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Research Article

Multidimensional Analysis and Evaluation of College English Teaching Quality Based on an Artificial Intelligence Model

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In view of the lack of teaching resources and the impossibility of real-time sharing and application of teaching resources in English teaching, this paper proposes a multidimensional analysis and application of English teaching quality based on an artificial intelligence model. This paper analyzes the basic framework and application of the Internet of Things technology and puts forward the corresponding hierarchical classification and teaching quality monitoring mode. Secondly, the monitoring framework of the Internet of Things to achieve the quality of English teaching and then the basic theory of the Internet of Things is analyzed. Finally, the experiment shows that the average score of English has been greatly improved by comparing the traditional teaching mode and the new classroom quality monitoring mode under the Internet of Things technology. The main dimensions of teaching quality, such as teachers' quality, teaching attitude, teaching content, and teaching methods, are analyzed in depth, and the coefficient of most sample data is more than 0.7, which has a good application effect. Whether running on the test set or the mixed test set, the accuracy of the new classroom quality monitoring model proposed in this paper is the highest among the three models. The correct rate on the test set can reach 99.71%, the correct rate on the mixed test set can reach 98.01%, and the correct rate can reach 98.67%, which shows the superiority of the performance of the new classroom quality monitoring model.

1. Introduction

As the most widely used language in the world, English has not only become an international language, but also its international status is getting higher and higher. How to master English well and lay a solid foundation for themselves in the increasingly internationalized society in the future is the concern of many Chinese college students. Under such circumstances, more and more attention has been paid to English teaching in higher education. Different from English teaching in other countries, college English teaching in China has its unique characteristics in different aspects, such as social and political background, educational policy, and teaching mode. Now that we are in an era of Internet, everything around us is undergoing earth-shaking changes, including our lives and studies. My country's higher education is also facing a huge reform, and traditional learning methods can no longer meet the requirements of today's students. The literature [1] analyzes the influencing factors of college English classroom teaching quality evaluation. English teaching under the intelligent monitoring teaching mode pays more attention to students' self-consciousness, discovering, and solving problems in the scene, which greatly improves students' interest in learning English and promotes the all-round development of students' English learning. The literature [2] revolves around the development of autonomous learning as one of the learning strategies related to planning, goal-oriented design, monitoring, and metacognitive capabilities. The literature [3] explains that the guarantee of English teaching quality should follow the principles of scientificity, comprehensiveness, process, and development. With the development of

science and technology, many colleges and universities have introduced computer teaching technology, and computer English teaching technology is also in the process of continuous promotion. It is necessary to establish a complete teaching quality evaluation system, which can not only improve the quality of English teaching but also can also find and solve problems in time. The literature [4] emphasized the importance of monitoring system to English teaching. The article combines the characteristics of the English classroom and designs a variety of color conversions to help students strengthen their memory. According to the effective results, the color conversion teaching method can help students master more than 90% of the classroom knowledge, which not only ensures the fun of the classroom and attracts the students' interest in learning but also improves teaching efficiency. The literature [5] shows that in the information age, all fields need to be developed in an all-round way. The traditional teaching model can no longer meet the needs of current students, and the education field is facing a major reform. The literature [6] examines four factors that have a major impact on the success of college English as a second language teaching. The focus of the article is how to maintain high-quality English teaching. It lists several important factors that affect English teaching, including teacher qualifications, teaching models, and teaching methods. The literature [7] shows that college English teachers need to use selected branches from the field of educational psychology in their teaching so that students can achieve better results. How to let students experience high-quality English teaching courses depends on the teacher's teaching methods. Teachers should answer students' questions patiently through detailed explanations and guide each student to give correct English learning methods. The literature [8] proposes integrating educational ecology theory into college English teaching reform, optimizing courses and teaching models, and creating an ecological environment. The progress of China's diplomacy has made English the focus of many students' learning, and language monitoring theory is an important part of improving the efficiency of English teaching. The literature [9] introduced the theory of language monitoring and analyzed its application in college English teaching. The literature [10] introduced a blended English teaching model, which is a model of autonomous learning. The literature [11] proposes a detailed teaching quality monitoring and evaluation plan based on the characteristics of the course. Many non-English majors in universities do not pay enough attention to English learning, although the education department has explained that the listening and speaking ability of non-English majors is a very important part. The reason is that many colleges and universities lack a teaching quality monitoring system, and the purpose of the article is to achieve the goal of cultivating students' listening and speaking ability. The literature [12] analyzes the problems in the autonomous learning of college English and then points out the basic idea of how to implement monitoring. The literature [13] establishes a higher vocational English education and teaching operation mechanism and perfects the quality monitoring system of flipped classroom teaching. The literature [14] analyzed the current situation of college English pronunciation courses and analyzed the current problems. The literature [15] proposes a hybrid learning model that combines traditional classroom teaching mode and network teaching mode. The advantages of network education include the maximum utilization of resources, the autonomy of learning behavior, the modification of teaching form, and the automation of teaching management. The application of network technology in distance education is characterized by anyone, at any time, at any place, starting from any chapter and learning any course. The convenient and flexible "Five Any" of network education directly embodies the characteristics of active learning in learning mode and fully meets the needs of modern education and lifelong education. Interactive learning forms, teachers and students, and students and students, through the network for all-round communication, close the psychological distance between teachers and students, and increase the opportunities and scope of communication between teachers and students. Through the statistical analysis of the types, number, and frequency of students' questions by computer, teachers can understand the doubts, difficulties, and main problems that students encounter in their study and guide students more pertinently.

2. Learning English Teaching Quality Monitoring and Intelligent Analysis

2.1. The Status Quo of College English Teaching. In the process of English teaching in many colleges and universities, there are still many problems and shortcomings, and English teaching is not paid enough attention [16]. Many colleges and universities lack advanced teaching equipment and teaching resources. English is different from other subjects we learn. English is not our mother tongue, and there are differences in culture and thinking. English grammar is the most difficult problem to solve. There are many English learners. The number of teachers is limited, and it is inevitable to use Internet technology to solve the problem of lack of resources. Construct a quality monitoring system for college English teaching, as shown in Table 1.

