of the learning model (student section).

The online English teaching platform designed in this study is mainly divided into three closed-loop structures which are independent but logically connected internally. First of all, the first major learning cycle consists of many major learning items. According to the general order of learning, its structure is: determining learning objectives, stimulating students' enthusiasm for learning, reviewing knowledge, self-learning textbooks, strengthening basic exercises, etc. It also includes the final stage of students' self-summary and self-evaluation. This cycle is designed for all students in the whole class, in order to lay a solid knowledge foundation at the beginning of learning and prepare for further learning. Therefore, I mainly learn objective declarative knowledge, such as basic concepts, laws, theories, consensus, and so on. The second main learning cycle consists of seven parts: first, determining learning objectives, then stimulating learning motivation, second, memorizing knowledge, then self-learning textbooks, expanding knowledge, consolidating knowledge and practice, and finally, self-learning summary and students' self-assessment. This cycle is designed for middle and advanced students who have the ability to study on the basis of previous studies. The third learning cycle is specifically designed to expand students' advanced level, so its audience is mainly students with excellent academic performance, quick thinking, and hard work. It mainly includes the determination of learning objectives, the activation of learning motivation, the recall of existing knowledge, the self-study of teaching materials, exploration and expansion, strengthening and expanding exercises, and the self-evaluation of students. This system can expand students' horizons, cultivate their problem-solving ability, and achieve the goal of solving real-life problems through learning.

As shown in Figure 2, according to the three-level structure of students' learning model, the teaching method of teachers is extended, which is divided into three levels of auxiliary teaching cycle. The first cycle is lead to students' learning interest, inform the students learning goals, provide incentives and material, the basic knowledge of learning guidance, the design of exercises, provide feedback, evaluate the operation and the suggestion, the teachers' self-summary, to student's knowledge and skills for accurate summary and evaluation. The second cycle is to guide students' interest in learning, inform students of their learning objectives, and provide incentive conditions, materials, and learning guidance. In addition, it can also provide appropriate task feedback, guidance, and job evaluation. Teachers can summarize and evaluate students' learning processes and methods. The third cycle is lead to students' learning interest, inform the students learning objective, provides the incentive conditions and materials, provide students with learning method guidance, provide further exploration and extension exercises, provide the appropriate expansion operation feedback, homework evaluation, teachers' self-summary, as well as to the students' emotional attitudes/values for evaluation.

3.2. System Architecture Design. The hierarchical structure of the English online teaching platform and the overall logical layout of teaching are shown in Figure 3.

3.3. Network Topology Design. The interactive online English teaching platform mainly serves campus teachers and students, so each subsystem of the interactive online English teaching platform is implemented in the school network.

