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*Research Article*

# Professional English Teaching Model Based on Wireless Network Communication and Multimedia

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The integration of multimedia technology and foreign language teaching has gradually become a contemporary key research topic under the trend of the integration of modern information technology and education. As an emerging method, multimedia-assisted learning method can not only create a more realistic language learning environment but also make contributions in stimulating students' willingness to learn and improving educational effects. However, sometimes it is used improperly, this method can easily lead to the teaching form being larger than the content, and the teaching effect may not be satisfactory. This article focuses on the characteristics of the professional English teaching model based on wireless network communication and multimedia, discusses the practical application of wireless network communication and multimedia technology in professional English teaching, and conducts a simple research on the professional English teaching model. Taking the professional English teaching model and the traditional multimedia teaching model of English as the research objects, two natural students are selected as the research objects, and they are divided into the experimental group and the control group. Statistical software is used to analyze the data in detail. The test results of the experimental class and the control class were analyzed before and after the experiment. The experimental results show that the professional English teaching model based on wireless network and multimedia has a significant teaching effect compared with the traditional English teaching model. Comparing the experimental group and the control group, English scores improved by 11%. The gap between the two groups is very obvious. As far as the scores of each part of the English test paper are concerned, the scores of each part of the experimental group are also higher than those of the control group. The professional English teaching model based on wireless network communication and multimedia turns out to be effective and popular among students.

## 1. Introduction

In recent years, my country's foreign language teaching and universities have faced unprecedented new challenges and new opportunities. The traditional college English teaching model is rigid, and the training model is becoming more and more difficult to cultivate students' comprehensive language ability to adapt to globalization and economic integration. Affected by this, the content, the form, method, and organization of education will have fundamental and fundamental changes. Under the trend of deep integration of modern information technology and technology, the combination of multimedia technology and foreign language teaching has always been a hot research topic, and it is also a hot topic foreign language teaching in the new century. In 2004, 2007, and 2020, the Ministry of Education of China successively issued "College English Course Requirements (Trial)," College English Course Requirements, and College English Curriculum Requirements, which clearly pointed out that the computer-based multimedia English teaching mode is a newly designed English to help Chinese college students reach the required level: the teaching mode curriculum requirements. Paying attention to individualized learning and autonomous learning and giving full play to the computer can repeatedly help students' uniqueness in oral and listening exercises. At the same time, with the help of computers, teachers can effectively teach such as reading, writing, and translation to help students improve their comprehensive language skills.

With the development of information technology, multimedia teaching has appeared in education, bringing great convenience to teaching. The application of teaching resource library in community nursing multimedia teaching can effectively improve students' learning interest and optimize teaching results [1]. In [2], the authors explored the results of incorporating YouTube into reading classes, thereby improving English vocabulary understanding and retention. The results of the study show that groups watching YouTube clips are better than those who have not been exposed to YouTube videos in later testing. In [3], the author provides an empirical study of high school students to understand how to encourage learners to learn English in a multimedia environment through appropriate methods. This is a vital "input and interaction" process that ensures that the needs of the learner are taken into account and produce real learning outcomes. In [4], the author analyzed the music teaching model based on intelligent classrooms and multimedia systems. Multimedia technology uses music software to generate, modify, and output music in electronic form, giving full play to the vividness and real-time nature of information technology. In [5], the author believes that with the advancement of teaching equipment, no matter where the child is, every child can customize the curriculum, so teachers need to reconsider their role. Teaching content will also change, as students will need to learn to use multimedia skills for collaboration and communication [6].

In the multimedia-assisted language-learning environment, teachers can teach students in accordance with their aptitude [7, 8]. In the learning process, students can actively search, ask questions, and answer the knowledge that they are interested in or do not master. The use of computers allows each student to have a personal tutor, instead of requiring all students to complete the same task at the same time [9, 10]. It has special value for students with different language ability, specialty, and comprehension ability [11]. For example, if student A can fully understand the new knowledge in 20 minutes, and the teacher may need 60 minutes to teach in class, then he only needs 3 days to complete all the learning content, while learning in class may take a week time. Similarly, if student B encounters some problems in learning, he can solve the problem and strengthen it by clicking the mouse several times [12, 13].

The innovations of this article are (1) since teachers can upload online software and exercises they collect on the Internet of Things, many courses are collected in the Internet of Things. Students can choose suitable English learning resources according to their own situation and progress. (2) The selection of teaching materials is often guided by teachers. Because of the differences in the learning ability and learning progress of each student in the class, textbooks will gradually be student-oriented, many extracurricular learning opportunities make up for the lack of classroom time, and they will have more time to interact with teachers.

## 2. Method

*2.1. Features of Multimedia-Assisted English Teaching.* The aim of combining information technology and language teaching is to achieve the objectives required by the curriculum and to cultivate content language skills of pupils [14]. Multimedia teaching of English has the following characteristics:

(1) The diversity of information contributes to the acquisition and retention of knowledge. The diversity of information is not only reflected in the input but also in the output [15]. At present, it is mainly used for vision and hearing. The way information is input and output is not always the same. For these applications, the former is called "acquisition" and the latter is called "presentation." If they are the same, then it can be called record and repeat [16, 17]. Multimedia technology includes operating functions such as exchange, processing, and synthesis, which greatly enhances the expressiveness of information [18]

(2) Information integration is conducive to the cultivation of students' comprehensive language ability. The core of traditional Chinese teaching is paper-based teaching materials [19, 20]. It is difficult for teachers to cultivate and develop the comprehensive language skills of pupils. On the contrary, language information is processed and stored simultaneously through multiple channels, which makes language information no longer separate, but a unified whole. Multimedia technology is an organic combination of text, audio, graphics, images, animation, video, and other information. It is like our body's sensory system. A person first receives information through eyes, ears, mouth, facial expressions, gestures, and other organs, and then the brain can analyze and process the received information (Johns 2002). In this way, we can get comprehensive and accurate information. With the rapid development of computer technology, the characteristics of computer-assisted processing of various information at the same time make it very easy for people to integrate and process various static or dynamic information. This integration makes language teaching more vivid and vivid, so that students' listening, speaking, reading, and writing abilities can be developed in an all-round way. The multimedia teaching platform is shown in Figure 1

