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*Research Article*

# Optimization of College English Teaching Plan under the Background of Micro-Video and Big Data

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English education has gained greater popularity due to the demands of international economy as well as international politics. College English education is also a part of national English education. However, the English education mode in colleges and universities has certain defects, and it still adopts traditional English education methods to impart knowledge to college students. This limits the interest of college students in learning English. The class hours and assessment mode of English education in colleges and universities limit the time for English learning in colleges and universities, which is also one of the reasons for the disadvantages of college English. Today, with the development of information technology, college English education should consider more technological elements to improve quality of English education in colleges and universities. Micro-video technology is a kind of video with interactive and real-time characteristics, which can be free from geographical restrictions. There are also many English education videos in the micro-video technology, which has a richer background of English knowledge and local customs. This research uses micro-video technology to assist English class level in universities. This research also considers big data theory to extract relevant features in micro-video technology to improve level of college English education. The research results show that micro-video technology can improve learning interest of English students in colleges and universities. CNN and LSTM methods can better predict student grades, student performance characteristics, and teacher performance characteristics. The hybrid CNN-LSTM algorithm has higher accuracy in predicting relevant features of college English teaching compared to the single CNN method. This also shows that the micro-video technology has great temporal characteristics in English teaching. This is a friendly study for improving the quality of English teaching.

## 1. Introduction

Under the influence of economic promotion, international exchanges and international politics are gradually showing the trend of internationalization. Economic and political exchanges are no longer confined within countries. However, due to geographical factors and historical factors, there are large differences in international languages. This is a big hindrance to the communication between people. Misunderstandings between languages often cause great damage and harm. In the nineteenth century, with the power of Western countries and the USA, English has become the official language of international communication [1, 2]. Although Chinese is one of the most popular languages, it does not limit English as the official language of international communication. In China, English education has been popularized. Whether it is the Chinese middle school examination or the college entrance examination, the English test is a more important part. The importance of college English education cannot be overemphasized. However, the current English education in colleges and universities has major defects [3, 4]. The first is that the proportion of English education has been reduced in university education. The second is that the level of English education has a large defect. This may be because the state advocates and encourages college students to realize autonomous learning, which reduces the proportion of college English education. However, most students have low self-control. Once they enter the university, they enter a state of learning relaxation, which leads to the relaxation of English

learning, and the class hours of college English education are relatively small. This will also reduce the quality and efficiency of English teaching [5, 6]. This is due to the difference between the university education model and students' own self-discipline. For non-English majors, their exposure to English education is less if they do not take the initiative to go to the library to study English. At present, the model of college English education has major flaws. This may be due to the low importance of college English education. Chinese students are accustomed to an exam-oriented learning model, and university education is assessed using a credit system. As a result, they lost more interest in English learning. Most English classrooms still use the English education mode of books and PPT. They are still learning some English test content, such as grammar and sentence patterns. This has many similarities with the education model of high school. This reduces the interest of college students in learning English. The traditional English education mode still makes college students unable to understand the historical factors and customs behind English. This will limit their understanding of English, which will also cause them to have more problems in English communication. The purpose of college English education is to achieve English communication, not just to learn English grammar or basic sentence patterns.

The traditional teaching mode needs to make certain changes in order to improve and optimize. High school is due to the needs of the college entrance examination, and it requires more knowledge of grammar and sentence patterns, which requires more books and PPT forms for auxiliary education [7, 8]. For college English education, this is the background for teachers to impart more local customs and English knowledge to English. This will not only effectively master English-related knowledge, but also improve communicative ability of college students in English. This is because there are languages related to English background and local customs in the process of English communication [9, 10]. Micro-video technology has been rapidly developed in the twenty-first century. Micro-video technology has the characteristics of strong interaction and real time [11, 12]. The duration of the micro-video is relatively short, but it can contain important content. Compared with long-term videos such as TV series and movies, micro-videos are more liked by people. At the same time, micro-video technology allows everyone to shoot in real time, which does not limit the time and place. This is also one of the reasons for the rapid development of micro-video technology. Micro-video technology provides people with more ways to experience life and learn more off-site knowledge. The dissemination of micro-videos will not be restricted as long as it is within a reasonable and legal range [13, 14]. There have been many micro-video platforms in China, such as Douyin and Xigua Video. There will also be a lot of English learning knowledge on the micro-video platform. This English knowledge will contain a lot of English-related background knowledge and local customs. The English-related knowledge of the micro-video platform will increase the interest of college students in learning English, and there will be no time and place restrictions.