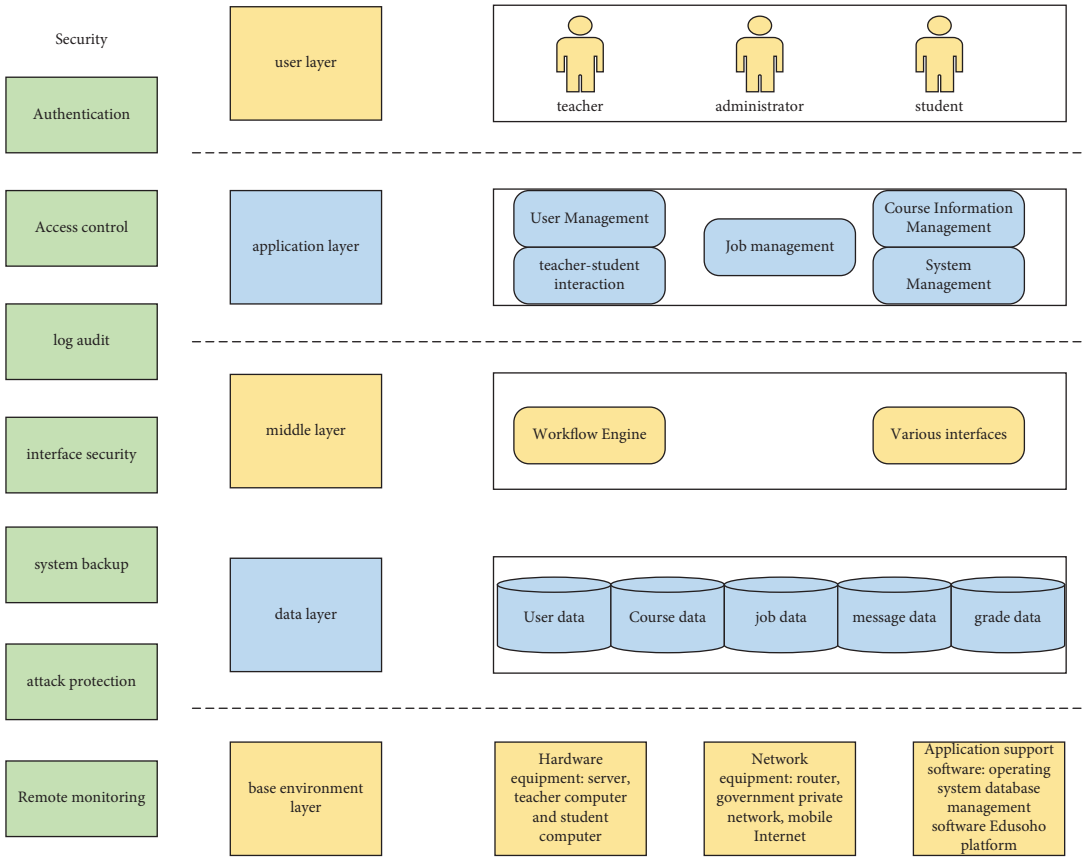


Figure 3: Overall architecture of the system.

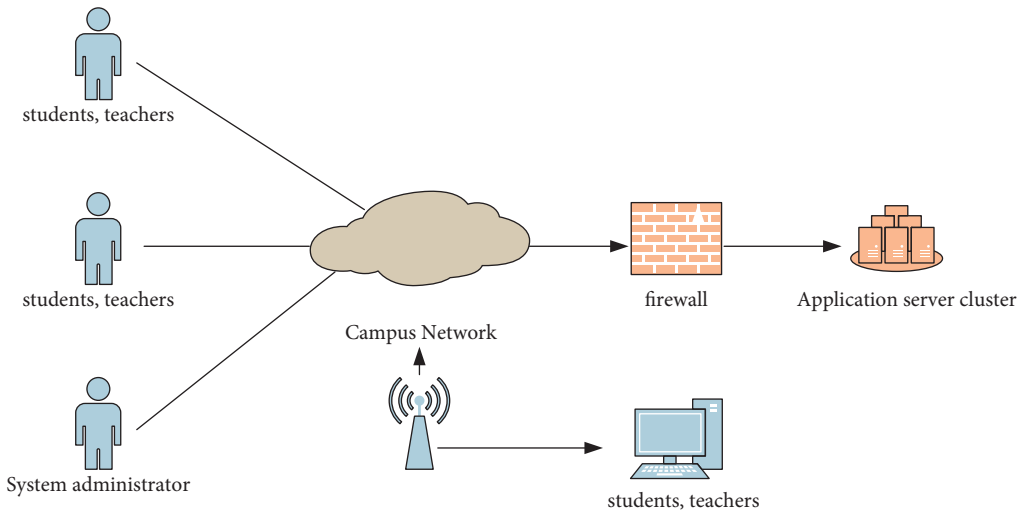


Figure 4: Network topology.

Students, teachers, and other users can access the campus digital platform through the campus network environment, and set up firewalls in the computer room where the interactive online teaching English platform server and internal network are implemented. The network topology is shown in Figure 4.

3.4. Interactive Teaching Module Design. The analysis of interface elements shows that the interaction between teachers and students usually occurs in four functional interaction modules: communication window, lecture comments, collaborative editing, and shared documents. The distribution of these modules on three typical platforms

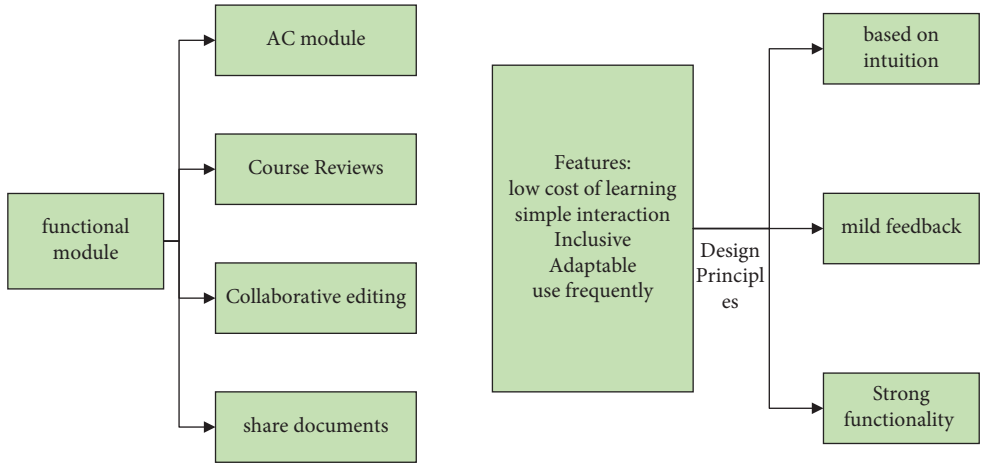


Figure 5: Design principles of functional modules.