*2.2. Advantages and Applications of Multimedia Teaching Technology.* The main thing is that users can choose the content of resources to be played according to their own needs, without being limited by time and space. Its advantages also include providing support for multiple users, own resources can simultaneously meet the requirements for multiuser transmission and display, and the quality of the resource will not be significantly affected. Different methods of resource compression may be used to meet the needs of users with different network band widths, provide users with control functions for reproducing resources, and provide simultaneous processing of average resource flow data [21].
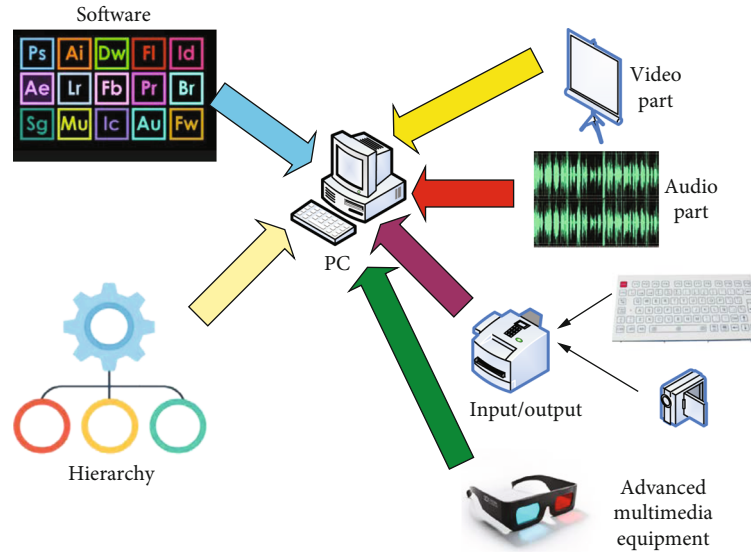
Figure 1: The multimedia teaching platform.

The application scope of university multimedia teaching in campus digital construction is very wide. Network remote teaching: teachers can broadcast lecture resources in the network remote teaching system in the form of streaming media, so that students distributed in different regions can receive, expand the scope of teaching, and reduce the burden on teachers. Self-learning field: many resources on the internet provide users with a good learning environment, but textual materials are relatively bland, and teaching resources based on streaming media technology can enable learners to achieve better learning results. Live webcast of on-site situation: there are often lectures held by famous scholars and experts on campus. If there are many participants, there will often be overcrowding. Using multimedia teaching technology, real-time broadcasting of on-site situation can be realized, and users can get real-time situation of lectures through the network. Entertainment application: it can realize on-demand viewing of entertainment resources through multimedia teaching of audio university. Relevant departments of the university can make cultural performances, sports meetings, and other activities in the school into resources and deploy them to the server for students to choose to play, or deploy their own works to enrich the cultural life of the campus.

*2.3. Design of Multimedia-Based English Teaching.* According to the analysis of system function requirements and performance requirements, it can be known that the multimedia teaching can be divided into four subsystems, and each subsystem includes functional modules. The four subsystems of the system are client subsystem, teaching management subsystem, system configuration subsystem, and information data service subsystem. The detailed analysis is as follows.

The main functional modules of the client subsystem include user registration and login, interactive communication, personal data management, multimedia teaching-related operations, comment publishing and management, and file upload and download management. The registration and login function module helps users to complete and upload their basic information, which is reviewed by the system administrator. Registered users who pass the certification can enjoy personalized service content provided by the multimedia teaching.

The teaching resource management module provides users with various management operation functions such as adding, deleting, updating, and querying resources. The administrator can manage a large number of multimedia teaching resources, set attributes, set keywords, and store related information of the resources in the database to facilitate management operations [22].

The system configuration subsystem mainly includes a system user management module, a permission configuration management module, a system parameter setting module, and a database maintenance management module. The system user management module helps system administrators to assign permissions for system users. The permission configuration management module mainly completes the configuration of permissions for different roles. By setting the permissions of a role, the user is assigned to different role groups to complete the management of users. The multimedia-based English teaching platform is shown in Figure 2.

*2.4. Algorithm Improvement.* To use cross-layer design to solve the problem of wireless network congestion, we must first use the technology of cross-layer design to extract effective information from the nodes or channels that cause wireless network congestion. Through the calculation of the congestion function, the congestion degree is divided into different categories. The degree of congestion adopts different congestion treatment or prevents the occurrence of more serious congestion, in order to achieve the purpose of improving the quality of wireless network transmission [23].
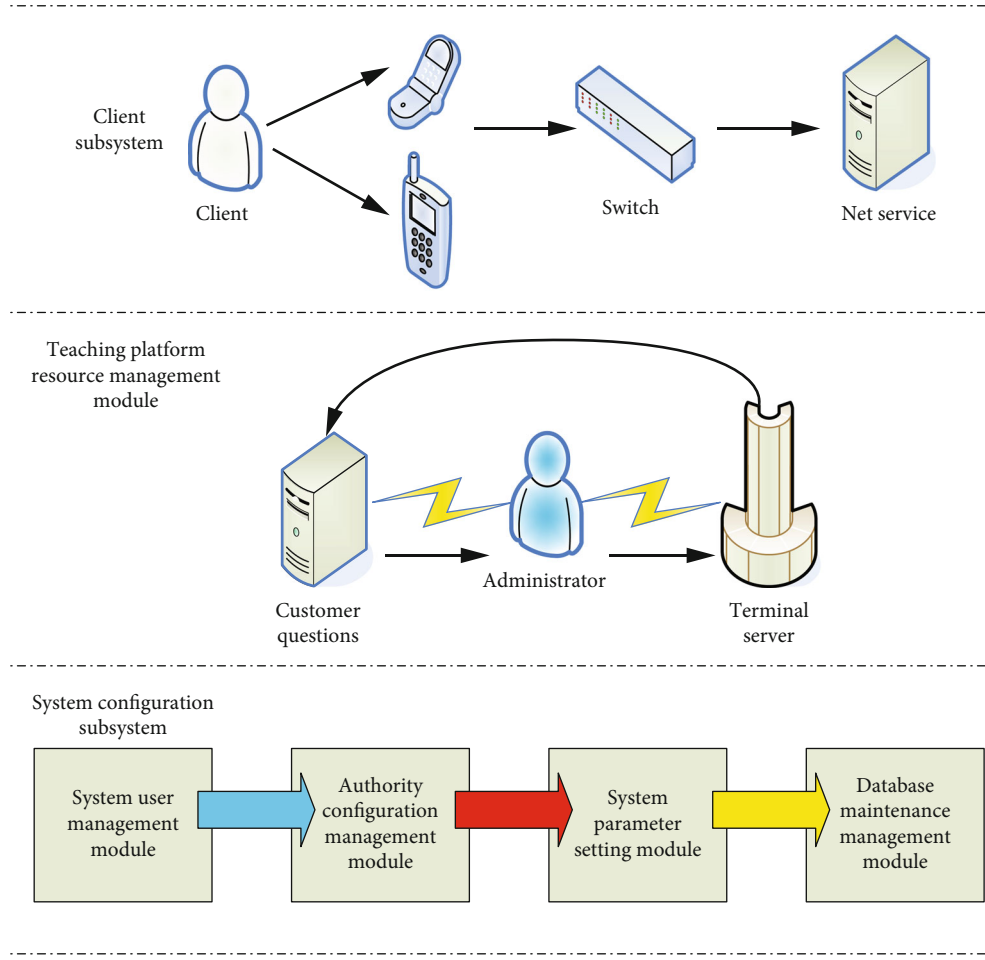
FIGURE 2: The multimedia-based English teaching platform.