Compared with the disseminated college English education model, the English education model assisted by micro-video technology will increase college students' interest in learning English. Micro-video technology is no longer boring English grammar and English sentence patterns and other knowledge, which also includes English audio-visual knowledge. At the same time, the English knowledge contained in the micro-video will show the local customs and background of English, which will deepen students' memory. At the same time, micro-video technology will give college students an immersive feeling, which will enhance their passion for learning English. In short, micro-video technology to assist college English education is a new way to improve college English education. Compared with the traditional English education mode in colleges and universities, this is also a new technology and breakthrough in English education methods. Micro-video technology will display English-related knowledge to students and teachers in the form of video. This will increase students' interest in learning. On the other hand, this will guarantee students' study time.

This research will fully study the advantages and performance of micro-video technology in assisting college English education. At the same time, this study will also consider the advantages of big data theory in extracting relevant features of micro-videos to improve level of English education in colleges and universities. In this study, combined with the characteristics of college English teaching, it uses CNN and LSTM methods to study the relevant characteristics of college English teaching. This research mainly introduces the research on micro-video technology and college English education from five aspects. The shortcomings of college English education and micro-video technology are introduced in Section 1. Section 2 describes the research status of English education in colleges and universities. The design scheme of micro-video technology and big data theory in college English education and related research theories of big data theory are explained in Section 3. The feasibility and performance of big data techniques in predicting English micro-video techniques are investigated in Section 4. Section 5 summarizes the performance of micro-video technology and big data theory in improving English education in colleges and universities and the application and promotion of research.

## 2. Related Work

The importance and training goals of colleges and universities on English will be related to the students' own situation, especially their interest in learning and study time. This is the key to learning English. From a further perspective, this is because English is a common language for international communication. Many researchers have made related studies based on this importance. A large number of researchers have presented a large number of studies based on the shortcomings of English education in colleges and universities. Huang and Jin [15] have also considered that the current English education model in colleges and universities has major flaws, which make it difficult to improve

students' responsiveness in English communication. This research uses big data theory and cloud computing technology to construct a comprehensive English cloud teaching model. This includes databases and English-related materials such as English labs, teaching resources for after-school review, and more. The research results show that the English cloud teaching system can improve students' English communication responsiveness. This provides suggestions and directions for the teaching of English. Xu [16] has established an English cloud teaching model with students as the center of teaching. This model can realize the autonomy and interaction of English education. The English education system and the English education operation method are all realized under the cloud teaching model. It also compares the effects and differences between the English cloud teaching system and the traditional teaching mode. It analyzes the advantages of cloud computing mode by applying multi-teaching mode. The results show that the English cloud teaching mode is in line with the modern English education method. This method can improve students' interest in learning and achievement for English. Dai [17] has found that computer multimedia technology has been used for English education, and it can improve students' enthusiasm for English and improve teachers' efficiency. This research studies the effect of computer multimedia technology in English education by means of teaching cases. It also introduces the theory of computer-aided English education, and at the same time it studies the effect of computer-aided systems in English education by means of questionnaires. It also quantifies this effect. The research results show that computer-aided English teaching system is also an important teaching resource and hardware equipment. Wang and Zeng [18] believed that English vocabulary is an important part of learning English. However, the traditional way of memorizing vocabulary has many defects, and it is difficult to improve students' interest. It proposes a form of English corpus that reduces the shortcomings of traditional memory methods. The practicality and authenticity of the corpus will improve students' interest in learning. The results show that the combination of English vocabulary and English corpus enhances students' autonomy and interaction. The corpus-based English education model will improve quality of English education compared to the traditional teaching model. Guo [19] studied the problems existing in the English education model from the perspective of psychology and English vocabulary, and it also optimizes the traditional English education method. He presented his research on the problems of English vocabulary teaching in the form of a questionnaire. The teacher relies too much on the use of traditional vocabulary materials, and his interpretation of the vocabulary lacks scientificity. This model can improve quality of English education. Lian [20] believes that the evaluation of English education is an important method for improving the accuracy of English education. This study uses machine learning methods to explore a method for evaluating the inaccuracy of English education. It also designs the selection principle of English education evaluation. It also uses the analytic hierarchy process to judge the evaluation indicators of English. He then calculated the eigenvalues and eigenvectors of these indicators using principal component analysis. The research results show that the effectiveness of this method reaches 0.99. This shows that this method has high feasibility in studying English education evaluation. From the literature review, it can be seen that many researchers have evaluated the effect of teaching methods, but this basically does not involve the integration of micro-video technology and educational methods. This research well integrates micro-video technology, big data technology, and college English teaching methods.