has the characteristics of low learning cost, simple interaction, strong inclusiveness, and strong adaptability. Functional interaction modules are often used as interaction units in online teaching interactions. So, the design of interaction modules should satisfy the design principles based on intuition, gentle feedback, and powerful functions (see Figure 5).

4. Model Construction of Collaborative Filtering Algorithm

4.1. User-Based Collaborative Filtering Algorithm. The user-based collaborative filtering algorithm has three main steps:

(1) Let M be the number of users in the system, N be the number of statistics of projects, Rui be the matrix element, and its value represents the evaluation score of user U on project I. The value range of the matrix element Rui does not change much. It is usually an integer value from 1 to 5. If there is no user rating, it is replaced by the number 0. The lower the Rui, the lower the evaluation score of user U on element I, and the worse satisfaction.

(2) Realize the function of searching for the nearest group of neighboring users. The core is to find the most matching recommendation for target users according to the nearest neighbor principle, that is, to find the nearest neighbor set for target users, so as to guarantee the accuracy of the recommended content. The first step to realize this function is to compare the similarity between the target user and other users. The second step is to introduce some metric rules to select the most recent set of users that are most similar to the target users and then pick them out.

In this collaborative filtering algorithm, the basic data of similarity calculation are usually obtained by calculating the rating based on users. In the data model, the vector in the N-dimensional space refers to the user rating, and the similarity between users is measured by the cosine Angle between their respective vectors. The higher the number, the more similar the two users are. Assuming two vectors, they are respectively expressed as vectors $\hat{u}$ and $\hat{V}$, which represent the score of user U and user V in the N-dimensional item space, formula (1) can be obtained, so as to realize the calculation of SIM (u, v) similarity of user U and user V:

$$\text{sim}\ (u,v) = \cos\ (\vec{u},\vec{v}) = \frac{\vec{u}\bullet\vec{V}}{\|\vec{u}\|\bullet\|\vec{V}\|} = \frac{\sum_{i=1}^{n} R_{ui} * R_{vi}}{\sqrt{\sum_{i=1}^{n} R_{ui}^2}\sqrt{\sum_{i=1}^{n} R_{vi}^2}}. \tag{1}$$

To calculate the Pearson correlation coefficient, we first need to find a set of items rated by two users and then calculate the correlation coefficient of the two user vectors based on this set. The formula for calculating the similarity between user u and user v is defined as follows:

$$\text{sim}(u,V) = \frac{\sum_{i\in I_{uv}}\left(R_{ui}-\overline{R}_u\right)\left(R_{vi}-\overline{R}_v\right)}{\sqrt{\sum_{i\in I_{uv}}\left(R_{ui}-\overline{R}_u\right)^2}\sqrt{\sum_{i\in I_{uv}}\left(R_{vi}-\overline{R}_v\right)^2}}, \tag{2}$$

where luv represents the set of items jointly rated by user u and user v.

The formula for predicting the target user's rating for item i is defined as follows:

$$P_{u_u} = \overline{R}_u + \frac{\sum_{(v\in I_u(i))}\text{sim}\ (u,v) * \left(R_{vi}-\overline{R}_v\right)}{\sum_{(v\in I_u(i))}|\text{sim}\ (u,v)|},$$
$$\overline{R}_u = \frac{1}{|I_u|}\sum_{j\in I_u} R_{uj}, I_u = \left\{j \in I \text{ and } R_{uj} \neq \Phi\right\}. \tag{3}$$

After scoring the target user and predicting all recommendable items, this group of items can be recommended to the target user according to certain rules. One method is to select the top N items with the highest test scores as the results to recommend to users (usually N is between 1–20, $N = 10$ is the most common); the other is to select items with predicted scores and more than be sure to specify a value. The results are determined by the user, and both recommendation methods depend on application-specific requirements, with the top-N recommendation being more widely used.