2.2. Form a Complete and Scientific Teaching Quality Monitoring System. A complete and scientific teaching quality monitoring system consists of the following aspects: First, it must have a clear teaching goal. In the process of quality monitoring, you must recognize that the direction of the object you are monitoring is correct and toward the goal. Second, formulate quality standards for teaching links. The process of teaching implementation is not accomplished overnight. It is composed of different links. During the implementation of the teaching link, quality standards must be established. It is necessary to ensure that the objects you monitor can meet the standards in every teaching link, only each of the previous ones. Only when the small link reaches the standard and a good foundation is laid, can you get a full harvest in the final big link. In this way, only with a complete and scientific teaching quality monitoring system, can the teaching process be improved towards the established goal

Table 1: College English teaching quality monitoring system.

Component	Content
Class preparation	Establish the learning goals of this course, including language goals and cultural background goals
	Choose relevant background knowledge to help students build a new knowledge framework
	Explore flexible teaching methods and equipment (such as multimedia)
	Design a variety of interactive teaching activities
	Investigate and understand the background and learning status of students in this class
	Invite some students to prepare together
Teaching process	Adopt various forms of classroom introduction
	State the learning goals of each lesson
	Provide opportunities to use different learning strategies
	Provide students with comprehensive use of listening, speaking, reading, writing, and translation activities
	Summarize teaching activities (including language goals and cultural goals)
	Evaluate teaching effects through different activities
Reflection after class	Is it valid to import?
	Is the learning objective clear?
	Whether the preclass assessment of students is accurate
	Whether the class activity link is successful
	Does the teacher give feedback on the student's learning situation in a timely manner
	Is there any connection between classroom teaching and career goals?

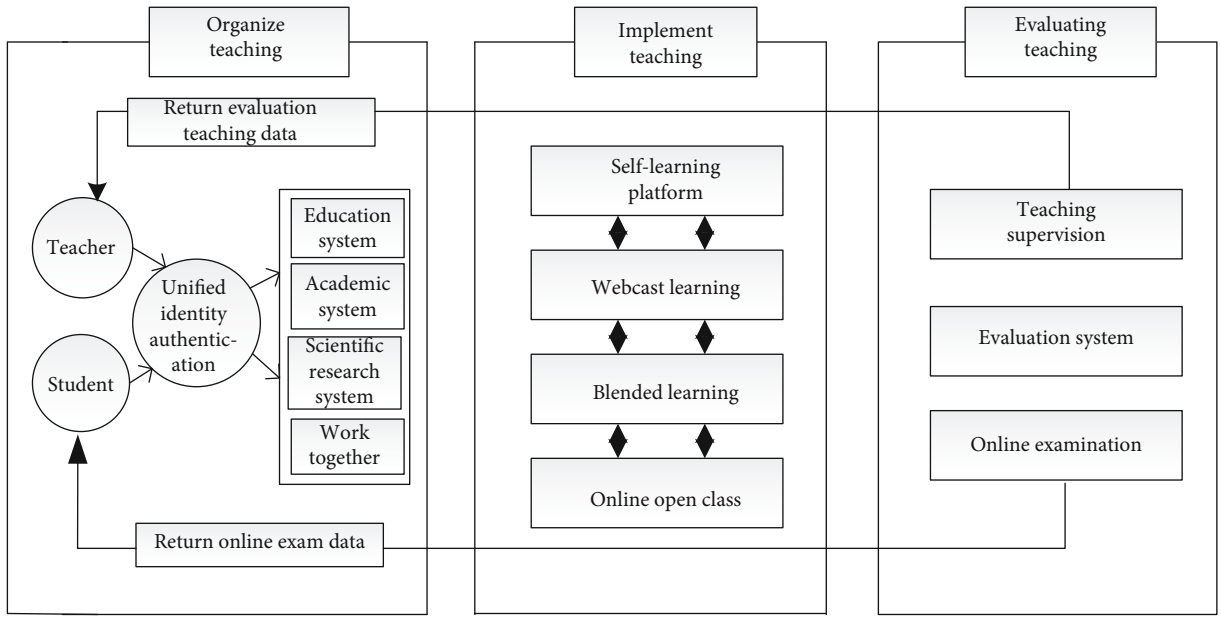

Figure 1: Teaching quality monitoring model.

and its shortcomings can be improved, and high-efficiency and high-quality teaching can be formed. The monitoring mode of college English teaching quality is shown in Figure 1.

2.3. The Role of Teaching Quality Monitoring System in Improving Teaching Quality. The teaching quality monitoring system has a guiding role. It can guide teachers in the direction of improvement, make teachers understand their shortcomings, and correct shortcomings to improve their teaching level [17]. He can guide students in the direction of learning, so that each student can master their own learning methods and formulate different learning goals for each student's different learning foundations, so that students can study with high quality and high efficiency. Second, the teaching quality monitoring system has a monitoring function. Third, the monitoring of teaching quality has a stimulating effect. It can inspire teachers to tap their own potential, find their own advantages, and develop them [18]. Fourth, the teaching quality monitoring system has a decision-making support role. After summarizing the collected information, it is convenient for school leaders to

