

Retraction

Retracted: Monitoring and Analysis of English Classroom Teaching Quality Based on Big Data

Security and Communication Networks

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] Z. Xun, "Monitoring and Analysis of English Classroom Teaching Quality Based on Big Data," *Security and Communication Networks*, vol. 2022, Article ID 5365807, 9 pages, 2022.

Research Article

Monitoring and Analysis of English Classroom Teaching Quality Based on Big Data

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In order to deal with the problems of low evaluation accuracy and long evaluation time in the traditional English classroom teaching quality monitoring and evaluation methods, this study proposes an English classroom teaching quality monitoring and evaluation method based on big data. According to the selection principle of English classroom teaching quality monitoring factors, this study analyzes the English classroom teaching quality monitoring factors, constructs the English classroom teaching quality monitoring index system, obtains the monitoring index data, filters and compresses the monitoring data, and takes the preprocessed English classroom teaching quality monitoring data as the evaluation index. This study uses the principal component analysis method to calculate the weight of the English classroom teaching quality evaluation index and constructs an English classroom teaching quality evaluation model. The simulation results show that the proposed method has high accuracy and short evaluation time.

1. Introduction

The rapid development of modern information technology has brought great changes to the world. It has changed people's way of life, work, and communication and affected the quality of education with its flexibility, convenience, and effectiveness. The Internet provides learners with unprecedented learning opportunities. People can not only share learning resources but also overcome the obstacles of time and space—all of which bring new prospects for education and teaching [1]. With the rapid development of network information technology, great changes have taken place in the concept of education. The goal of realizing the rapid development of education in China is to promote the modernization of education with network information technology. English teaching in China runs through the whole educational process of basic education and higher education. It is one of the key contents of teaching. The rapid development of information technology has brought new hopes and challenges to English education in China. For English teaching circles, information-based teaching reform has attracted much attention. The integration of information

technology and curriculum is the dominant way of curriculum learning in the information age. The integration of information technology and English curriculum is an important way to promote the transformation of English from traditional to modern teaching [2].

With the rapid development of higher education, the guarantee and improvement of its education quality have attracted the attention of the whole society. As the most extensive public basic curriculum, English has been highly valued by the Ministry of education. Since April 2003, the Ministry of education has officially launched the “teaching quality and teaching reform project in Colleges and universities,” which lists English teaching reform as the second of the four tasks of the “quality project”. Some opinions on further deepening undergraduate teaching reform and comprehensively improving teaching quality issued by the Ministry of education clearly require “To further promote and implement English teaching reform, we should comprehensively promote the achievements of English teaching reform, make full use of high-quality teaching software and teaching resources, deepen the reform of English teaching contents and teaching methods, promote colleges and

universities to establish a new model of English Teaching under the network environment, and earnestly promote the improvement of students' Comprehensive English application ability, especially their listening and speaking ability. We should strengthen the training of English teachers, Create a group of backbone teachers for English teaching reform" [3]. The requirements of the Ministry of education have driven the upsurge of English teaching reform. At the same time, many schools have increased their research on English teaching means, teaching contents, and teaching methods, but the research on the quality monitoring and guarantee system of English teaching is not deep and perfect, mostly focusing on the discussion of teaching mode and the exploration of ways to improve the quality of English teaching. The research on the quality monitoring system of English teaching needs to be strengthened [4].