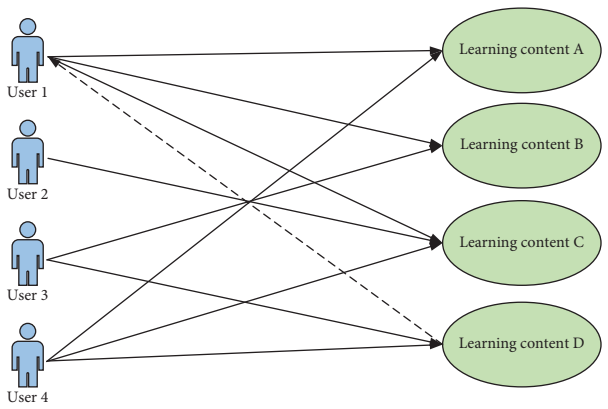


Figure 6: Schematic diagram of user-based collaborative filtering.

The main idea of user-based collaborative filtering is based on the above assumption that users who rate some articles will also rate other articles similarly. Figure 6 shows a schematic diagram of the recommended algorithm.

Among users 2, 3, and 4, compared to user 1, user 4 has the closest preference to user 1. User 4 learns content D in addition to content A, B, and C that user 1 likes. So we recommend D to user 1.

4.2. Item-Based Collaborative Filtering Algorithm. Rui and Ruj represent user us rating values for item i and item j, respectively, and $\overline{R}_i$ and $\overline{R}_j$ represent the average rating of item i and item j in Uij, respectively, namely,

$$R_i = \frac{1}{\left|U_{ij}\right|} \sum_{u \in U_{ij}} R_{ui}, \quad R_j = \frac{1}{\left|U_{ij}\right|} \sum_{u \in U_{ij}} R_{uj}. \tag{4}$$

The number of item sets selected affects the quality of subsequent recommendations. In order to judge this effect, two methods can be adopted: one is to set the threshold value, then among all items to be selected, the item whose similarity with the target object is greater than the threshold value will select the relatively recent item set. The other method also sets a threshold value, K is the number of recent items, and the maximum K objects with the highest similarity to the target object are used as the set of recent items.

According to the score of the target user u in the K-nearest neighbors of the target item i, we predict the score of the user u of the item i, and then select the item with the highest predicted score value to recommend to the user, and get the score from all the possible recommended items.

Pui's scoring formula for target user u of item i is defined as follows:

$$P_{ui} = \overline{R}_i + \frac{\sum_{j \in I_u(u)} \text{sim}\ (i, j) * \left(R_{uj} - \overline{R}_j\right)}{\sum_{j \in I_e(u)} |\text{sim}\ (i, j)|}. \tag{5}$$

$\overline{R}_j$ in the above formula represents all the ratings of item j in all user spaces U, namely,

$$\overline{R}_j = \frac{1}{\left|U_j\right|} \sum_{u \in U,} R_{uj}, U_j = \left\{u \in U, R_{uj} \neq \Phi\right\}. \tag{6}$$

After scoring the target user and predicting all recommendable items, this group of items can be recommended to the target user according to certain rules. One method is to select the top N items with the highest test scores as the results to recommend to the user (usually N is between 1–20, $N = 10$ is the most common); the other is to select the estimated score greater than a certain score value. Project. Results are recommended by users. Both recommended methods depend on the specific application requirements.

4.3. Collaborative Filtering Algorithm Model Construction. There are many ways to integrate recommendation algorithms, but starting from the algorithm itself, the most suitable method is the weighted combination of recommendation algorithms. The weighted fusion method assigns different weights to the results generated by the current algorithm and synthesizes new results, so as to achieve a lower prediction error than the original algorithm. Assuming that we have established two score prediction models r(1) and r(2) based on the recommendation algorithm, an original weighted fusion method is to set different weights according to the effects of the two models to balance the contributions of the two algorithms, and then make the recommended end result. The form of the model is shown in (12):

$$\hat{r} = \alpha \cdot r^{(1)} + (1 - \alpha) \cdot r^{(2)}. \tag{7}$$

Such a weighted fusion method cannot be modified to handle and adapt to different usage scenarios, because different algorithms can achieve different effects for different scenarios and different data, and a fixed weight system cannot adapt to changes from the environment in real time.