The CCM function is as follows:

$$CCM = w1 \sum LONLi + w2 \sum LOLLij + w3 \sum LOCIi. \quad (1)$$

The cumulative node load degree is proposed to measure the congestion degree of all nodes on the entire transmission path:

$$LONL1 = \frac{QL_1 + \sum B_1 \cdot ETT_1 - \alpha \sum b_m \cdot ETT_M}{b_1} \cdot ETX_1. \quad (2)$$

The limit formula is as follows:

$$\lim_{\sum b_j \cdot ETT_j \longrightarrow N}^{b_i - E_j} \frac{QL_1 + \sum b_j \cdot ETT_J - \alpha \sum b_m \cdot ETT_M}{b_1} \cdot ETX_i = M. \quad (3)$$

For the link load level, LOLLij, the load transmission capacity of the available link measures the load level of the link.

$$LOLLij = \frac{QLij}{Bi - \sum_{k \in Ni} Bik} \cdot ETXij. \quad (4)$$

The degree of channel interference can be expressed by LOCIi as:

$$LOCli = CSTi + \max_{k \in Nk} \left\{ \frac{r}{d_k} \cdot LCITk \right\} \quad (5)$$

The optimal response is shown in the following equation:

$$S_i^* = \arg \max_{s_i \in S_i} (S_i, S_{i-1}{}^*), \forall s_i \in S_i. \quad (6)$$

Or it can be expressed as:

$$u_i(S_i^*, S_{-1}^*) \geq u_i(S_i^*, S_{-1}^*), \forall S_i \neq S_i^*, s_i \in S_i. \quad (7)$$

The optimal strategy combination of each participant in game G is

$$\{S_i^*, \cdots, S_N^*\}, s_i^* \in S_i. \quad (8)$$

Then, this solution is the optimal for the following problems:

$$\phi_j(\varphi, R_{\min}) \in \arg_{\bar{r} \in S, \bar{R}_i \geq R_{\min}^i} \max_{\forall i \in k} \prod_{i=1}^{k} (\bar{R}_i - R_{\min}^i). \quad (9)$$

To solve the cooperative game, the optimization problem of Nash bargaining solution can be equivalent to the following optimization problem:

$$\phi_j(\varphi, R_{\min}) \in \arg_{\bar{r} \in S, \bar{R}_i \geq R_{\min}^i} \max \sum_{i=1}^{k} \ln(\bar{R}_i - R_{\min}^i). \quad (10)$$

This grading indicator checks the average search depth required to cover all relevant sample labels in the sample category label ranking row.

$$\text{Coverage}_s(h) = \frac{1}{p} \sum_{i=1}^{p} \max_{y \in Y_i} \text{rank}_f(x_i, y) - 1. \quad (11)$$

This rating indicator checks the situation in the ranking row of the sample category labels. The labels with high membership are still their relevant labels or reflect the average accuracy of the expected category labels.

$$\text{Average Precision}_s(h)$$
$$= \frac{1}{p} \sum_{i=1}^{p} \frac{1}{|Y_i|} \sum_{y \in Y_i} \frac{\left| \left\{ y' \mid \text{rank}_f(x_i, y') \leq \text{rank}_f(x_i, y), y' \in Y_i \right\} \right|}{\text{rank}_f(x_i, y)}. \quad (12)$$

This evaluation index reflects the degree of consistency between the label predicted by the system and the true label of the sample.

$$\text{ClassificationAccuracy} = \frac{1}{p} \sum_{i=1}^{p} I(h(x_i) = Y_i). \quad (13)$$

Then, we use the weighted kernel function to convert the standard distance $x_t$ to $x_i$ and get the following formula:

$$p(x_i | x_t) = \frac{1}{2\pi} \exp\left(-\frac{D(x_t, x_i)}{2}\right). \quad (14)$$

Then calculate the posterior probability of $x_t$ belonging to class $\omega_r (r = 1, 2, \cdots, s)$ based on the $k$ nearest neighbors is $x_t$, there are the following formulas;

$$P(y_i | x_t) = \frac{1}{\alpha} \sum_{i=1}^{k} p(x_i | x_t) I(y == \omega_r), \quad (15)$$

$$I(A) = \begin{cases} 1 & \text{true,} \\ 2 & \text{false,} \end{cases} \quad (16)$$

$$a = \sum_{i=1}^{N} P(x_i | x_t). \quad (17)$$

TABLE 1: Distribution of survey objects.

| | Liberal arts | Science and engineering | Total |
|---|---|---|---|
| Male | 16 | 18 | 34 |
| Female | 28 | 14 | 42 |
| Total | 44 | 32 | 76 |