Literature [5] takes students as the evaluation subject to establish an evaluation index system suitable for College English teaching. Since most of the evaluation systems are personal qualitative indexes and the evaluation value is fuzzy, a College English classroom teaching quality evaluation method based on language phrases and triangular fuzzy numbers is proposed, and an example is analyzed for four English teachers in a university. The algorithm steps are clear. It can be directly realized by computer input, which is convenient to be popularized in English teaching evaluation. Literature [6] proposes a multimedia teaching quality evaluation method based on grey correlation analysis and neural network. First, the current situation of multimedia teaching quality evaluation is analyzed, and the multimedia teaching quality evaluation index is constructed. Then, the grey correlation analysis method is used to determine the weight of the multimedia teaching quality evaluation index, and the neural network is used to establish the classifier of multimedia teaching quality grade. The multimedia teaching quality evaluation is completed. However, the accuracy of the above two methods in evaluating the quality of English classroom teaching is low, resulting in the unsatisfactory evaluation effect. Literature [7] proposes an Internet teaching quality evaluation method based on evidence theory and neural network. According to the current basic situation of Internet teaching, following the combination of qualitative and quantitative indicators, an Internet teaching quality evaluation system including enterprise operation level, university cooperation degree, teachers' teaching ability, students' learning degree, and environmental support is constructed. On this basis, taking advantage of the adaptability, self-organization, and self-study habit of BP neural network model, as well as the uncertain information processing advantages of D-S evidence theory, and effectively combining the evaluation results based on BP neural network model and D-S evidence theory, this study comprehensively evaluates the quality of Internet teaching. Literature [8] proposes a method of university teaching quality evaluation based on data mining algorithm. This method first studies and analyzes the relevant literature of current university teaching quality evaluation, establishes the influencing factors of university teaching quality

evaluation, then collects the data of influencing factors of university teaching quality, and determines the university teaching quality level through experts. Finally, the BP neural network of data mining technology is introduced to train the learning samples to form the university teaching quality evaluation model, and the advantages of the university teaching quality model are analyzed through specific examples. However, the above two methods take a long time to evaluate the quality of English classroom teaching, resulting in low evaluation efficiency.

In view of the problems existing in the above methods, this study proposes an English classroom teaching quality monitoring and evaluation method based on big data and verifies the effectiveness of this method through simulation experiments, which lays a certain foundation for English classroom teaching and the improvement of English achievement. Big data, which is also known as huge data, refers to the huge amount of data involved, which cannot be retrieved, managed, and processed within a reasonable time through mainstream software tools. At present, big data technology has been widely used in many fields, especially in commercial fields, such as banking, telecommunications, and e-commerce. Big data technology can solve many problems, including marketing strategy formulation, background analysis, and enterprise management crisis. The common methods of big data mining include classification, regression analysis, clustering, association rules, neural network methods, and web data mining.

In order to deal with the problems of low evaluation accuracy and long evaluation time in the traditional English classroom teaching quality monitoring and evaluation methods, this study puts forward an English classroom teaching quality monitoring and evaluation method based on big data. The contributions of this study can be given as follows:

- (1) This study concerns the problem of monitoring and analysis of English classroom teaching quality which is important but is very difficult to solve
- (2) This study introduces the big data method into the problem of monitoring and analysis of English classroom teaching quality

2. Selection Principles and Analysis of Monitoring Factors for English Classroom Teaching Quality

2.1. Selection Principles of Monitoring Factors for English Classroom Teaching Quality

2.1.1. Scientific Principle. The analysis of English classroom teaching quality monitoring factors should be connected with the actual situation of English classroom teaching. Through the sorting and classification of big data related to English classroom teaching quality, we should strive to scientifically and reasonably analyze English classroom teaching quality monitoring factors and improve the scientificity of education quality monitoring factors [9].

2.1.2. Principle of Comprehensiveness. The analysis and selection of English classroom teaching quality monitoring factors should comprehensively reflect the actual situation and existing problems of English classroom teaching from the actual requirements of English classroom teaching resources, talent training, and teacher team construction.

2.1.3. Practical Principle. The monitoring factors of English classroom teaching quality meet the development requirements of English classroom teaching and pay attention to the operability and application value of education quality monitoring factors, and the monitoring factors can be applied to the practice of English classroom teaching to improve the quality of English classroom teaching [10].