Suppose there are N rating predictors defined as $\{r^{(1)}, r^{(2)}, \ldots, r^{(N)}\}$, ε is the error constant used to fit the N predictors to the final model, and θ is the prediction variable weight, the final regression model is shown in

$$\hat{r} = \varepsilon + \sum_{n=1}^{N} \theta_n r^{(n)}. \tag{8}$$

In order to adapt the weighted parameters of the model to different scenarios and automatically assign the best parameters for different application environments, machine learning methods can be used to train the model to obtain better parameters. In order for the model to finally better match the actual results, we construct the loss function using the least squares difference and then learn the parameters by minimizing the loss function. For the convenience of writing, we take the error constant as one of the weights and use it as the weight coefficient of r(0). We assume that r(0) is always equal to 1, then the regression model (13) becomes simplified (14):

$$\hat{r} = \sum_{n=0}^{N} \theta_n r^{(n)}. \tag{9}$$

Formula (9) represents the loss function of the regression model, where M represents the number of samples in the training set, y represents the specific value of the actual score, {{r(0),r(1),r(2). The meaning of r(N)} is the output item of each score variable, which is taken as the input of the model, where the coefficients 1/2m are set coefficients to simplify the calculation of the derived coefficients.

$$J(\theta) = \frac{1}{2m} \sum_{i=1}^{m} \left(\hat{r}^{(i)} - y^{(i)}\right)^2. \tag{10}$$

The parameters are solved by the above loss function, which can be solved using the gradient descent method or the normal equation (Normal Equation). Both have their own advantages and disadvantages. The gradient descent method requires multiple iterations, and the normal equation requires matrix operations. This study adopts the same normal equation as the previous alternating least squares method. According to the loss function 17, the steps to solve the normal equation are defined as follows:

$$J(\theta) = \frac{1}{2m} \|R \cdot \theta - Y\|^2, \tag{11}$$

$$\Rightarrow J(\theta) = \frac{1}{2m} (R \cdot \theta - Y)^T (R \cdot \theta - Y), \tag{12}$$

$$\Rightarrow J(\theta) = \frac{1}{2m} \left(\theta^T R^T R\theta - Y^T R\theta - \theta^T R^T Y + Y^T Y\right), \tag{13}$$

$$\Rightarrow J(\theta) = \frac{1}{2m} \left(\theta^T R^T R\theta - 2\theta^T R^T Y + Y^T Y\right). \tag{14}$$

Taking the derivative of θ according to Equation (20) and setting the derivative to zero, the solution for the weight θ is shown in Equation (22):

$$\theta = \left(R^T R\right)^{-1} R^T Y. \tag{15}$$

5. Testing and Application of Interactive English Teaching Online Platform

5.1. Test Results of the System. Figure 7 shows the test topology used for this test.

All users can access through the domain name of the interactive online English teaching platform, but users who are not logged in can only access some open resources. To obtain additional resources, users must register and log in to the online learning platform, and apply for corresponding permissions. Administrators can set user registration-related functions, set registration information fields, customize the field information that must be provided during user registration, and drag and drop to adjust fields. After students log in to the system, they have functions such as managing personal information, submitting assignments, and interactive discussions. After logging in to the system, teachers can manage personal information, manage courses, upload resources, download assignments, and reply to messages.

5.2. Users' Willingness to Use the Interactive English Teaching Online Platform. The main reasons why learners use the interactive English teaching online platform are shown in Figure 8.

Figure 8 investigates the main reasons why students use interactive online English teaching platforms. The results showed that submitting assignments was the main reason for most students to use the interactive English teaching platform (44.7%), followed by viewing course materials (39.4%). However, at the request of teachers (11.2%), the number of people who expanded their knowledge and communicated with teachers and classmates was very small, less than 5% of the total. The above data show that students passively use the interactive English teaching platform to complete classroom teaching tasks. As for taking the initiative to expand knowledge outside the classroom and communicate with teachers and classmates after class, students do not like to use online platforms for interactive English teaching.

The frequency of students using the interactive online English teaching platform is shown in Figure 9.

From Figure 9, we can see that course notifications and downloading materials are the most used functions by learners.

5.3. The Teaching Effect of the Interactive English Teaching Online Platform. As can be seen from Table 1, the students' English scores in this semester are better than those in the previous semester. Judging from the test scores of the excellent rate in the second semester, there are 20 outstanding students with a score of 85 or above in this semester, accounting for 22.22% of the total, while only 11 outstanding students with a score of 85 or above in the last semester, accounting for 8.9% of the total number; There are 45 students with excellent grades this semester, accounting for 43.53% of the total number of students, while only 26 students in this grade range last semester, accounting for 21.0% of the total number of students; from the point of view of the failure rate, there are 8 students this semester, 6.48% of the total, while 37 students failed last semester, accounting for 29.8% of the total.

It can be seen from Table 2 that at least 67.37% of the students are satisfied with the interactive English teaching online platform.