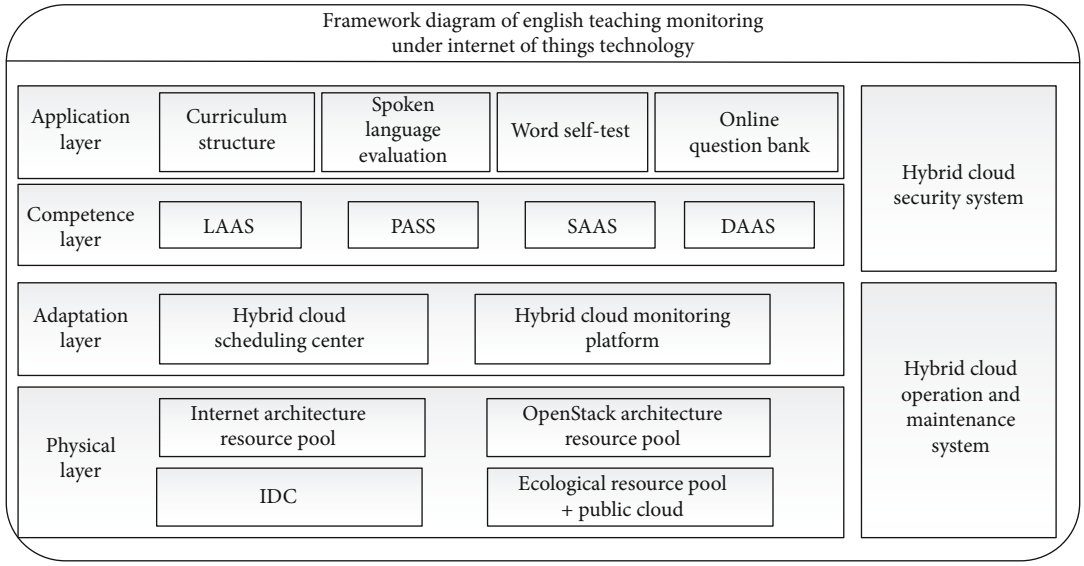

Figure 2: Framework diagram of English teaching monitoring.

Table 2: Achievement statistics of traditional teaching mode.

Group	N	Mean	Standard deviation	Standard error of the mean
Test group	100	66.2000	1.71270	.54160
Control group	100	66.8000	1.96921	.62272
Standard group	100	68.0000	2.15214	.78142

check. The framework diagram of using the Internet of Things technology to realize the monitoring of English teaching is shown in Figure 2.

3. English Teaching Quality Monitoring Based on Internet of Things Technology

3.1. Analysis of Classroom Teaching Behavior. S stands for student and T stands for teacher. It mainly studies classroom observation methods of teacher and student behavior in English classrooms [19]. The number of S behaviors is recorded as N_s, and the number of T behaviors is recorded as N_t, and the formula [20] is obtained.

$$N = N_s + N_t \tag{1}$$

The teacher behavior share R_t is

$$R_t = \frac{N_t}{N} = \frac{(N - N_s)}{N} = 1 - \frac{N_s}{N}. \tag{2}$$

The calculation formula for behavioral conversion rate Ch is

$$\mathrm{Ch} = \frac{g - 1}{N}. \tag{3}$$

The behavior conversion rate indicates the interactivity in teaching, and the greater the value, the more frequent the switching between student and teacher behaviors.

The mathematical formula is

$$S(m,n) = (f * g)(m,n) = \sum_{i=-\infty}^{\infty} \sum_{j=-\infty}^{\infty} f(i,j) g(m-i, n-i). \tag{4}$$

The convolution in the neural network is

$$S(m,n) = (I * K)(m,n) = \sum_{i} \sum_{j} I(m+i, n+i) K(i,j). \tag{5}$$

The following is the logical function:

$$s(x) = \frac{1}{1 + e^{-x}}. \tag{6}$$

The following is the hyperbolic tangent function:

$$\tanh(x) = \frac{e^{x} - e^{-x}}{e^{-x} + e^{-x}}. \tag{7}$$

The following is the linear rectification function:

$$\mathrm{ReLU}(x) = \begin{cases} 0, & x < 0, \\ x, & x \geq 0. \end{cases} \tag{8}$$

The function of the normalized index layer is to complete the calculation of the normalized index function in most linear classifiers [21]; the following is the specific algorithm input vector:

$$X = (x_1, x_2, \cdots, x_n). \tag{9}$$

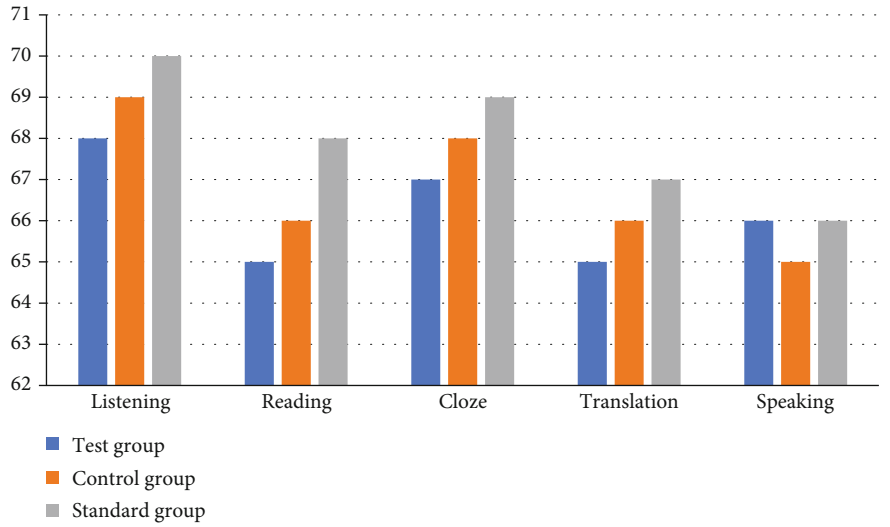

Figure 3: Result statistics of traditional teaching mode.

Table 3: New classroom quality monitoring model.