2.1.4. Dynamic Principle. The quality of English classroom teaching is affected by many factors. The monitoring factors of English classroom teaching quality need to comply with the principle of dynamic adjustment and make dynamic adjustment according to the situation of colleges and universities, so as to better promote the diagnosis and improvement of English classroom education and promote the continuous improvement of English classroom teaching quality.

2.2. Analysis on the Factors of English Classroom Teaching Quality Monitoring. With the support of big data technology, this study analyzes the monitoring factors of English classroom teaching quality according to the school running resources, education and teaching, teacher team construction, students' learning status, and school running effect of colleges and universities.

2.2.1. School Resources. The school running resource factors related to English classroom teaching quality monitoring mainly include basic education facility resources, software resources, and practical training resources [11]. First is basic education facilities and resources. It mainly analyzes the infrastructure resources of colleges and universities, such as the number of ordinary classrooms, multimedia classrooms, and laboratories, so as to provide necessary resource support for English classroom teaching activities and analyze the status of educational facilities through data. Second is software resource. This study mainly makes a comprehensive analysis of the software resource data related to English classroom teachings, such as books, information platform, quality monitoring system, and information teaching management. Using the monitoring data of software resources, grasp the situation of software resources related to English classroom teaching. Third is the practical training resource. Mainly through the data analysis of teaching resources in relevant practical teaching and training places in Colleges and universities, we can grasp the level of practical training resources in English classroom teaching. Through the data analysis of practical training resources, monitor the situation of practical training resources related to English classroom teaching [12].

2.2.2. Education and Teaching Factors. It mainly includes talent training scheme, curriculum system, textbook construction, on-campus practice and training, graduation design guidance, and other factors in the monitoring factors of English classroom teaching quality. First is the talent training program. The talent training plan reflects the connection between English classroom teaching talent training and social talent demand. Data analysis is mainly carried out through the revision of the talent training program, and the design and formulation level of the talent training program are improved through the data monitoring of the talent training program. The second is the curriculum system. Mainly through the data analysis of the curriculum setting of various majors in Colleges and universities, grasp the setting principles of the curriculum system, and analyze the data conditions of professional basic courses, professional compulsory courses, professional elective courses, professional general courses, and so on. Third is the construction of teaching materials. It mainly analyzes the data of teaching materials used by various majors, the utilization rate of national planning teaching materials, and provincial planning teaching materials, and the data of various teaching materials at all levels compiled by school teachers. Through data analysis, it reflects the construction of English classroom teaching materials. Fourth is the teaching situation of practical training and postpractice in the school. This study mainly analyzes the data of practical teaching related to English classroom teaching through the data monitoring of on-campus practical training courses and students' on-the-job practice teaching guidance. Fifth, the guidance of the graduation project, through the graduation project, comprehensively reflects the teaching situation of English majors, uses data monitoring to analyze the problems, and causes the teaching process of the graduation project, so as to improve the quality of the graduation project guidance [13].

2.2.3. Factors Affecting Students' Learning Status. First is the students' academic completion rate. Through the monitoring of English majors' academic completion, mainly through data analysis, this study reflects the academic completion rate of English classroom teaching students. The data of enrollment, graduation, and employment are monitored and analyzed. Analyze students' learning status from the data of academic completion, monitor the majors and students with low academic completion rate, and grasp the reasons for the low academic completion rate. Second, students' academic performance complements the academic completion rate and highlights the quality and effect of students' academic completion [14]. According to the academic achievement, it is divided into excellent, good, medium, qualified, and unqualified grades, analyze the detailed data of academic achievement of various majors, grades, and specific courses, and monitor the status of academic achievement. Data comparative analysis is used to reflect the academic performance of different majors, different grades, and related courses. The third is the data of student skills research. It is mainly monitored by the number of candidates, passing rate, excellence rate, and other data of relevant

English certificates. Through data analysis and comparison, master the application and acquisition of various skill certificates with a high demand of students, promote the cultivation and certification of students' English skills, and improve students' employment competitiveness. Fourth is data on students' continuing education and further education. It mainly analyzes the data of students' participation in self-study examination and undergraduate enrollment. Through the analysis of students' academic learning data, grasp students' enthusiasm, demand, existing problems, reasons, and other aspects. Fifth is the quality of students' employment. It is mainly monitored from the aspects of employment rate and employment quality. Through the analysis and comparison of the employment data of students of various majors in higher vocational colleges, and the comparative analysis of employment data between majors and years, we can grasp the employment competitiveness of English classroom teaching quality [15].