5.4. Application Strategies of Interactive English Teaching Online Platform. Whether multiple interactions can be effectively realized in the network environment is not only affected by objective factors such as the network environment, but also by the subjective factors of students. Students' learning motivation, learning needs, and current cognitive level directly affect their participation in many interactive network activities. In order to provide students with all support for learning, teachers must create a good network teaching environment, carefully design the content

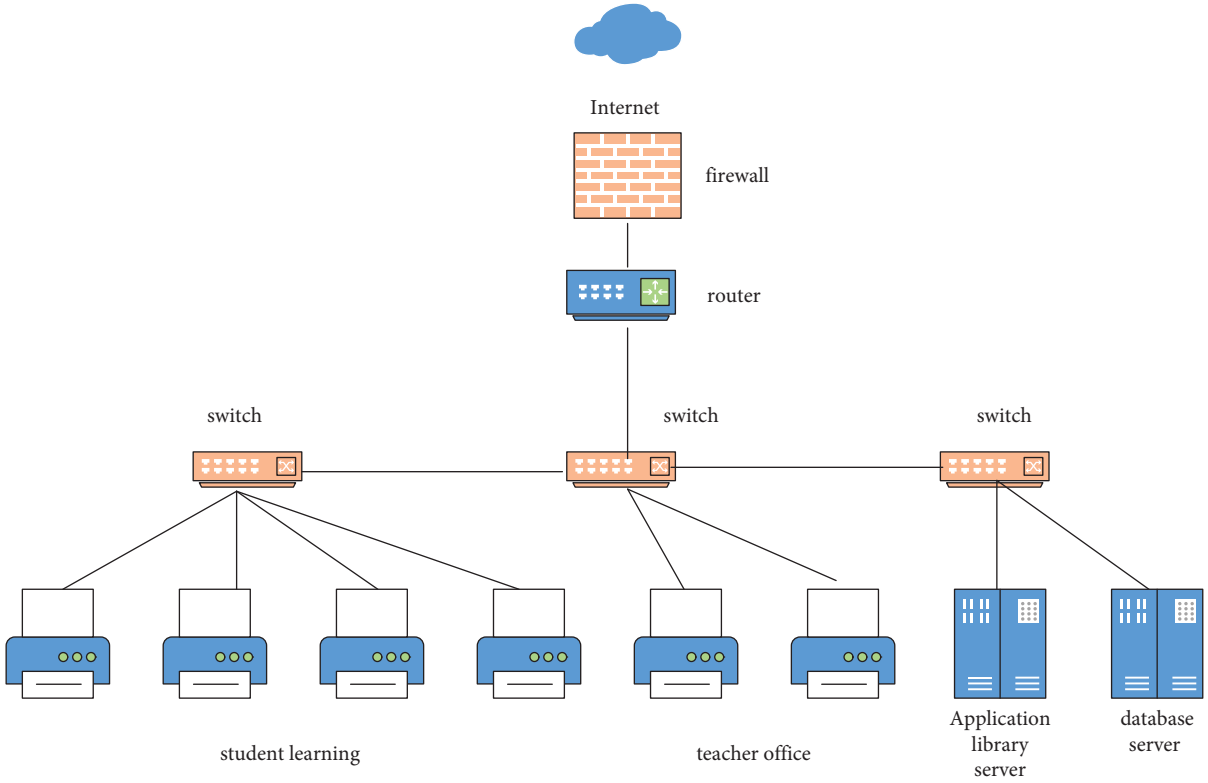
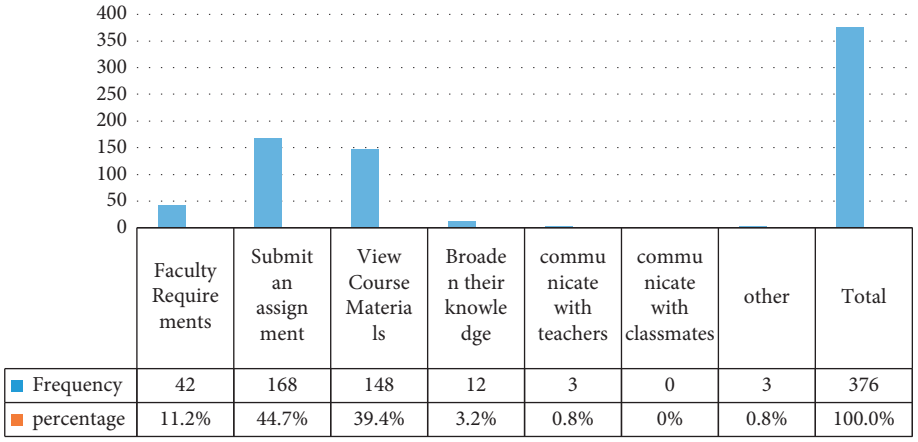


Figure 7: Test topology diagram.