Group	N	Mean	Standard deviation	Standard error of the mean
Test group	100	85.5000	2.71270	.65405
Control group	100	86.2000	2.96921	.62272
Standard group	100	88.0000	3.15214	.78142

Calculate n scalar values:

$$y_k = \frac{e^{x_k}}{e^{x_1}+\cdots+e^{x_n}}, \tag{10}$$

spliced into

$$Y = (y_1, y_2, \cdots, y_n). \tag{11}$$

The following is the detection rate:

$$\mathrm{DR} = \frac{m_1}{M_1}. \tag{12}$$

The following is the false detection rate:

$$\mathrm{FAR} = \frac{m_2}{M_2}. \tag{13}$$

The following is the missed detection rate:

$$\mathrm{FRR} = \frac{m_3}{M_3}. \tag{14}$$

3.2. English Grammatical Analysis Model. The most commonly used evaluation algorithm for grammatical error correction is MaxMatch(M^2), and the calculation of correction rate P is publicized as

$$P = \frac{\sum_{i=1}^{n} |g_i \cap e_i|}{\sum_{i=1}^{n} |e_i|}. \tag{15}$$

The following is the correction rate R:

$$R = \frac{\sum_{i=1}^{n} |g_i \cap e_i|}{\sum_{i=1}^{n} |g_i|}. \tag{16}$$

The key evaluation index in MaxMatch is $F_{0.5}$, and the formula is defined as follows:

$$F_{0.5} = \frac{\left(1+0.5^2\right) * R * P}{R + 0.5^2 * P}. \tag{17}$$

Soft attention mechanism, weight a_{ij}, is determined by the $i-1$ hidden state s_{i-1} and each hidden state variable in the input [22, 23]; the calculation formula is

$$a_{ij} = \frac{\exp\left(e_{ij}\right)}{\sum_{k=1}^{T_x} \exp(e_{ik})}, \tag{18}$$

$$e_{ij} = a\left(s_{i-1}, h_j\right), \tag{19}$$

where h_j is the output of the hidden layer of the encoder layer at time j and S_{i-1} is the output of the hidden layer of the decoder layer at time $i-1$.

The following is the input calculation of neuron:

$$\mu = \frac{1}{H}\sum_{i=1}^{H} x_i, \tag{20}$$

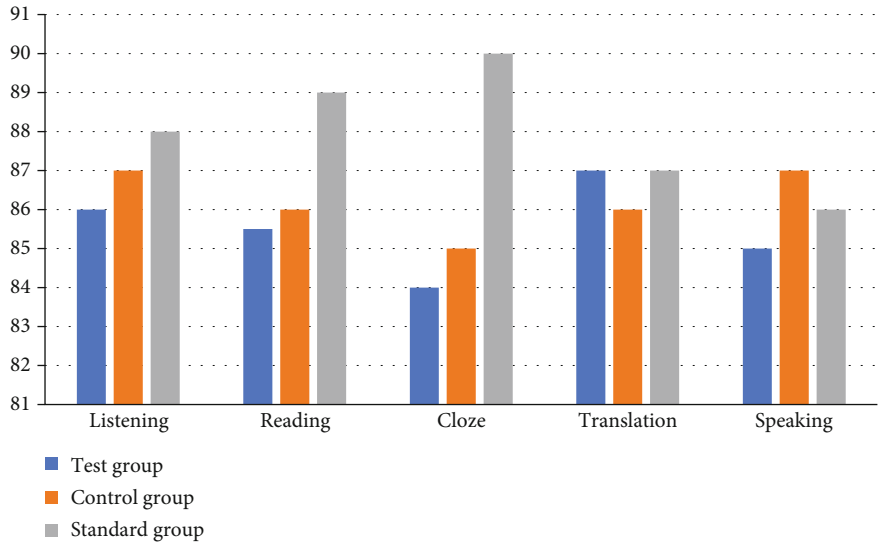

Figure 4: Score statistics of the new classroom quality monitoring model.

Table 4: Reliability coefficient.

Reliability factor	Representation
0.60-0.65	Better not
0.65-0.70	Minimum acceptable value
0.70-0.80	Pretty good
0.80-0.95	Very good

Table 5: Teacher quality sample data.

Sample number	Clear educational goals	Solid English professional knowledge	The level of teaching explanation
1	0.90	0.87	0.86
2	0.80	0.54	0.51
3	0.76	0.44	0.48
4	0.87	0.55	0.82
5	0.79	0.60	0.31
6	0.91	0.95	0.79
7	0.96	0.92	0.98
8	0.71	0.91	0.98
9	0.99	0.73	0.33
10	0.72	0.60	0.50

where μ is the average value of input neurons.

$$\sigma = \sqrt{\frac{1}{H}\sum_{i=1}^{H}(x_i - \mu)^2}. \tag{21}$$

The following is the antifiltering algorithm:

$$p(\omega_i|\omega_1,\cdots,\omega_{i-1}) = p(\omega_i|\omega_{i-n-1},\cdots,\omega_{i-1}). \tag{22}$$

When $n = 2$, bigram is

$$p(\omega_i|\omega_1,\cdots,\omega_m) = \prod_{i=1}^{m} p(\omega_i|\omega_{i-1}). \tag{23}$$

When $n = 3$, bigram is

$$p(\omega_i|\omega_1,\cdots,\omega_m) = \prod_{i=1}^{m} p(\omega_{i-2}\omega_{i-1}). \tag{24}$$

Estimate the value of $p(\omega_i|\omega_{i-2}\omega_{i-1})$; the formula is

$$p(\omega_i|\omega_{i-2}\omega_{i-1}) = \frac{c(\omega_{i-2}\omega_{i-1}\omega_i)}{c(\omega_{i-2}\omega_{i-1})}. \tag{25}$$

According to the N-gram grammar model introduced above, we can get

$$P(S) = P(\omega_1, \omega_2,\cdots,\omega_m). \tag{26}$$

Confusion is as follows:

$$\mathrm{PP}(S) = P(\omega_1, \omega_2,\cdots,\omega_m)^{-1/m} = \sqrt[m]{\frac{1}{P(\omega_1, \omega_2,\cdots,\omega_m)}}. \tag{27}$$