3. Construction of English Classroom Teaching Quality Monitoring Index System

The construction of English classroom teaching quality monitoring index system is the core element of monitoring. It is an organic whole composed of various monitoring indicators and monitoring standards at all levels, which is conducive to the quantitative and qualitative analysis of English classroom teaching quality. According to the analysis results of English classroom teaching quality monitoring factors, this study determines to build an English classroom teaching quality monitoring index system from four aspects: school management quality, teachers' teaching process, students' learning behavior, and academic quality [16].

3.1. School Management Quality. School management quality indicators include teaching staff, teaching environment, and teaching conditions. The specific indicators are shown in Table 1.

3.2. English Teachers' Teaching Process. English teachers' teaching process indicators include English teaching content, English teaching attitude, English teaching skills, and English teaching effect. The specific indicators are shown in Table 2.

3.3. Students' Learning Behavior. The indicators of students' learning behavior include learning objectives, learning performance, style of study, learning effect, and ideological and moral character. The specific indicators are shown in Table 3.

4. Pretreatment of Monitoring Data of English Classroom Teaching Quality

Based on the collected monitoring data of English classroom teaching quality, this chapter is mainly divided into two

parts: data filtering processing and data compression sensing processing. The former mainly removes the collected data noise, and the latter improves the efficiency of English classroom teaching quality evaluation [17]. The following is a specific analysis.

4.1. Data Filtering. The data filtering method is removed by empirical mode decomposition [18]. The specific process is as follows.

Step 1. Input the collected English classroom teaching quality monitoring data $x(t)$.

Step 2. Obtain $x(t)_{\max}$ (maximum point) and $x(t)_{\min}$ (minimum point) from $x(t)$.

Step 3. Fit $x(t)_{\max}$ and $x(t)_{\min}$ to obtain the upper envelope $s_{\max 1}(t)$ and the lower envelope $s_{\min 1}(t)$.

Step 4. Calculate the average value $m(t)$ of $s_{\max 1}(t)$ and $s_{\min 1}(t)$.

$$m(t) = \frac{[s_{\max 1}(t) + s_{\min 1}(t)]}{2}. \quad (1)$$

Step 6. Calculate the difference $y(t)$ between $x(t)$ and $m(t)$.

$$y(t) = x(t) - m(t). \quad (2)$$

Step 7. Judge whether $y(t)$ meets the two conditions of IMF component. If not, repeat the above steps; otherwise, $y(t)$ is an IMF component obtained by decomposition, which is recorded as IMF(t);

Step 8. Subtract IMF(t) from $x(t)$ and repeat the above steps to continue decomposition until the m -th IMF component is a monotonic function or $<$ the preset value, and the decomposition is completed [19].

Step 9. Since the noise generally appears in the high-frequency component and the effective component appears in the low-frequency part, there is a boundary index value between the two parts.

Step 10. Calculate the correlation coefficients between all IMF components and $x(t)$ and sort them accordingly.

Step 11. Judge whether the correlation coefficient of each IMF component is \leq the boundary index value? When it is less than or equal to the boundary index value, it is considered as noise data, which is removed and reconstructed to complete denoising.

4.2. Compressed Sensing. When collecting a large number of English classroom teaching quality monitoring data, it will occupy a large number of communication resources, resulting in the decline of communication efficiency. At the

TABLE 1: Management quality index system.