## 3. The Scheme of Micro-Video Technology and Big Data Theory in College English Education

*3.1. The Significance of Improving English Education in Colleges and Universities.* Colleges and universities are an important part of the country's talent export. College English education is also an important part of cultivating international talents. This not only requires effective English education methods, but also requires students to have a more positive attitude toward learning English. Only in this way will it achieve the significance of English training in national colleges and universities. However, the traditional English education methods have limited the enthusiasm and meaning of learning for college students. Micro-video is an interactive and time-sensitive video technology [21]. It will not have geographical restrictions. In the current micro-video technology, there are more knowledge and videos related to English education, and there are also more English videos shot by foreigners. This means that micro-videos can not only learn English-related knowledge, but also learn more about English-related background and local customs. This will increase the interest of college students in learning English. If micro-video technology is applied to college English education classrooms, it will greatly improve interactivity of English classrooms. For the integration of English education classrooms and micro-video technology, this can also use big data theory to optimize the quality of English education in colleges and universities. Micro-video technology imparts English knowledge in a new way. Big data technology can also extract features related to college English teaching. This fusion is a new direction. These big data can include CNN and LSTM algorithms. In short, micro-video technology and big data theory are an important way to improve level of English education in colleges and universities.

*3.2. College English Education Improvement Plan and Optimization Algorithm Design.* In order to improve quality and level of English education in colleges and universities, this research introduces micro-video technology and big data theory. Micro-video technology will provide college students with intuitive English knowledge and background-related videos. Compared with traditional book teaching methods, video technology will improve students' attention. When micro-video technology was introduced into college English classrooms, it did not just require students to watch videos.

It also requires students to grasp the main points of English, which requires big data theory to extract features related to English knowledge and background knowledge. This research introduces big data theory, which will include CNN and LSTM algorithms. CNN will be used to extract English grammar and context-related features. LSTM technology can extract time-related features in micro-videos. This research needs to numerically process the grammar and sentence patterns of micro-video technology, and then these data will be input into the CNN in the form of a matrix. Figure 1 shows the application method of micro-video technology and CNN/LSTM algorithm in college English education. For the improvement plan of college English education, the input of CNN and LSTM methods is the relevant feature of micro-video technology. The output data are features related to student performance as well as teacher performance. In order to ensure that there is no major difference in the relevant data of the features, the micro-video and the feature data of the students will be pre-processed here. This also ensures that CNNs and LSTMs can be efficiently iterated and tested. CNN and LSTM methods will extract English grammar, English background and English customs, and other related features from micro-videos. This is an important feature of improving the level of English education in colleges and universities. It will map characteristics of learning performance, student achievement, and teacher performance. Micro-video technology and big data theory are the key factors to improve the quality of college English teaching. The form of data required by CNN and LSTM is different. The output data of CNN are the input data of LSTM. Meanwhile, the data requirement of LSTM is in the form of time series.

Big data theory will be used as an optimization algorithm for improving the quality of English education in colleges and universities, and micro-video is a measure to improve teaching quality. For practical engineering, it requires the algorithm to have high stability and usability. CNN and LSTM algorithms have been applied in many projects, which are relatively mature and stable algorithms. According to the evaluation indicators of college English education and the characteristics of micro-video technology, this research selects CNN and LSTM technology as the basic algorithm, which are also two common algorithms in most fields. CNN is better at mapping the nonlinear relationship between input and output, and LSTM technology is better at extracting temporal features of research objects. The combination of these two algorithms can extract the spatiotemporal features of the research object. In most cases, the research will make use of these two algorithms in an efficient combination. The improvement plan for the quality of English education in colleges and universities will also involve larger time characteristics. If the LSTM algorithm is not selected, it may cause a poor optimization effect, and it will not achieve the optimal effect. Figure 2 shows the working principle of the CNN algorithm in the combined application of college English education and micro-video. CNN has a weight sharing mechanism, and the factors of the hidden layer are not calculated one by one. For a fully connected neural network, the factors of the hidden layer will be calculated one by one, which increases the number of parameters to be calculated. The workflow of the LSTM algorithm is not described in detail. The LSTM method contains many gate structures, which can assign different weights to the relevant features of English teaching in colleges and universities, and the gate structure will selectively output relevant English time features according to the weights.