	Faculty Requirements	Submit an assignment	View Course Materials	Broaden their knowledge	communicate with teachers	communicate with classmates	other	Total
Frequency	42	168	148	12	3	0	3	376
percentage	11.2%	44.7%	39.4%	3.2%	0.8%	0%	0.8%	100.0%

Figure 8: Main reasons for using interactive English teaching online platforms.

environment of each teaching unit, and improve the configuration of network resources. When designing learning tasks, attention should be paid to relevance and moderate difficulty. Providing students with novel and interesting learning content that meets their cognitive needs is a necessary factor to help students learn effectively.

In addition to ensuring the level of teaching content, teachers should try their best to design rich and diverse learning and teaching situations, and provide a guarantee for students' self-study effect on the Internet through innovative means based on the platform., so that students can obtain emotional satisfaction in the learning process. They can be motivated and supported in their motivation to learn, stimulating their enthusiasm for learning. In face-to-face tutoring courses, in order to give students more opportunities to demonstrate their learning achievements, teachers need to create a relaxed, free, and democratic atmosphere in the classroom, and through demonstrations, students' learning achievements can be recognized by teachers and other students. Therefore, students are more willing to communicate with teachers and other classmates. In the interactive process, with the improvement of the network quality, students can maintain a more stable and active learning state, and have a stronger learning motivation for the learning content, so as to participate in the multi-interactive teaching process. In face-to-face classes, teachers

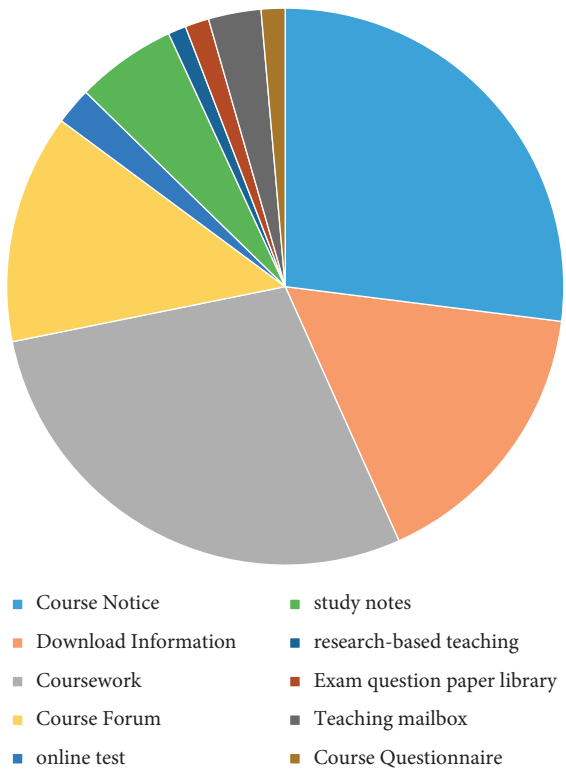


Figure 9: Frequency of learners using online platforms for interactive English teaching.

Table 1: Comparison of scores of interactive English teaching online platforms.

Each fraction	Exam results this semester (109 people)		Last semester's test scores (124 people)	
	Frequency	Percent	Frequency	Percent
Above 85	20	22.22	11	8.9
75–84	45	43.53	26	21.0
60–74	36	31.51	50	40.3
Below 60	8	6.48	37	29.8

need to respect every student, pay attention to every student at all times, help students with different learning backgrounds to participate in every learning activity, encourage them to talk with their classmates, discuss with teachers, and boldly put forward their own views and their own ideas and existing learning problems, strengthen their courage and stimulate their interest in learning. When teachers step off the podium and become helpers, guides, and advocates of student learning, it can broaden the communication channels between teachers and students, meet more diverse communication needs, and provide teachers and students with a good teacher–student interaction effect and teaching efficiency. The traditional way of English teaching is mainly one-way input, that is, the way that the teacher imparts knowledge to the students one way. Closed teaching is not conducive to students' active learning. As we all know, it is quite common to copy textbooks, and it is not uncommon for teachers to become "language teachers". According to relevant statistics, more than 80% of the problems in the classroom are closed ended. With such a form of teaching, there is little chance of effective interaction. In this study, we boldly designed an open classroom, where students are the "protagonists" of the classroom, and teachers act as "behind the scenes" to guide students to participate in interaction and achieve better results.