Primary index	Secondary index
English teaching staff z_1	English teachers, teaching level, professional ability, teachers' ethics, and style z_{11}
	English teachers, teaching ability, teaching research z_{12}
	English teachers, development and service attitude, ability z_{13}
	English teacher structure z_{14}
Teaching environment z_2	Investment and distribution of English teaching funds z_{21}
	English teaching plan planning and training scheme design z_{22}
	Openness of English teaching facilities z_{23}
	Number of quality courses z_{24}
	Social resource width z_{25}
Teaching conditions z_3	Setting of practical teaching z_{31}
	Average reading rate of library z_{32}
	Compliance with school discipline and rules z_{33}

TABLE 2: Index system of English teaching process.

Primary index	Secondary index
English teaching content English teaching attitude English teaching skills English teaching effect u_1	English teaching objectives are clear, meet the requirements of English teaching content, highlight the key and difficult points, and make full reasoning u_{11}
	The professor has clear logic, clear organization, rich and skilled content, reasonable arrangement, and appropriate examples u_{12}
	Carefully arrange and correct homework, and regularly organize Q & A u_{13}
	Integrate theory with practice and pay attention to guiding students to think actively u_{14}
English teaching content English teaching attitude English teaching skills English teaching effect English teaching content u_2	English teachers are rigorous in study, strict in teaching, dignified in appearance, harmonious in atmosphere, and respect students u_{21}
	Fully prepared lessons, enthusiastic, serious, and devoted u_{22}
	Abide by teaching discipline and go to and from class on time u_{23}
English teaching attitude English teaching skills English teaching effect u_3	Mandarin teaching, accurate and vivid language, neat blackboard writing, and reasonable layout u_{31}
	English teaching methods are flexible and diverse and pay attention to cultivating students' ability to analyze and solve problems u_{32}
	Be able to make rational use of various teaching aids such as network and multimedia u_{33}
English teaching content u_4	Be able to complete teaching tasks, and students can accept and master the course content u_{41}
	It promotes the improvement of students' thinking ability and learning ability u_{42}

TABLE 3: Student learning behavior index system.

Primary index	Secondary index
Learning objectives v_1	Clear learning purpose and correct learning attitude v_{11}
Learning performance v_2	Adhere to preview before class, listen carefully in class, and review carefully after class v_{21}
	Finish the homework on time and correct it in time v_{22}
	Speak actively in class and take notes carefully v_{23}
Learning effect v_3	Ability to understand, think independently, analyze, and solve problems v_{31}
Ideological and moral character v_4	Respect teachers and be willing to help others v_{41}
	Collective sense of honor v_{42}

same time, the congestion of a large number of data will also cause data loss, which will reduce the efficiency of English classroom teaching quality evaluation. In order to solve the

above problems, English classroom teaching quality monitoring data compression perception is carried out; that is, through compression, the features in the data are extracted

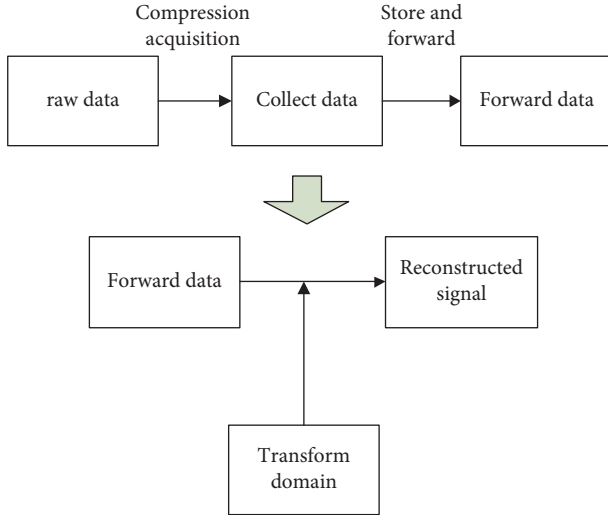


FIGURE 1: Principle and flow of compressed sensing.

and then evaluated [20]. The principle of the compressed sensing process is shown in Figure 1.