According to the chain method, it can be written as

$$\mathrm{PP}(S) = \sqrt{\prod_{i=1}^{m} p(\omega_i|\omega_{i-n-1},\cdots,\omega_{i-1})}. \tag{28}$$

3.3. Construction of Teaching Quality Evaluation Model. The original teaching quality evaluation data is standardized

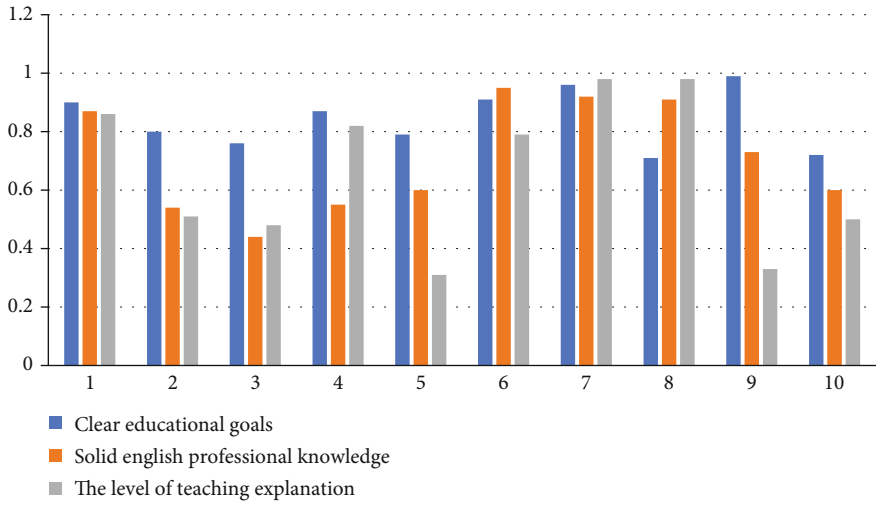

Figure 5: Teacher quality sample results.

Table 6: Sample data of teaching attitude.

Sample number	Counseling and answering questions patiently and positively	Teach seriously	Rigorous attitude
1	0.87	0.92	0.90
2	0.43	0.59	0.89
3	0.46	0.44	0.75
4	0.95	0.63	0.68
5	0.82	0.64	0.75
6	0.81	0.85	0.93
7	0.91	0.86	0.87
8	0.91	0.95	0.91
9	0.74	0.71	0.61
10	0.45	0.51	0.68

[24], and the calculation is publicized as

$$x'_{ij} = \frac{(x_{ij} - \bar{x})}{S_j}, \tag{29}$$

where x_{ij} is the score of the i-th sample in the j-th index, x'_{ij} is the standardized value, and $\bar{x}$ and S_j are the mean and standard deviation of the j-th index, respectively.

The following is the normalized value:

$$Z_{ij} = x'_{ij} + A. \tag{30}$$

Quantify teaching quality evaluation indicators:

$$p_{ij} = \frac{Z_{ij}}{\sum_{i=1}^{m} Z_{ij}} \quad (i = 1, 2, \cdots, m; j = 1, 2, \cdots, n), \tag{31}$$

where w_j is the weight of the j-th index and p_{ij} is the proportion of the i-th sample in the j-th index.

Calculate the index entropy value E_j:

$$E_j = -k \sum_{i=1}^{m} p_{ij} \ln\left(p_{ij}\right), \tag{32}$$

in

$$k = \frac{1}{\ln(n)}, E_j \geq 0. \tag{33}$$

Calculate the coefficient of difference G_j:

$$G_j = 1 - E_j. \tag{34}$$

Calculate the weight of the indicator w_j:

$$w_j = \frac{G_j}{\sum_{j=1}^{n} G_j}. \tag{35}$$

Calculate the teaching quality of the sample F_i:

$$F_i = \sum_{j=1}^{n} w_j p_{ij}. \tag{36}$$

4. Simulation Experiment

4.1. Comparative Experiment. In order to test the quality of English teaching in colleges and universities, the experiment selected 300 non-English major students from a certain university. The students came from different majors such as management, computer, auditing, and accounting. Divide these students into the experimental group, control group, and standard group, with 100 people in each group. We chose 3 teachers with the same teaching age to teach the students in 3 groups, and the teaching time is one academic year. The experiment compares the student performance of the traditional teaching model with the student performance

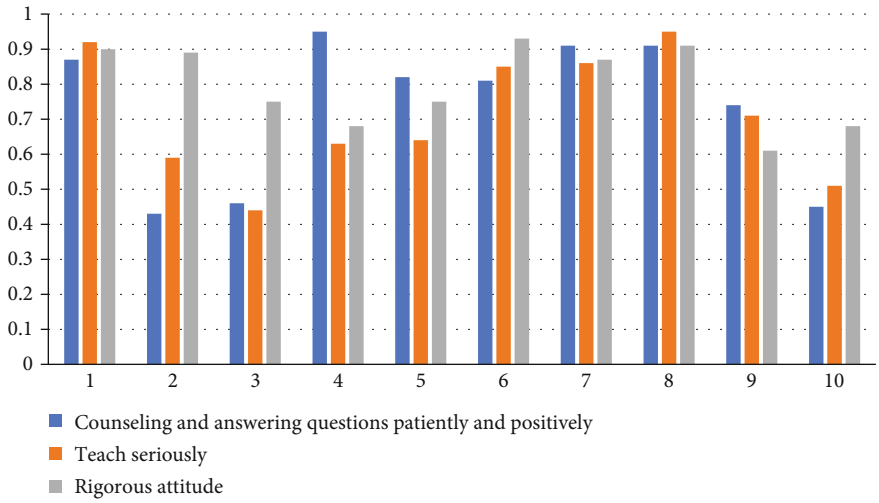

Figure 6: Sample results of teaching attitudes.