Finally, the simplified overall function of the algorithm is obtained by introducing a way that the data obeys a certain distribution composed of a mixture of L Gaussian distributions as shown in the following equation:

$$f(x | \theta) = \sum_{l=1}^{L} a_l f(x | \theta_l). \quad (18)$$

This evaluation indicator is used to investigate whether it is possible to follow the classification order of the sample category labels. The label with the highest classification is not the actual label of the sample. When learning a label, it will evolve into a general error rate.

$$\text{One-Error}_S(h) = \frac{1}{p} \sum_{i=1}^{p} \left\{ \left[ \arg \max_{y \in Y} f(x_i, y) \right] \notin Y_i \right\}. \quad (19)$$

This grading indicator checks the average search depth required to cover all relevant sample labels in the sample category label ranking row.

$$\text{Coverage}_S(h) = \frac{1}{p} \sum_{i=1}^{p} \max_{y \in Y_i} \text{rank}_f(x_i, y) - 1. \quad (20)$$

## 3. Research Plan

*3.1. Measuring Object.* This research conducted a random grouping study on 76 non-English major college students and 23 non-English major English teachers from xx university.

The target population of the student questionnaire survey is the number of non-English majors. Due to time and energy constraints, 76 students were randomly selected as the survey subjects. Sampling is the basis of educational research. When choosing a sampling method, factors such as research purpose, research methods, data collection methods, time, and cost should be considered. Purposeful sampling is used to locate the person, place, or event that can provide the most information about the research problem. Therefore, these 76 subjects covered all the colleges of xx university. In order to obtain reliable and credible research results, all the students participating in the research are sophomores who are not majoring in English. The reason why freshmen do not participate is because they have just entered the school and are relatively new to multimedia-assisted college English teaching. They may not be very clear, nor can they give an objective and fair evaluation. Since sophomores have studied college English for
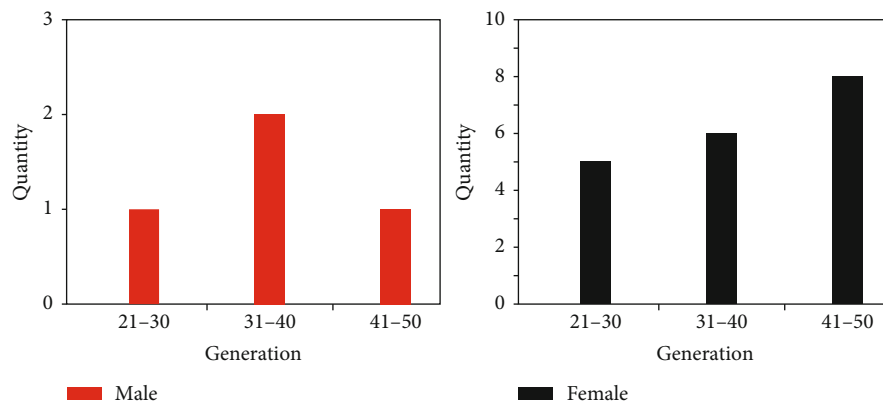
FIGURE 3: Distribution of teacher survey objects.

more than a year, their feelings and opinions are more fair and valuable.

Table 1 shows the total number of students participating in the survey, as well as the distribution of gender and major. All students participating in the research are English learners. Among them, women accounted for 55.2% and men accounted for 44.8%. Liberal arts students accounted for 57.8%, and science and engineering students accounted for 42.2%.

There are not many researches on the education system and multimedia teaching, but with the continuous development of science and technology, the teaching model is also constantly updated. Whether the children's learning effect can be achieved is the best for the education industry. Crucially, the lack of this part of the research urges us to explore this aspect. Only when the quality of teaching improves, our future will be bright, and our future life will become more and more happier.

The target population of the teacher questionnaire survey is the number of non-English major English teachers in xx universities. 23 English teachers were randomly selected as the research objects. Figure 3 shows the total number of teachers participating in the survey and their gender and age distribution. All the teachers participating in the study were from the English Department of xx university, of which male teachers accounted for 17.4% and female teachers accounted for 82.6%. Among all the respondents, most teachers are between 31 and 50 years old, and they have extensive experience in language teaching.

### 3.2. Research Methods and Research Plans

*3.2.1. Questionnaire Survey Method.* Questionnaire survey is a widely used research tool, which consists of a series of questions, and the purpose is to collect qualitative and quantitative data and useful information from the surveyed. Compared with other research methods, questionnaire surveys are more cost-effective, because a large amount of information can be collected from people's scores in a relatively more anonymous manner in a short period of time. The subjects of the survey are non-English majors and English teachers in xx university. This article aims to study the oper-

ation and application of multimedia-assisted English teaching by teachers and students, as well as classroom performance in a multimedia-assisted English teaching environment, teachers, and students' emotional attitudes towards multimedia-assisted English teaching, and how they use modern information technology after class Assist English learning. At the same time, there are also some problems that we need to discover that may affect the effectiveness of English teaching.

*3.3. Data Collection and Analysis.* After the multimedia-assisted English teaching experiment ended, a questionnaire survey was conducted on the subjects. These questionnaires are distributed in two ways, one is traditional printed paper, and the other is online voting by sharing a QR code. By scanning the QR code with a mobile phone, the respondent can easily conduct the questionnaire and then get the results of the questionnaire in the background. Students return to the questionnaire after the class is over. Teachers all sent out questionnaires via QR codes. The detailed distribution and collection of the questionnaire are shown in Table 2.

The multimedia-assisted English teaching questionnaire survey is based on the questions I asked students after the media English teaching. Some students found in this teaching, he made very fast progress after this teaching, and some students absorbed the comparison. Slowly, based on this question, I have produced this kind of investigation and research. The main purpose is to observe the attitude of those of us who can assist English teaching in terms of methods and interests and make appropriate adjustments to this model based on this result. so that we can better help students learn.

*3.4. Classroom Observation.* This research adopts the method of classroom observation to understand the current situation of students' learning. The method of classroom observation is one of the most widely used methods in educational research. Classroom observation is a cooperative process, and the observer and the observed play an equally important role in the observation process. As a data collection tool, it is not only essential for the basic data of

TABLE 2: Distribution and collection of questionnaires.