For CNN, the big difference from the fully connected neural network is that it has convolution operations. The convolution operation will reduce the amount of parameter operation, which will save a lot of computing resources. (1) shows the process of CNN forward operation. $*$ represents the convolution operator symbol.

$$\begin{aligned} a^2 &= \sigma\left(z^2\right) \\ &= \sigma\left(a^1 * W^2 + b^2\right). \end{aligned} \tag{1}$$

Every CNN will contain multiple layers of neural network structure, which are called hidden layers. There is also a convolution operation similar to (1) between the hidden layers. (2) shows the convolution operation process of the hidden layer.

$$\begin{aligned} a^l &= \sigma\left(z^l\right) \\ &= \sigma\left(a^{(l-1)} * W^l + b^l\right). \end{aligned} \tag{2}$$

Generally speaking, each CNN will contain a layer of fully connected neural network in the last layer of the CNN. (3) shows the operation between the last hidden layer and the fully connected neural network. This is somewhat different from the operations between convolutional layers.

$$\begin{aligned} a^l &= \sigma\left(z^l\right) \\ &= \sigma\left(W^l a^{(l-1)} + b^l\right). \end{aligned} \tag{3}$$

There will be large differences in the structure of CNN for different CNNs. If the last layer is a pooling layer, the calculation method between hidden layers is shown in

$$a^l = \text{poola}^{(l-1)}. \tag{4}$$

If the last layer is still a convolutional layer, the calculation method is as shown in

$$\begin{aligned} a^l &= \text{ReLU}\left(z^l\right) \\ &= \text{ReLU}\left(W^l a^{(l-1)} + b^l\right). \end{aligned} \tag{5}$$

If the last layer is a fully connected layer, the corresponding output layer is calculated as

$$\begin{aligned} a^l &= \text{softmax}\left(z^l\right) \\ &= \text{softmax}\left(W^L a^{(L-1)} + b^L\right). \end{aligned} \tag{6}$$

The loss function represents the error between the predicted value and the actual value. In this study, it represents the difference between the predicted value of features such as student grades and the actual assessment grade. The loss function is calculated as shown in

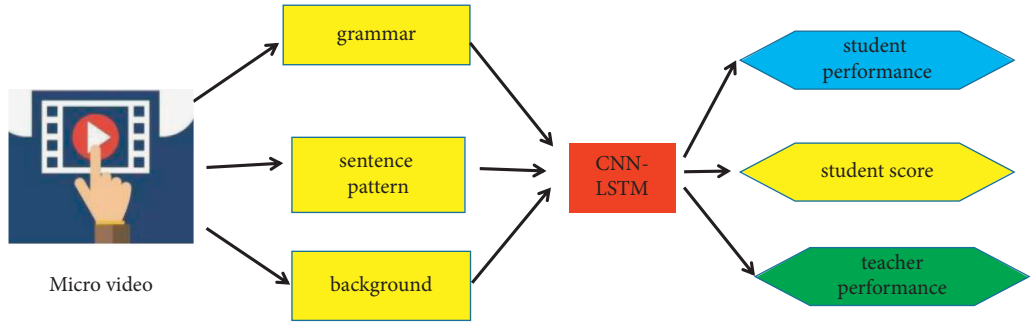


Figure 1: The application of micro-video and big data theory in college English education improvement plan.