Table 7: Sample data of teaching content.

Sample number	Conceptual theory is accurate	Full of content	Focus on practice	Depth of expertise
1	0.94	0.94	0.89	0.71
2	0.56	0.64	0.81	0.59
3	0.92	0.79	0.35	0.71
4	0.68	0.81	0.86	0.92
5	0.75	0.72	0.71	0.83
6	0.70	0.63	0.74	0.47
7	0.82	0.87	0.99	0.90
8	0.91	0.92	0.48	0.95
9	0.88	0.42	0.61	0.55
10	0.70	0.62	0.56	0.65

of the new classroom quality monitoring model and observes the superiority of the new classroom quality monitoring model in English education [25]. In order to ensure the objectivity of the experimental data, the three sets of data were tested separately. The main test content included 5 parts: listening, reading, cloze, translation, and speaking. The specific experimental data are as follows:

From the data in Table 2 and Figure 3, we can conclude that under the traditional teaching mode, the average scores of the experimental group, control group, and standard group are 66.2, 66.8, and 68, respectively, and there is no big difference in the scores of the three groups. Among them, the standard group has the highest score among the three groups. The listening modules of the three groups are the highest among all the test modules. The standard group has a listening score of up to 70 points, and the control group has a listening score of 69 points. The listening score of the experimental group is 68 points. The other test modules are relatively lower, the overall performance presents a lower level, and the students' learning of English is poor.

Based on the data in Table 3 and Figure 4, we can conclude that under the new classroom quality monitoring mode, the average scores of the experimental group, control group, and standard group are 85.5, 86.2, and 89, respectively. Among them, the standard group had the highest scores in listening, reading, and cloze, which were 88, 89, and 90, respectively, and the control group had the highest score in oral English, with 87 points. Compared with the traditional teaching model, the average score of the experimental group has increased by 19.3, the average score of the control group has increased by 19.4, and the average score of the standard group has increased by 20. Overall, the students' English learning level has been greatly improved. The experimental results also show that the new classroom quality monitoring model can improve the quality of teaching.

4.2. Simulation Experiment

4.2.1. Data Collection. In order to test the quality of English teaching in a certain university, the experiment combines the results of teachers' English teaching evaluation to find out the factors affecting English teaching and adopts a questionnaire survey. The undergraduates of a university were taken as an example. The questionnaires are distributed by class. The main content of the questionnaires is the teaching quality evaluation system, which mainly includes multiple-choice questions and short answer questions. The reliability of the returned questionnaires is analyzed. The division of reliability coefficients is shown in Table 4.

The stronger the reliability and consistency of the two indicators in the reliability analysis, the smaller the error and the higher the reliability; the fewer problems will arise after the questionnaire is issued.

4.2.2. Data Preprocessing. According to the collected questionnaire results, the evaluation system of English teacher classroom quality is divided into first-level indicators and

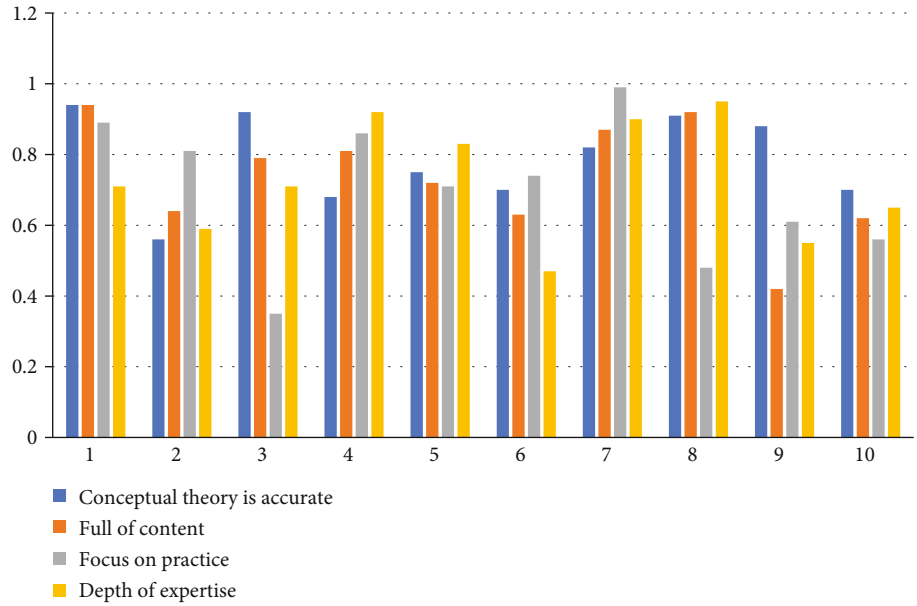

Figure 7: Sample results of teaching content.

second-level indicators. The first-level indicators can be subdivided into 5 levels, and the second-level indicators can be subdivided into 18 levels. The questionnaire is scored by students, and the results are collected to obtain experimental data. The experiment is scored from four aspects: teacher quality, teacher's teaching attitude, teaching content, and teaching method. The specific experimental results are as follows:

(1) Teacher Quality. Based on the data in Table 5 and Figure 5, we can conclude that the reliability coefficient of sample number 1 is always maintained at 0.80-0.95. The experimental data representing sample number 1 is very reliable, and the reliability coefficients with clear educational goals are maintained. Above 0.7, it shows that most teachers' educational goals are very clear. The solid reliability coefficient of English majors remains in the range of 0.70-0.90, which accounts for most of the sample. The teacher's teaching level only has a small number of reliability coefficients, a lower situation.