Compressed sensing is mainly divided into three parts.

4.2.1. Sparse Representation. The monitoring data of English classroom teaching quality are expressed sparsely, and the formula is as follows:

$$x' = \psi s, \quad (3)$$

where x' represents the sparse expression of English classroom teaching quality monitoring data x ; ψ is the sparse basis of x ; s represents the transformation coefficient vector of x under ψ .

4.2.2. Measurement Matrix. The function of the measurement matrix is to reduce the dimension of English classroom teaching quality monitoring data and ensure the minimum information loss of x . Considering x , the projection data y is obtained by measuring matrix Φ .

$$y = \Phi x. \quad (4)$$

4.2.3. Data Recovery. When the monitoring data of English classroom teaching quality reaches the target node after forwarding, it is necessary to restore the compressed sensing data to its original state through a reverse solution. The reverse solution formula is as follows:

$$\hat{x} = \arg \min_x \|x\|_0 \text{ s.t. } y = \Phi x = \Phi \Psi \alpha, \quad (5)$$

where \hat{x} represents the number of nonzero elements in x ; α stands for thinning.

5. Evaluation of English Classroom Teaching Quality

Taking the preprocessed English classroom teaching quality monitoring data as the evaluation index, the weight of the English classroom teaching quality evaluation index is calculated by using the principal component analysis method. According to the calculation results, an English classroom teaching quality evaluation model is constructed. First, the relative importance of each evaluation index is evaluated in Tables 1–3. The scale of the evaluation set is 1 to 9. A judgment matrix is built according to the meaning given by the evaluation set.

Assuming that the evaluation factors of English classroom teaching quality of the same type are one layer, n factor C_1, C_2, \dots, C_n in one layer is compared, and the impact on a factor in the other layer is assumed to be 0. Two factors C_i and C_j each time are taken and used a_{ij} to represent the ratio of the impact of C_i and C_j on O , and the judgment matrix A formed is

$$A = \begin{bmatrix} a_{11} & \dots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{n1} & \dots & a_{nn} \end{bmatrix}. \quad (6)$$

Among them, $A = (a_{ij})_{n \times n}$, $a_{ij} > 0$, $a_{ji} = 1/a_{ij}$, $i, j = 1, 2, \dots, n$.

Each column in the normalized judgment matrix is as follows:

$$\begin{cases} \bar{b}_{ij} = \frac{b_{ij}}{\sum_{i=1}^n b_{ij}}, \\ i = 1, 2, \dots, n, \end{cases} \quad (7)$$

where \bar{b}_{ij} represents the normalization result of the judgment matrix column; b_{ij} represents the judgment matrix column; n represents a positive integer; i represents the sequence number of the column.

For the matrix normalized by column, sum by row is implemented, as follows:

$$\left\{ \bar{W} = \sum_{j=1}^n \bar{b}_{ij}, j = 1, 2, \dots, n, \right. \quad (8)$$

where \bar{W} represents the sum result by line and j stands for the number of rows.

The random average consistency index corresponding to the principal component is searched, and the consistency proportion is calculated as follows:

$$\begin{cases} W_i = \frac{\bar{W}}{\sum_{i=1}^n \bar{W}}, \\ i = 1, 2, \dots, n, \end{cases} \quad (9)$$

where W_i represents the principal component.

According to the above formula, the weight of English classroom teaching quality evaluation index is

calculated, and the weight coefficient is obtained as follows:

$$\lambda_{\max} = \sum_{i=1}^n \frac{n}{W_i}, \quad (10)$$

where λ_{\max} represents the weight coefficient.

The process of constructing the evaluation model of English classroom teaching quality is as follows:

$$R = \frac{\text{cov}(a, b)}{\sigma_a \sigma_b W_j}, \quad (11)$$

where R represents the evaluation result, $\text{cov}(a, b)$ represents the covariance between the two evaluation indicators, and σ_a and σ_b represent the variance between the two indicators, respectively.