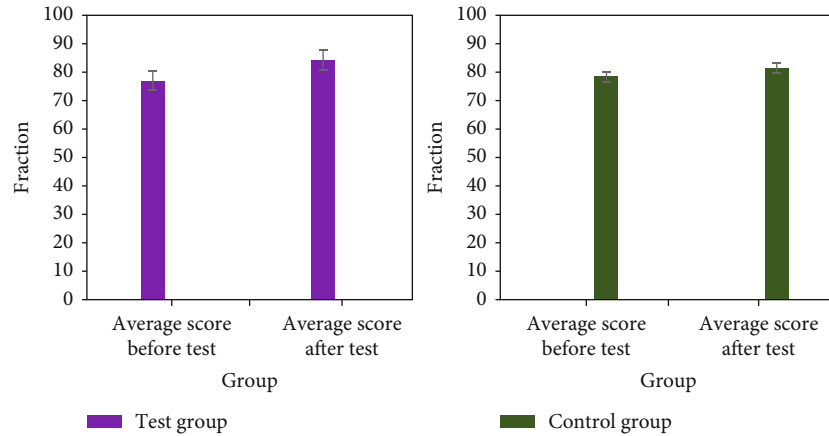| Survey object | Major | Distributed pieces | Returned pieces | Recovery rate |
|---|---|---|---|---|
| | Liberal arts | 43 | 43 | 100% |
| Student | Science and engineering | 32 | 32 | 100% |
| | Total | 76 | 76 | 100% |
| Teacher | Total | 16 | 16 | 100% |



FIGURE 4: Comparison of average scores before and after the two groups of tests.

educational research but also necessary for the study and improvement of basic data.

*3.5. Classroom Observation Outline.* The well-designed classroom observation mainly focuses on the following aspects of multimedia-assisted college English classroom teaching: the operation and application of multimedia-assisted English teaching, teacher-student interaction, and the implementation of multimedia classroom teaching. The classroom atmosphere includes Students' learning motivation and participation, as well as classroom multimedia equipment and other factors.

*3.6. Interview.* Based on previous literature reviews, questionnaire surveys, and classroom observations, there are still some questions and questions that need to be understood. The interviews with teachers are mainly aimed at the problems encountered in multimedia-assisted college English teaching, while the interviews with students are aimed at how they use advanced multimedia equipment such as computers and mobile phones to assist in language learning in their spare time. Although the interview outline has been prepared, the actual interviews were conducted in a semi-structured manner in order to obtain a more comprehensive survey result.

In order to reduce the pressure and understand the true thoughts of the interviewees, all interviews are conducted in a relatively casual way. The interview place is mainly a vacant lounge, where the interviewer is not easily disturbed. A total of 6 teachers and 21 students were interviewed. Since all the interviewees are unwilling to be recoded, the author only took down key notes during the interview and then rearranged them.
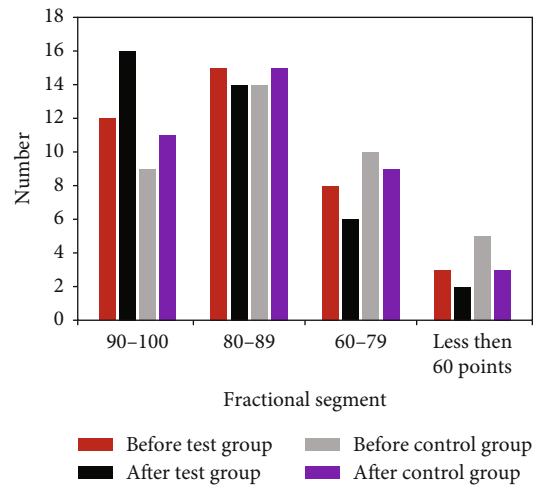


FIGURE 5: Comparison of the number of people in different scores before and after the two groups of tests.

## 4. Effect of Multimedia-Assisted English Teaching

*4.1. Comparative Analysis of English Scores before and after the Multimedia-Assisted Teaching Experiment.* The average scores of the two classes before and after the experiment are shown in Figure 4.

Data analysis in the figure shows that the average English scores of the two classes have improved to varying degrees after the test results before and after the end of the experiment. Compared with the previous test, the experimental group's average score on the back side increased by 7.1

TABLE 3: Outline of questionnaire design.

| Section 1 | \ | Personal information |
|---|---|---|
| Section 2 | Question 1-3 | Overall attitude to the multimedia assisted English teaching |
| Section 3 | Question 4-8 | Evaluation of Teacher's manipulation and application of multimedia assisted English teaching |
| Section 4 | Question 9-12 | Assessment of classroom performance under the environment of multimedia assisted English teaching |
| Section 5 | Question 13-16 | The use of multimedia technology after class. |
| Section 6 | Question 17-20 | Related questions of multimedia assisted language learning and teaching |

TABLE 4: Reliability statistics of teacher and student questionnaire.

| Reliability statistics | | |
|---|---|---|
| Questionnaire survey object | Cronbach's alpha | N of items |
| Student's | 0.844 | 20 |
| Teacher's | 0.795 | 20 |

points, and the control group's average English score increased by 3.2 points.

The comparison of the number of people in each score segment before and after the two groups of tests is shown in Figure 5.

Through the test of the average scores of students at different levels in the experimental class, it can be seen that there are very obvious differences in the scores of students with good, medium, and failing scores, while the experimental effects of students with excellent scores are not obvious, and the changes in scores are small. The reason is that outstanding students not only have a good foundation but also have good study habits, suitable learning methods, and excellent psychological quality. Be proactive and diligent when studying. Therefore, the use of multimedia technology will not have much impact on their English grammar learning. However, the students whose grades are in the middle class have average foundation, and their learning is in a passive state. The time and effort invested in learning are greatly affected by the external environment.

## 4.2. Questionnaire Survey Data

*4.2.1. Summary of Questionnaire.* Any good questionnaire must meet at least the following two criteria: it has high internal validity; it should be viewed from a professional perspective. Consider the form, structure, question wording, and format of the questionnaire. In addition, a preliminary study was conducted in this process to test the questionnaire. Observe the respondent's reaction and attitude, and check their explanation of the problem to see if they have the same explanation as the researcher expected. After the experiment, the wording and order of the questions were revised. Outline of questionnaire design is shown in Table 3.