(2) Teaching Attitude. Based on the data in Table 6 and Figure 6, we can conclude that the reliability coefficient of No. 1 is always maintained at 0.80-0.95, which means that the experimental data of sample No. 1 is very reliable, and the reliability coefficient of sample No. 1 is serious in teaching, reaching 0.92, which not only shows the seriousness of the teacher's teaching and the credibility of the experimental data. Generally speaking, the reliability coefficients of teachers' patience and enthusiasm for answering questions, seriousness in teaching, and rigorous attitude are mostly maintained in the range of 0.70-0.90, which shows the authenticity of the experimental data.

(3) Teaching Content. Based on the data in Table 7 and Figure 7, we can conclude that the theoretical accuracy reliability coefficient of sample number 1 reaches 0.94, and the other reliability coefficients of number 1 also remain above 0.70, indicating the authenticity of the experimental data. In general, the overall reliability coefficient of the teaching content sample data is mostly maintained within the range of 0.70-0.95, and only a few parts show a low situation, which also shows that the overall status of the diversity of teaching content is good.

Table 8: Sample data of teaching methods.

Sample number	Increased interest in learning	Knowledge understanding	Problem analysis ability	Improved ability to innovate
1	0.83	0.92	0.94	0.87
2	0.56	0.54	0.51	0.85
3	0.57	0.62	0.43	0.51
4	0.93	0.82	0.91	0.87
5	0.85	0.86	0.73	0.68
6	0.79	0.63	0.87	0.89
7	0.93	0.92	0.97	0.92
8	0.83	0.96	0.97	0.98
9	0.79	0.89	0.68	0.59
10	0.62	0.65	0. 68	0.76

(4) Teaching Method. According to the data results in Tables 8, 9 and Figure 8, we can conclude that the overall reliability coefficient of the teaching method sample data presents a relatively high situation, and the reliability coefficient of the improvement of innovation ability can reach up to 0.98, indicating the authenticity and authenticity of the experimental data. In effectiveness, the reliability coefficient of sample data 1 presents a high state.

Table 9: Evaluation criteria table.

	Metrics	Formula
Accuracy	The accuracy rate measurement standard refers to the ratio of recommended English teaching resources to the number of recommended teaching resources. The larger the index value, the more accurate the recommendation result [26].	$\text{Precision} = \text{hits}_u/\text{recset}_u$
Recall rate	The recall rate standard refers to the ratio of recommended English teaching resources to the theoretical maximum number of hits. The larger the index value, the more accurate the recommendation result.	$\text{Recall} = \text{hits}_u/\text{testset}_u$
$F1$ measurement	The $F1$ measurement index can effectively balance the accuracy rate and the recall rate by favoring the smaller value. The larger the index value, the more accurate the recommendation result.	$F1 = 2 \times \text{precision} \times \text{recall}/\text{precision} + \text{recall}$

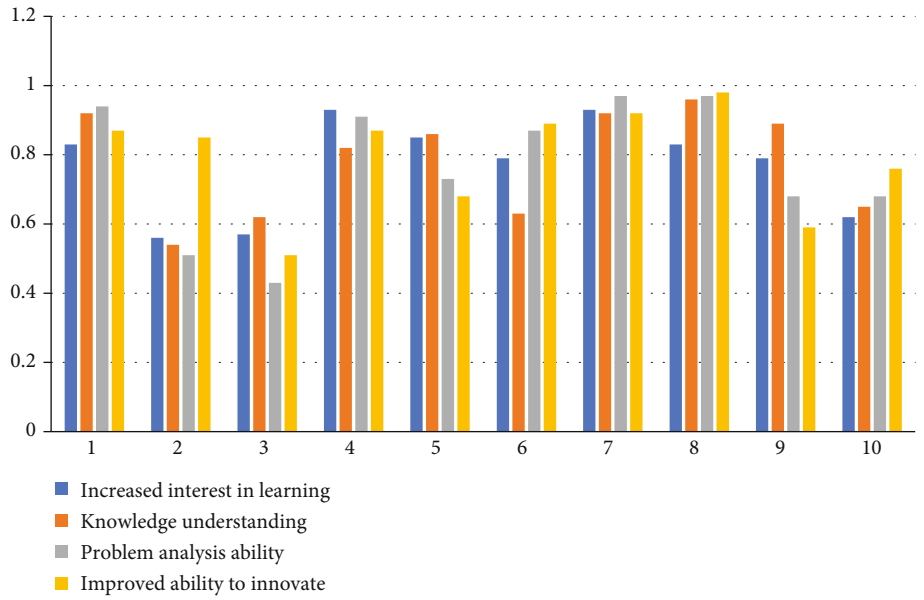

Figure 8: Teaching method sample results.

Table 10: Performance of each model on the test set.

Model	Accuracy rate	Precision rate	Recall rate	$F1$ score
New classroom quality monitoring	99.71%	98.83%	97.74%	98.82%
BP neural network teaching	51.64%	51.29%	97.83%	67.30%
Genetic Algorithm Teaching	88.21%	87.81%	88.62%	89.21%
Adaptive teaching	90.12%	92.21%	90.26%	91.32%
ASS model teaching	97.97%	98.10%	97.89%	98.00%

4.3. Model Performance Testing

4.3.1. Evaluation Criteria

4.3.2. Experimental Results and Analysis. In order to test the performance of the new classroom quality monitoring model, we run the model proposed in the article and other teaching models in different dimensions to test the superiority of the model. The experiment runs each model on the test set and the mixed test set and records the experimental data. The specific experimental data are shown in Tables 10 and 11.

The test set is used to evaluate the generalization ability of the final model, and the hybrid test set is used to adjust the hyperparameters of the model and preliminarily evaluate the ability of the model.

According to the data in Figure 9, we can conclude that the accuracy rate of the new classroom quality monitoring

Table 11: Performance of each model on the mixed test set.