6. Simulation Experiment Analysis

In order to verify the effectiveness of the big data based on English classroom teaching quality monitoring and evaluation method proposed in this study in practical application, Hadoop platform is selected to build an English classroom teaching quality monitoring cloud platform, and a simulation analysis is carried out under the English classroom teaching quality monitoring cloud platform. The cloud platform for English classroom teaching quality monitoring is shown in Figure 2. In this figure, the input data may be any type of the user, such as the text, figures, and any other types.

According to this figure, we can establish a cloud platform for English classroom teaching quality monitoring. By building a cluster environment and using Hadoop distributed structure mode, the data are stored in blocks in each node of the cluster for distributed computing. To build a cluster environment, the specific operation process is as follows:

6.1. Preparation Stage

- (1) Select 6 servers as the building tools of the cluster environment, and install a Linux system for each machine
- (2) Modify the host name of each machine and close the firewall
- (3) Install JDK on each machine and configure the JDK environment for it

6.2. Installation Phase

- (1) Install Hadoop on each machine (Hadoop version 2.6.5 is selected for this project) and configure Hadoop installation environment.
- (2) To configure the Hadoop running environment, you mainly need to configure `hadoop-env.sh`, `core-site.xml`, `hdfs-site.xml`, `mapred-site.xml`, and `yarn-site.xml`. `Hadoop-env.sh` mainly configures the Hadoop running environment, such as `export/usr/`

`local/jdk1.7.0_25`. `Core-site.xml` mainly configures the IP and port of the namenode, `hdfs-site.xml` mainly sets the number of auxiliary nodes, and `mapred-site.xml` mainly configures the scheduling framework of MapReduce. Therefore, this environment must be configured to use MapReduce. Finally, `yarn-site.xml` implements yarn scheduling, which is a new function module after Hadoop 2. X. Its main function is to record the log completed in MapReduce.

In addition to the above configuration, it is also necessary to select one PC as the master node, that is, as the name node, and the other PCs as the slave node. The installed distributed environment includes five nodes. The primary node includes resource manage, name node, and secondary name node, and the secondary node includes node manage and data node. Each node undertakes its own utility. After the Hadoop cluster environment is built, other auxiliary tools are started to install gradually, such as hive, sqoop, mysql.

Under the above background, the monitoring and evaluation method of English classroom teaching quality based on big data proposed in this study, the evaluation method of College English classroom teaching quality based on triangular fuzzy number proposed in literature [5], and the multimedia teaching quality evaluation method based on grey correlation analysis and neural network proposed in literature [6] are used to compare and analyze the accuracy of English classroom teaching quality evaluation. The comparison results are shown in Figure 3.

According to Figure 3, the accuracy of English classroom teaching quality evaluation of the big data based on English classroom teaching quality monitoring and evaluation method proposed in this study can reach 100%, while the accuracy of English classroom teaching quality evaluation of the triangular fuzzy number based on College English classroom teaching quality evaluation method proposed in literature [5] is only 60%, and literature [6] The proposed multimedia teaching quality evaluation method based on grey correlation analysis and neural network has the highest accuracy of English classroom teaching quality evaluation, which is only 80%, indicating that the English classroom teaching quality evaluation accuracy of the English classroom teaching quality monitoring and evaluation method based on big data proposed in this study is the highest.

In order to further verify the effectiveness of this method, the monitoring and evaluation method of English classroom teaching quality based on big data proposed in this study, the evaluation method of College English classroom teaching quality based on triangular fuzzy number proposed in literature [5], and the multimedia teaching quality evaluation method based on grey correlation analysis and neural network proposed in literature [6] are adopted. A comparative analysis is made on the evaluation time of English classroom teaching quality, and the comparison results are shown in Figure 4. In this figure, the blue dotted line indicates the result of the method mentioned in reference [6]. The solid pink lines indicate the result of the method mentioned in reference [5]. The green dotted line indicates the result of the method proposed in this study.