In the actual online teaching situation, teachers can complete the interaction between teachers and students through QQ groups, WeChat, online platform discussion boards, and other channels, through the above ways to provide targeted and constructive guidance to students in learning. The survey shows that more than 90% of the students are unwilling to listen to the teacher's lectures, and 70% of the students are more willing to acquire knowledge from books through independent exploration, communication and cooperation, and practical operation. In terms of teaching, the online learning platform, with its rich teaching resources, comprehensive teaching functions, and convenient operation interface, allows students to freely study, communicate, interact with their peers and teachers, and acquire knowledge at any time; and through WeChat, QQ groups and other networks, the interactive platform creates more convenient opportunities for teacher–student interaction and student–student interaction, and brings a new perspective to the study of the effective interaction between teachers and students, students and human–computer. Classroom teaching evaluation will be more diversified, and students need to participate in the evaluation. Teachers' comprehensive evaluation, group member evaluation, student self-evaluation, and other multi-faceted evaluation systems can be used to enable students to more clearly discover their own shortcomings, discover the advantages of classmates, and correctly evaluate themselves and others. Whether the classroom teaching evaluation mechanism can be used well is the key to the effectiveness of students' cooperative learning, student leadership, and classroom teaching.

In terms of evaluation strategy, it is necessary to abandon the traditional "discriminatory evaluation" model and establish a more reasonable "incentive evaluation" mechanism to give each student, especially those with poor performance, sufficient respect and consideration for their learning achievements. We must strive to stimulate the enthusiasm for learning in our diverse students and help them build confidence and focus on their growth and development. To this end, the method of group assessment can be used to divide students into several groups and guide learning and discussion in groups. When grouping, teachers should pay attention to introverted and extroverted students, and pair students with good and bad foundations with each other, which will help them achieve mutual benefit and win–win results in group cooperation, and increase their sense of cooperation and competition. In the classroom, teachers make positive comments on reading, dialogue, answering, debating, etc. Students are praised for their outstanding performance and therefore more motivated to learn.

For most students, English class has only one chance to show themselves. It is difficult to fully satisfy their desire for performance, and it is not conducive to cultivating students'

Table 2: Satisfaction survey of interactive English teaching online platform ($n = 78$).

Survey questions	Satisfied	Percent	Common	Percent	Dissatisfied	Percent
More able to use their own methods to solve problems in learning	53	67.37	26	32.37	11	12.95
A certain degree of freedom to choose their own learning tasks	59	75.14	33	41.44	14	16.84
It can improve my English self-learning ability	57	72.52	24	29.78	8	9.06
More freedom to control their own learning progress	66	84.13	29	36.26	11	12.95
The overall level of English has improved significantly	60	75.45	21	25.90	11	12.95
More direct and accurate understanding of their own learning	64	81.61	22	27.19	9	10.36
It enables me to have access to more authentic English materials, and I have more confidence in English learning	58	73.83	25	31.08	7	7.77
It can improve my interest in learning English, and I can learn English more consciously	62	78.98	28	34.97	13	15.53
Increased willingness to invest more time in English language learning, English language skills improved	53	66.46	32	40.14	12	14.24
More preparation in extra-curricular time, and more efficient learning in face-to-face tutoring classes	67	84.34	23	28.49	9	10.36

active learning and participation attitude. Therefore, when designing teaching activities, teachers should try to expand students' participation and increase the opportunities for students to participate. Each student in the class has their own specialties, some can perform, some are good at communication, and some can sing and dance. For this reason, teachers should fully consider the personality characteristics and ability level of each student in the process of designing the teaching content and lecture sequence, and guide each student to experience the continuous and effective learning process. At the same time, it provides more opportunities for students to participate in activities and evaluate results and forms a good communication situation with the outside world, so that the majority of students' learning has a good experience and effect.

6. Conclusion

In the traditional English classroom teaching mode, teachers often adopt a one-way teaching method to teach students the knowledge that teachers think is important, which is not conducive to the interaction and knowledge communication between teachers and students, ignores students' own feelings, and is not conducive to the personalized development of students. At present, the development of online interactive teaching mode is gradually deepening. At the same time, with the increasing promotion of curriculum and textbooks in the new era, as well as the reform of college entrance examination, teachers' teaching concepts should also be changed. Based on this, this article studies a collaborative filtering algorithm and develops an online interactive English online teaching platform. The development and application of an interactive English system can promote students' active learning, realize all-round and multifaceted personalized education, and improve their comprehensive ability to acquire and absorb knowledge points, which has positive significance for ensuring students' better participation in the teaching process; the change of teachers' concept has also followed. The advantages of implementing interactive teaching in the classroom can be confirmed by many teachers, thus providing a new type of English teaching.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

All the authors declare no conflicts of interest.

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