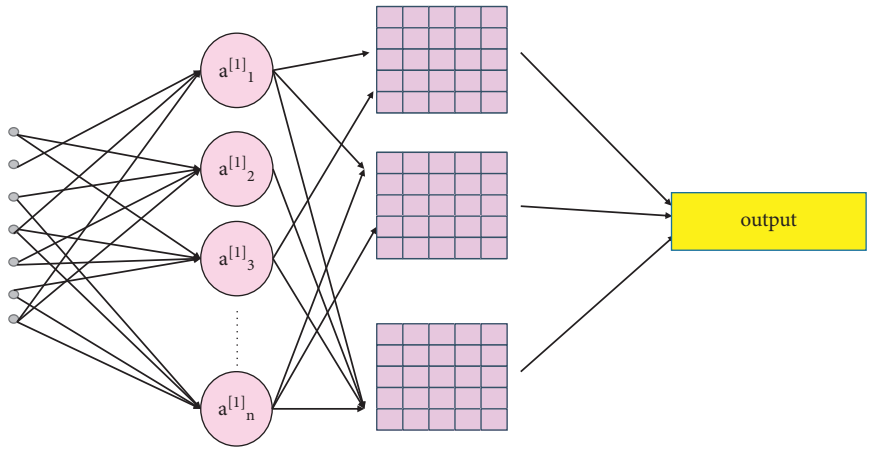


Figure 2: The application process of CNN in extracting relevant features of English education micro-video.

$$E = \frac{1}{2}(d_{\text{out}} - O_{\text{real}})^2 = \frac{1}{2}\sum_{\kappa=1}^{t}(d_\kappa - O_\kappa)^2. \tag{7}$$

For every neural network, it will have a large number of derivative operations. (8) shows how the weights are calculated.

$$\Delta u_{ij} = -\eta \frac{\partial E}{\partial u_{ij}}. \tag{8}$$

For the LSTM neural network, here is just a brief introduction. Equations (9)–(11) show how the LSTM algorithm is calculated. The biggest difference between LSTM and CNN is that it has a gate structure. These gate structures are determined by the distribution of weights. It determines the output and retention of data.

$$f_t = \sigma\left(w_f \cdot \left[h_{(t-1)}, P_t\right] + b_f\right), \tag{9}$$

$$i_t = \sigma\left(W_{xi} * x_t + W_{hi} * h_{(t-1)} + W_{ci} \circ C_{(t-1)} + b_i\right), \tag{10}$$

$$f_t = \sigma\left(W_{xf} * x_t + W_{hf} * h_{(t-1)} + W_{cf} \circ C_{(t-1)} + b_f\right). \tag{11}$$

*3.3. Introduction and Research on Micro-Video Technology.* Micro-video technology may have certain advantages for improving the quality of English education in colleges and universities. There are a large number of micro-videos on the video platform, which requires teachers to choose according to the content of the video. This is also selected according to the teaching needs. The optimal English micro-video needs to have a greater correlation with the teacher's content. It cannot choose without purpose. Figure 3 shows the application scheme of micro-video technology in college English education. On the premise of determining the teaching content, the teacher needs to find relevant English micro-videos according to the knowledge of the teacher's content, background, and customs. These micro-videos are selected and then subjected to feature extraction by CNN and LSTM methods. In Figure 3, the two pictures related to micro-videos represent the collected micro-videos related to English, and this is just a schematic diagram. Teachers represent that it needs to select micro-videos according to the teaching content of teachers.

## 4. Result Analysis and Discussion

This research is mainly to realize the improvement and optimization method of micro-video technology to guide the English education level in colleges and universities. Micro-videos are just a way to guide. This research also uses big data

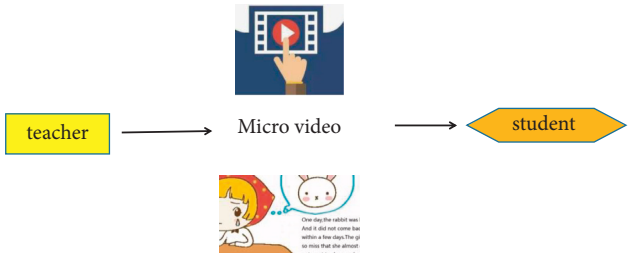


Figure 3: The application process of micro-video technology in English education.

theory to realize the prediction and extraction of relevant features of micro-video technology, which is also a progress for improving the level of English education in colleges and universities. For big data, this requires the guarantee of a large amount of data. In this study, the micro-video data of a mobile phone platform were selected as the research object. The relevant data of students in many colleges and universities in Beijing are also used as research data. This ensures the accuracy and authenticity of the data source. In this study, the graphics and speech features of micro-videos will be selected as the input data of big data theory. It will select students' interest in English, students' grades, and teachers' responses as the output data of big data theory. CNN and LSTM are optimized algorithms for improving English education in colleges and universities as micro-videos. It will learn the relationship between these two features. This optimization method will better combine the relationship between micro-video and college English education.