FIGURE 2: Cloud platform for English classroom teaching quality monitoring.

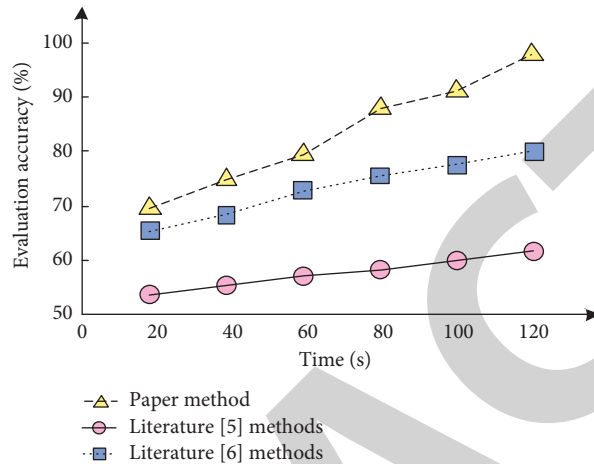


FIGURE 3: Comparison results of evaluation accuracy of three methods.

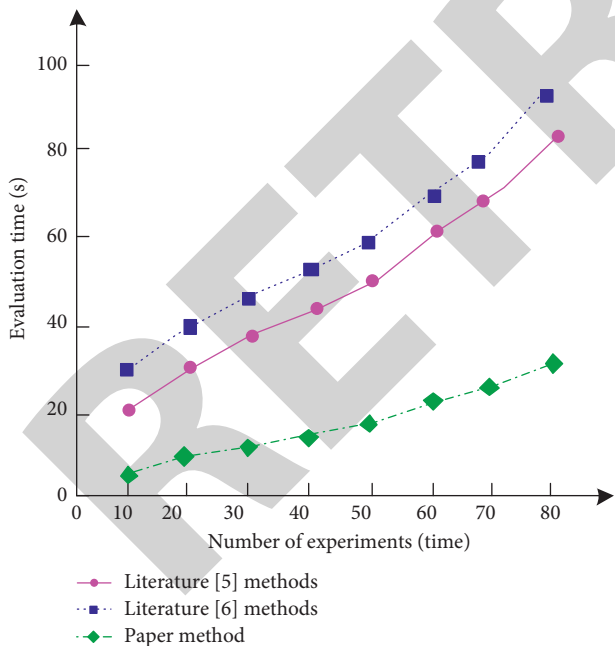


FIGURE 4: Comparison results of evaluation time of three methods.

It can be seen from Figure 4 that the English classroom teaching quality evaluation time of the big data based on English classroom teaching quality monitoring and evaluation method proposed in this study is within 30 s, which is

better than the triangular fuzzy number based on College English classroom teaching quality evaluation method and literature [6] proposed in literature [5]. The proposed multimedia teaching quality evaluation method based on grey correlation analysis and neural network has a short time for English classroom teaching quality evaluation.

7. Conclusion

Customers in education are different from those in business, and their scope is significantly larger than that of well-known customers in business. Therefore, the quality of English education can also be defined as striving to improve the comprehensive English application ability and autonomous learning ability of primary customer students in English teaching. This study proposes a monitoring and evaluation method of English classroom teaching quality based on big data. The simulation results show that this method has high accuracy and short evaluation time. The application of this method can improve the efficiency of English classroom teaching quality evaluation. At present, the application of big data technology in this field is still in its infancy, and there are still many practical problems to be further solved. According to the method proposed in this study, although the algorithm proposed in this study has better performance than other algorithms, the complexity of the algorithm is still high. Therefore, in future work, it is necessary to

further study the methods to reduce the complexity of the algorithm.

Data Availability

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

Conflicts of Interest

The author declares that he has no conflicts of interest.

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