It can be seen from Table 3 that the second part is mainly the general emotional attitude of the respondent to the multimedia-assisted college English teaching. The third part is the respondents' evaluation of teachers' use of multimedia-assisted English teaching in the classroom. The fourth section mainly discusses the respondents' personal feelings and experiences of the multimedia-assisted teaching environment. The fifth section mainly discusses the use of
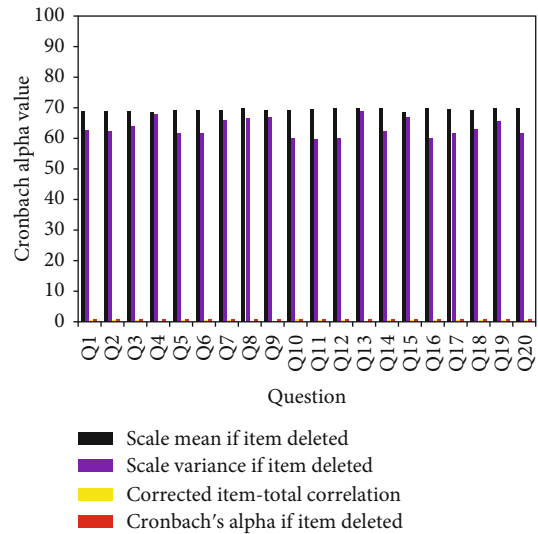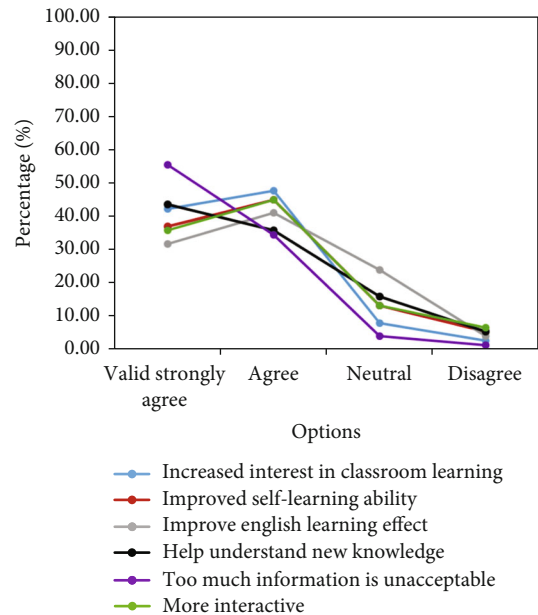


FIGURE 6: Questionnaire item statistics.



FIGURE 7: Comparison of the two groups of students' classroom satisfaction.

multimedia after class. The sixth part is about other issues about multimedia language learning. Respondents must use a five-point scale to give answers from "strongly disagree" to "strongly agree" in all five parts except the first section.
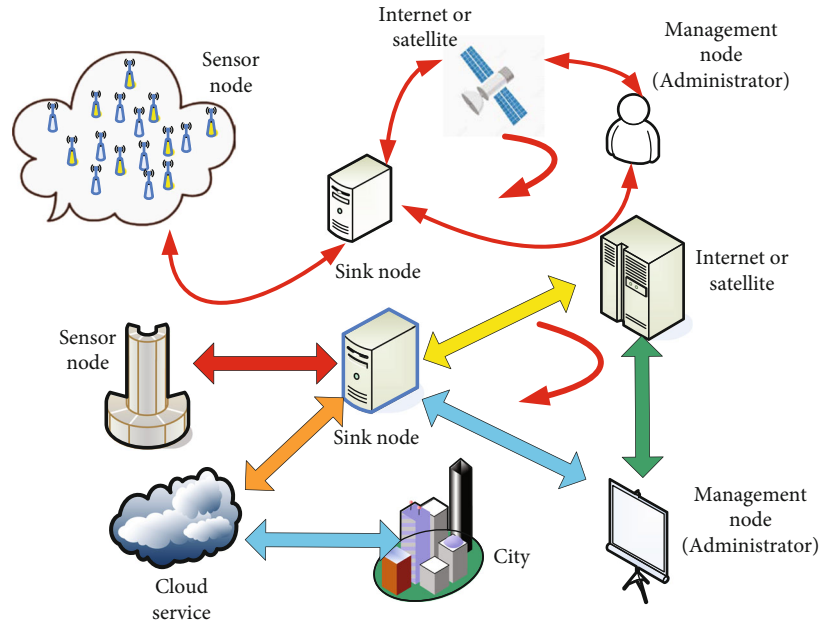
FIGURE 8: Wireless sensor network structure.

A scientific questionnaire should be reliable, which means that the results it provides are reliable and consistent. If the results produced each time are different and inconsistent, then a questionnaire will not be considered very valuable. Therefore, reliability has always been regarded as a basic and important part of qualified questionnaires or tests.

Cronbach $\alpha$ is widely used in education statistics as a reliability indicator to test the internal consistency of tests or questionnaires. Therefore, the reliability of the two questionnaires (one teacher questionnaire and one student questionnaire) was tested to determine whether the survey results are stable and consistent. Reliability statistics of teacher and student questionnaire are shown in Table 4.

As shown in Table 4, the Cronbach alpha value of the student questionnaire is 0.844, which is between 0.8 and 0.9, while the Cronbach alpha value of the teacher questionnaire is 0.795, which is between 0.7 and 0.8. Therefore, it can be concluded that the questionnaire design for both students and teachers is very good and has a high internal consistency. In general, the experimental data is consistent and reliable.

In addition, the total number of items in the two questionnaires was counted to understand whether there are any areas that need improvement in the questionnaire or design some specific questions. Generally speaking, if the Cronbach alpha value of a specific item is deleted, the item is lower than the entire item. The tested Cronbach alpha value means that the project is well designed and cannot be deleted. If the Cronbach alpha value of a specific item is higher or greater than the Cronbach alpha value of the entire test, then, this item may have some problems or may need some improvement and perfection. Questionnaire item statistics are shown in Figure 6.