For most of the research subjects, researchers rarely use the LSTM method because the LSTM method consumes a lot of computing resources and computing time compared to the CNN method. This study firstly analyzes the effect of a single CNN method in studying the optimization of English education in colleges and universities. If a single CNN method will have better results, it will not consider the LSTM method. Figure 4 shows the prediction error distribution of the characteristics related to the quality of English education in colleges and universities. *P*1 stands for student achievement prediction error, *P*2 stands for student performance feature error, and *P*3 stands for teacher performance feature error. Although the prediction errors of most college English evaluation features are within the acceptable range, this part of the error is not the optimal error for the optimization of college English education. The largest prediction error has reached 2.17%, and this part of the error still has a scope for reduction. The prediction error for the characteristics of students' grades is 1.23%, which only shows that this part of the error prediction is better.

This study considers the English-related temporal features contained in the micro-video method and uses a hybrid CNN-LSTM technique to study the effect of the micro-video method on improving the quality of college English education. Figure 5 shows the prediction error of the relevant characteristics of English education in colleges and universities. In Figure 5, green represents the region where the prediction error of the three characteristics of college English teaching is within 1%. In general, the improvement

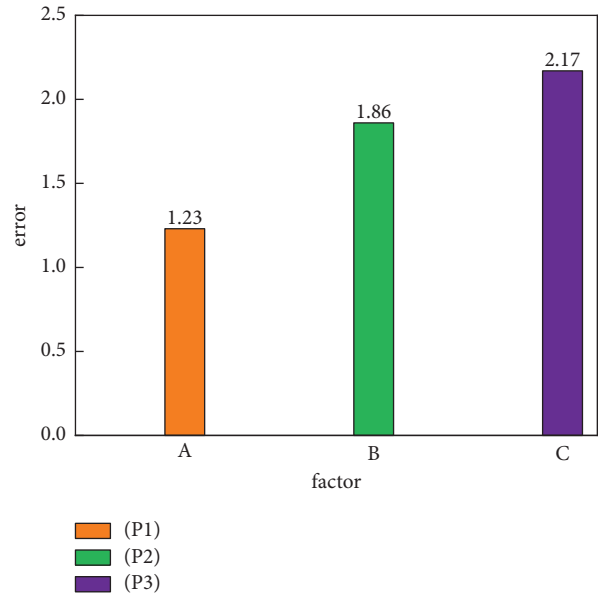


Figure 4: Prediction error of quality characteristics of English education in colleges and universities using a single CNN method management system.

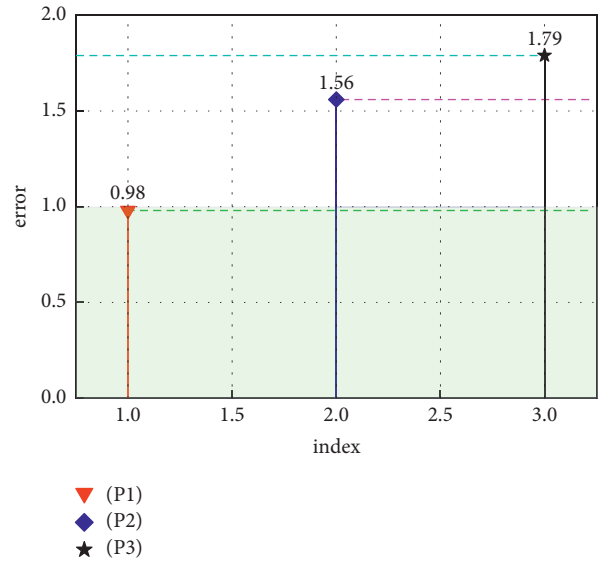


Figure 5: Prediction error of college English education quality characteristics using hybrid CNN-LSTM method.