Model	Accuracy rate	Precision rate	Recall rate	$F1$ score
New classroom quality monitoring	98.01%	98.67%	97.73%	98.20%
BP neural network teaching	67.70%	66.37%	70.75%	69.55%
Genetic Algorithm Teaching	90.49%	91.25%	89.63%	89.83%
Adaptive teaching	92.68%	91.49%	94.75%	90.77%
ASS model teaching	96.72%	98.54%	95.53%	97.01%

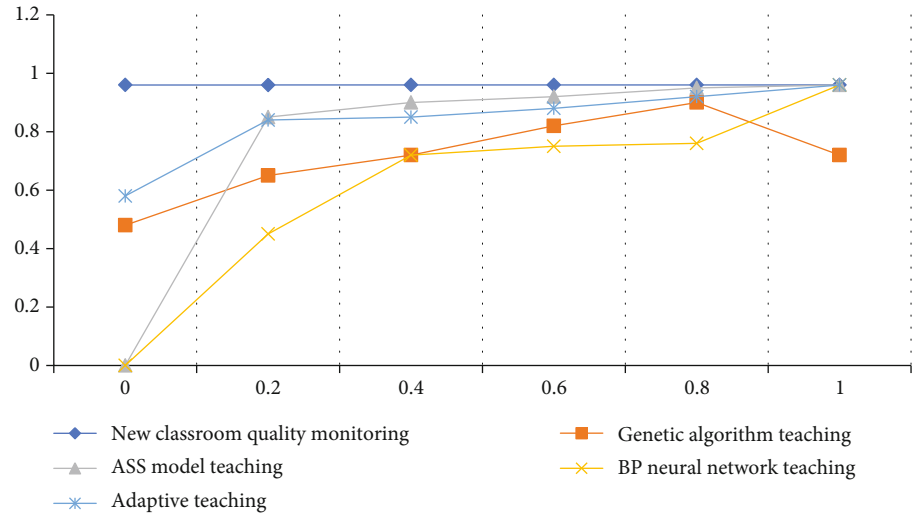

Figure 9: ROC curve on the test set.

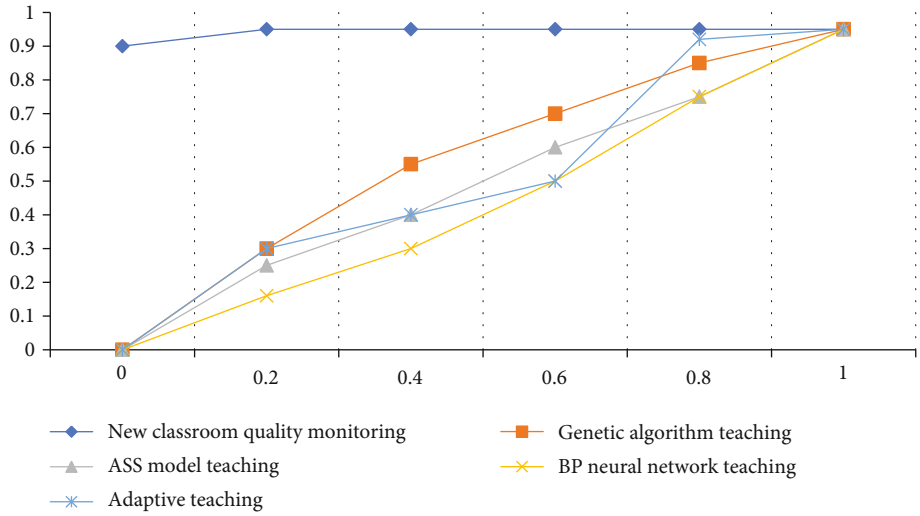

Figure 10: ROC curve on the mixed test set.

teaching model proposed in the article is the highest among several models, which can reach 99.71%, indicating that the teaching performance of the new classroom quality monitoring teaching model is the highest. Among them, the accuracy of the BP neural network teaching model is the lowest at 51.64%, indicating that the detection efficiency of the BP neural network teaching model is not good enough.

According to the data in Figure 10, we can conclude that whether it is in the test set or the mixed test set, the accuracy of the new classroom quality monitoring model proposed in

the article is the highest among the three models, and it is the highest on the mixed test set. The highest accuracy rate can reach 98.01%, and the accuracy rate can reach 98.67%, which also illustrates the superiority of the performance of the new classroom quality monitoring model. ROC curve combines sensitivity and specificity as a graphical method, which can accurately reflect the relationship between specificity and sensitivity of analytical methods, and is a comprehensive representative of the accuracy of the test. ROC curve does not fix the classification threshold and allows the existence of intermediate state, which is helpful for users to combine professional knowledge, weigh the impact of missed diagnosis and misdiagnosis, and select a better cut-off point as a diagnostic reference value. To provide an intuitive comparison between different tests under a common scale, the more convex the ROC curve is, the closer it is to the upper left corner, indicating that its diagnostic value is greater, which is conducive to the comparison between different indicators.

5. Conclusion

At present, there are more and more English learners, and the English grammar module is also an important part of the English learning process. However, due to the particularity of English teaching, there are still some shortcomings in English teaching in many universities in our country. With multifaceted support, there is still a lot of room for improvement in English teaching. Therefore, we should combine the current problems and make in-depth summaries to create a more intelligent and accurate English teaching model to make English teaching easier and more efficient.

The characteristics of college English teaching in China in the transitional period are that the professional boundaries are not clear enough, the basic teaching is not paid attention to, the teaching mode is diversified, and the teaching effect is improved. After the transformation, college English teaching is more in line with the needs of society and the times than before. College English teaching in the transitional period can improve college students' English learning ability by improving college students' interest in English courses, changing college English teachers' teaching ideas, improving college English teachers' professional quality, improving college English teaching equipment and facilities, and paying attention to the application training of college English teaching. In the transitional period, college English teachers must be student-centered in their teaching work.

Data Availability

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

Conflicts of Interest

The authors declared that they have no conflicts of interest regarding this work.

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