As shown in Figure 6, Question 13 may need some improvement. The Cronbach alpha value of the deleted item

in Question 13 is very close to the Cronbach alpha value of the entire test, which may expose some problems. However, after consideration, this question has not been deleted.

Through the analysis of the questionnaire survey, we investigate whether the use of multimedia in the teaching process can arouse students' interest and expectations in the classroom and the overall emotional attitude of the respondents to multimedia-assisted college English teaching. Respondents evaluated the multimedia-assisted English teaching methods used by teachers in the classroom, and talked about their personal feelings and experiences in the context of multimedia-assisted teaching. The survey results are shown in Figure 7.

As can be seen from Figure 7, the results of the questionnaire after the multimedia-assisted English teaching experiment are over. For multimedia's increased interest in classroom learning, improving self-study ability, improving English learning, helping to understand new knowledge, and the interactive nature, most students agree and agree. They believe that if multimedia is used to assist teaching, there will be higher expectations for learning. There are also most students who think that in the process of multimedia-assisted English teaching, the amount of information in the classroom is too much to accept, and it takes a long time to assimilate knowledge after class. The structure of the wireless sensor is shown in Figure 8.

Table 5 is the reliability analysis of the overall variables of supply chain information sharing.

The results of the descriptive statistical analysis of the variables are shown in Figure 9.

The rotation component matrix of the supply chain information sharing scale is shown in Figure 10.

It can be seen from the rotation component matrix of the supply chain information sharing scale that it can realize on-demand viewing of entertainment resources through

TABLE 5: Supply chain information sharing overall variable reliability.

| Latent variable | Item number | CITC | Deleted | Coefficient of each dimension |
| --- | --- | --- | --- | --- |
| | ISS1 | 0.630 | 0.887 | |
| | ISS2 | 0.587 | 0.889 | |
| | ISS3 | 0.521 | 0.892 | |
| | ISC1 | 0.582 | 0.890 | |
| | ISC2 | 0.529 | 0.892 | |
| | ISC3 | 0.586 | 0.889 | |
| | ISC4 | 0.584 | 0.889 | |
| Supply chain information sharing | ISC5 | 0.651 | 0.886 | 0.896 |
| | ISC6 | 0.598 | 0.888 | |
| | ISQ1 | 0.524 | 0.891 | |
| | ISQ2 | 0.610 | 0.888 | |
| | ISQ3 | 0.602 | 0.889 | |
| | ISQ4 | 0.648 | 0.887 | |
| | ISQ5 | 0.575 | 0.890 | |
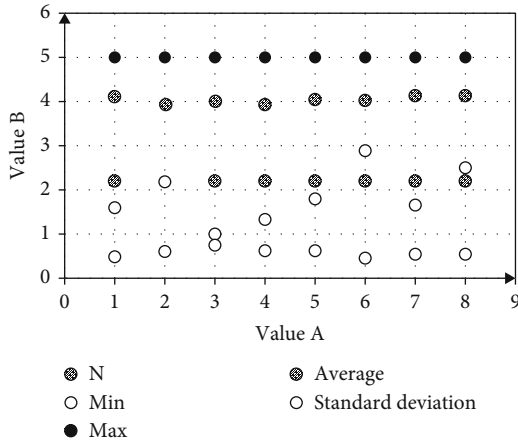


FIGURE 9: Descriptive statistical analysis results of variables.



FIGURE 10: Rotating component matrix of supply chain information sharing scale.

multimedia teaching skills of audio university. Relevant departments of the university can make cultural performances, sports meetings, and other activities in the school into resources and deploy them to the server for students to choose to play or deploy their own works to enrich the cultural life of the campus.

*4.3. Interview Results.* Through interviews, it can be concluded that most teachers think that they are not proficient in making ideal courseware and operating advanced multimedia auxiliary teaching equipment. Since the courseware of each unit has a CD attached to the teacher's book, most teachers will use these coursewares directly. If they find that the premade courseware is not satisfactory, they will modify and improve it by adding other materials downloaded from the internet. Few of them will make a brand new courseware by themselves, because it is time-consuming and laborious, unless the lesson he or she wants to teach will be observed by school leaders.

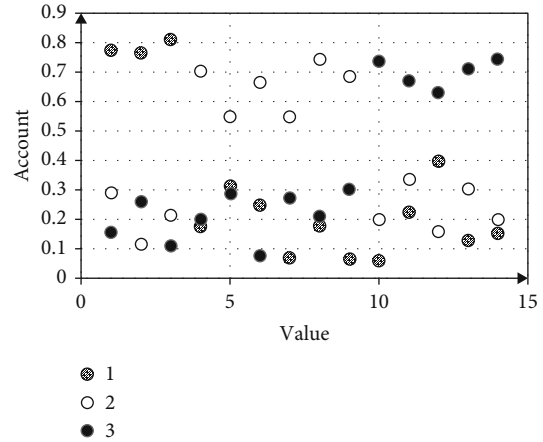Most students believe that, compared with traditional blackboard and chalk teaching, multimedia-assisted teaching can stimulate students' interest in learning to a certain extent. They think that multimedia-assisted teaching courses are a bit like lectures, because most of the time the teacher will only explain the information on the screen, showing the premade courseware one by one, and rarely interact with them. Not many of them use computers or mobile phones to learn English after class.

Based on previous questionnaire surveys, classroom observations, and interviews, it can be concluded that although multimedia-assisted English teaching is popular and widely used in college English classrooms, and there are still some problems that cannot be ignored.