indicators of English education in colleges and universities have been improved to a certain extent. This not only shows that the hybrid CNN-LSTM method has higher accuracy in extracting English micro-video features than the single CNN method. It also shows that the micro-videos of college English education also contain temporal features, which cannot be ignored. If the time characteristics contained in it are ignored when evaluating the effect of improving the quality of English education in colleges and universities, it will reduce the accuracy of the optimization algorithm. For the prediction of student grade features, this part of the error is only 0.98%. This part of the feature has been better

extracted by the optimization algorithm CNN-LSTM. This has great reference value for finding micro-videos in improving the quality of English education in colleges and universities. The largest prediction error is only 1.79%, and the prediction error of this part of the evaluation index of English improvement has also been greatly improved. This is extremely beneficial for finding micro-videos and improving the effect of English education in colleges and universities.

It can be seen from Figure 5 that the prediction error value of teachers' performance characteristics is the largest among the evaluation indicators of English education in colleges and universities. In this study, 15 groups of data related to teacher performance characteristics were selected for analysis. Figure 6 shows the prediction error of teacher performance characteristics in college English education optimization. The green area represents the error within 2% of the error value. Overall, this error distribution of teachers' performance characteristics can satisfy the evaluation of English education in colleges and universities. On the other hand, it can also be shown that the hybrid CNN-LSTM method can well map the relationship between micro-video technology-related content and teacher performance characteristics. Most of the prediction error values of teacher performance characteristics are distributed within 2%, and there are only two groups of data whose prediction error value exceeds 2%. But it does not exceed 3%.

For the evaluation of English education quality in colleges and universities, students are the subject of the optimization of evaluation indicators. In this study, student performance characteristics and student achievement are listed as the main evaluation indicators of English education in colleges and universities. Figure 7 shows the distribution of predicted values and actual values of student performance characteristics of college English education optimization indicators. The yellow area represents the predicted value of the student's performance, and the blue area represents the actual value of the student's performance characteristic. DL refers to the hybrid CNN-LSTM algorithm. In general, the data distribution of the predicted value of student performance characteristics and the actual value of student performance characteristics have a large similarity. Although the predicted values of most of the student performance characteristics are larger than the actual values of the student performance characteristics, the averages of these data are closer to them at 0.64337 and 0.63537, respectively. When the student performance features are predicted well, this shows that the hybrid CNN-LSTM method can better map the relationship between the micro-video English features and student performance features. It can reflect the effect of micro-video technology on the improvement of English education in colleges and universities through the performance of students.

Student achievement is the most intuitive evaluation index to evaluate and optimize the quality of English education in colleges and universities. In this study, 15 groups of students were selected for prediction and analysis. Figure 8 shows the predicted correlation of students' performance characteristics, the optimization index of English education level in colleges and universities. Overall, the predicted value

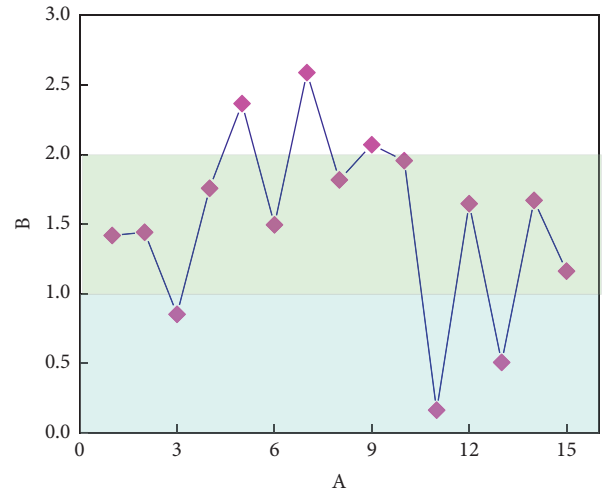


Figure 6: English education optimization index-teacher performance prediction error.