## 5. Conclusions

China's rapid development has provided a basis for technological updates to assist the teaching and learning of English education in colleges and universities with the help of multimedia. The application of multimedia technology has changed the traditional teaching, strengthened the

method, improved the teaching mode, improved the effect, and expanded the knowledge of English students. The research in this article is about the impact of multimedia-assisted English teaching on children. In the research of many researchers, we will find in this research that when teaching with high-tech technology, when it is convenient for them, it will often become a little bit more convenient. No, it **is** like the Internet is a double sword, but what we have is to sweep away all the defects that these bring, reduce their defects, enlarge their advantages, and do our best to do it. Some scholars blindly pursue benefits, often ignoring the part of the people affected by the malpractice, and we cannot give up anyone in education. This research investigates the current situation of multimedia-assisted English teaching in colleges and universities and understands the attitudes of students and teachers to multimedia-assisted English teaching. This research has discovered the current problems of multimedia-assisted universities, and through questionnaire surveys, classroom observations, and interviews, the results show that multimedia-assisted college English teaching is generally popular today and has reached an excellent level. However, there are still some painting problems. The quality of these devices varies. Hardware projectors have problems such as dim vision, slow computer response, and even extra data brought by teaching. Most English teachers have no design knowledge. The courseware contains a series of new information from time to time to make students fall asleep. Mobile learning is a new method of multimedia-assisted language teaching content, with flexible learning methods, personalized teaching plans, and timely feedback. Although a lot of work has been done, there is still room for improvement.

## Data Availability

No data were used to support this study.

## Conflicts of Interest

The author states that this article has no conflict of interest.

## References

[1] P. Li and C. Li, "Construction of multimedia teaching platform for community nursing based on teaching resource library technology," *international journal of emerging Technologies in Learning*, vol. 12, no. 7, p. 68, 2017.

[2] R. Kabooha and T. Elyas, "The effects of Youtube in multimedia instruction for vocabulary learning: perceptions of EFL students and teachers," *English language teaching*, vol. 11, no. 2, p. 72, 2018.

[3] A. Philominraj, D. Jeyabalan, and C. Vidal-Silva, "Visual learning: a learner centered approach to enhance English language teaching," *English language teaching*, vol. 10, no. 3, p. 54, 2017.

[4] C. Jin, "Analysis of music teaching mode innovation based on intelligent classroom and multimedia system," *Revista De La Facultad De Ingenieria*, vol. 32, no. 1, pp. 534–543, 2017.

[5] T. Mpemba, "Reluctance to sanction Kiswahili instructional medium in post-primary education: how do the learners and their instructors cope with or resist the English medium policy?," *phi delta kappan*, vol. 92, no. 4, pp. 15–21, 2018.

[6] A. Muslem and M. Abbas, "The effectiveness of immersive multimedia learning with peer support on English speaking and reading aloud," *International Journal of Instruction*, vol. 10, no. 1, pp. 203–218, 2017.

[7] D. A. Hennessy, "Conceptual models underlying economic analysis of animal health and welfare with the inclusion of three components: people, products and resources," *Revue scientifique et technique (International Office of Epizootics)*, vol. 36, no. 1, pp. 77–85, 2017.

[8] C. Carne, S. Semple, A. MacLarnon, B. Majolo, and L. Maréchal, "Implications of tourist–macaque interactions for disease transmission," *EcoHealth*, vol. 14, no. 4, pp. 704–717, 2017.

[9] D. Farine, "The dynamics of transmission and the dynamics of networks," *Journal of Animal Ecology*, vol. 86, no. 3, pp. 415–418, 2017.

[10] L. M. A. Santos, M. S. E. Kadri, R. Gamero, and T. Gimenez, "Teaching English as an additional language for social participation: digital technology in an immersion programme," *Revista Brasileira de Linguística Aplicada*, vol. 18, no. 1, pp. 29–55, 2018.

[11] T. Zhang, Y. Luo, Y. Sun, T. Li, and H.-J. Qiu, "New-concept animal vaccines emerging in recent years," *Sheng wu gong cheng xue bao = Chinese journal of biotechnology*, vol. 34, no. 12, pp. 1963–1973, 2018.

[12] E. Kaldrymidou, G. Kanakoudis, K. Katsaras, T. Tsangaris, and N. Papaioannou, "Bovine spongiform encephalopathy and public health," *Journal of the Hellenic Veterinary Medical Society*, vol. 49, no. 3, p. 171, 2018.

[13] M. Gozieva, "Using modern information technologies in the teaching English language," *Scientific Bulletin of Namangan State University*, vol. 1, no. 2, pp. 213–213, 2019.

[14] W. X. Gu, "Application of learning by design into the cultivation of multiliteracies: a case study of college English teaching practice at Soochow University," *Language & Semiotic Studies*, vol. 4, no. 1, pp. 129–147, 2018.

[15] D. Zou, "Research on college English teaching model based on multimedia and network," *DEStech Transactions on Social Science Education and Human Science*, no. icsste, pp. 19–21, 2017.

[16] R. Gooch, K. Saito, and R. Lyster, "Effects of recasts and prompts on L2 pronunciation development: teaching English /ɹ/ to Korean adult EFL learners," *System*, vol. 60, no. 60, pp. 117–127, 2016.

[17] C. L. Al-Qallaf and A. Al-Mutairi, "Digital literacy and digital content supports learning," *Electronic Library*, vol. 34, no. 3, pp. 522–547, 2016.

[18] A. Alhassan, "Teaching English as an international/lingua franca or mainstream standard language? Unheard voices from the classroom," *Arab World English Journal*, vol. 8, no. 3, pp. 448–458, 2017.

[19] M. Polat, "Teachers' attitudes towards teaching English grammar: a scale development study," *International Journal of Instruction*, vol. 10, no. 4, pp. 379–398, 2017.

[20] O. Aljohani, "Does teaching English in Saudi primary schools affect students' academic achievement in Arabic subjects?," *Advances in Language & Literary Studies*, vol. 7, no. 1, pp. 214–225, 2015.

[21] S. Yang, B. Deng, J. Wang et al., "Scalable digital neuromorphic architecture for large-scale biophysically meaningful neural

network with multi-compartment neurons," *IEEE transactions on neural networks and learning systems*, vol. 31, no. 1, pp. 148–162, 2020.

[22] Z. Cai and X. Zheng, "A private and efficient mechanism for data uploading in smart cyber-physical systems," *IEEE Transactions on Network Science and Engineering (TNSE)*, vol. 7, no. 2, pp. 766–775, 2020.

[23] Z. Cai, Z. Xiong, H. Xu, P. Wang, W. Li, and Y. Pan, "Generative adversarial networks: a survey towards private and secure applications," https://arxiv.org/abs/2106.03785.