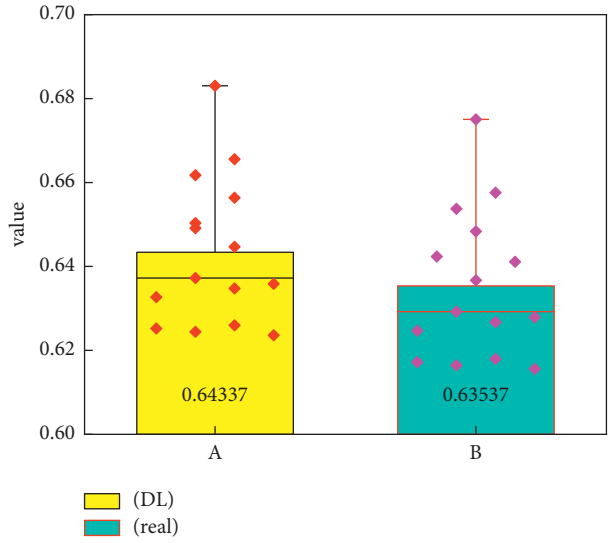


Figure 7: English education optimization index-distribution of predicted value of student performance.

of student grades has a good correlation with the actual value of student grades because most of the data points are distributed on both sides of the linear function. The blue line represents the upper bound of the 95% confidence interval, and the yellow line represents the lower bound of the 95% confidence interval. It can be seen that all the points of the eigenvalues of students' grades are distributed within the 95% confidence interval, which further shows that the hybrid CNN-LSTM method has a good effect in predicting students' English grades. Once the hybrid CNN-LSTM method has high credibility, it can show that the neural network algorithm can better extract the relationship between English micro-video features and student achievement features. This has a good reference value for guiding the relationship and improvement effect between English education and micro-video in colleges and universities.

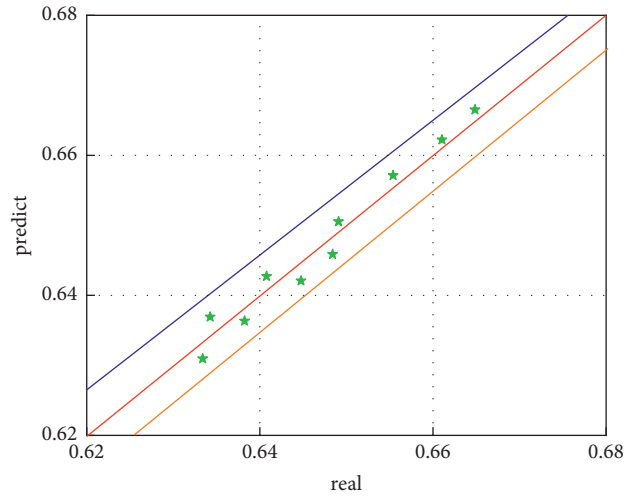


Figure 8: English education optimization index-student achievement prediction correlation distribution.

## 5. Conclusions

English has always been an important subject, it not only requires students to learn the basic knowledge of English, and it also requires students to learn English audio-visual. For secondary education, English education focuses on English grammar and English sentence patterns. This is the foundation of learning English. However, for English education in colleges and universities, this cannot only be limited to the basic knowledge of English. College students are important talents for national construction, and they will inevitably encounter more opportunities for English communication and international communication, which requires that there is a big difference in the training objectives of English education in colleges and middle schools. However, at present, there are many defects in college English education in our country, mainly the way of learning English and the time of learning English. English in colleges and universities mainly lies in the ability of autonomous learning. However, the teaching methods and teaching resources of colleges and universities limit students' initiative and goal of learning English. This requires colleges and students to find a more suitable English education method.

Micro-video technology has developed rapidly. With the development of technology, micro-video technology has the advantages of higher interactivity and real time. It can also quickly spread more knowledge and customs of other places. This research integrates micro-video technology into English education in colleges and universities. It also uses CNN and LSTM methods to study the effect of micro-video technology on improving the level of college English education, which is also an optimization algorithm for college English education. This study explores the relationship between the English characteristics of micro-videos and student performance characteristics, teacher performance characteristics, and student achievement. These three characteristics are important indicators to evaluate the improvement effect of English education in colleges and universities. First, it investigates the accuracy of a single CNN approach in predicting these three features. Most forecast errors are within 3%. However, the hybrid CNN-LSTM method has higher accuracy compared to the CNN method. The prediction errors of the three features are all reduced to a high degree. The smallest prediction error is 0.98%, which is the prediction of students' performance characteristics. The largest prediction error is only 1.79%. This has been greatly reduced compared to the 2.17% error. In general, micro-video technology and hybrid CNN-LSTM are beneficial technologies and methods for improving the quality of English education in colleges and universities.

## Data Availability

The dataset can be accessed upon request.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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