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Retraction

Retracted: Research on the Cultivation of College English Listening, Speaking, Reading, and Writing Ability by VR Technology

Security and Communication Networks

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1].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. Zeng, "Research on the Cultivation of College English Listening, Speaking, Reading, and Writing Ability by VR Technology," *Security and Communication Networks*, vol. 2022, Article ID 4241870, 9 pages, 2022.

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Research Article

Research on the Cultivation of College English Listening, Speaking, Reading, and Writing Ability by VR Technology

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With the development of VR technology, it is possible to apply innovation to English teaching, and realize new breakthroughs and innovations in English teaching. In the background of information technology widely used in teaching, VR technology has become a very popular new technology because it can promote teaching better and make teaching effect more obvious; Through VR technology in English learning in listening, speaking, reading, and writing mode, we summarize the application of this technology in education industry at home and abroad, and put forward the purpose and significance of this research. Firstly, through the listening, speaking, reading, and writing mode of VR technology in English learning; In order to better evaluate the performance comparison under different modes, the score and weight distribution method are carried out for listening, speaking, reading, and writing. Secondly, by evaluating the value of $E(X)$ in the nonexisting combination mode, the corresponding optimal proportion distribution scheme can be obtained. Finally, by comparing the scores of 8 groups of people under VR technology and statistical learning mode, the results show that VR technology has obvious advantages in improving listening, speaking, reading, and writing scores.

1. Introduction

2016 is called "the first year of VR." Since 2016, China's VR industry has started to develop rapidly, but it is also facing serious talent problems and unequal development [1]. By analyzing the current situation of VR industry chain structure in China, this paper expounds the demand direction of VR talents in China from three fields: technology production, content creation, and operation planning [2, 3]. This paper examines the possibility of training talents in reality from the perspective of the links among schools, public authorities, and enterprises. With the rapid development of Internet technology, the tradition of terminal equipment general education and the modern network autonomous learning new musical instrument training classroom complement and strengthen each other, especially in the learning resources of students, whether it is the allocation of working hours, that is, anyone can learn more selectivity and stability at their own rhythm [4]. However, self-sufficient online education for college students remains

a challenge. English learning is becoming more and more important in all stages of people's learning and development, especially in compulsory education and higher education [5]. However, in real life, many students have obstacles in English learning and development [6]. In clarifying the needs of talents and establishing an effective talent training mechanism, VR technology is used to cultivate college English listening, speaking, reading, and writing skills [7]. The combination of VR technology and college English listening, speaking, reading, and writing can not only promote the development of VR technology but also help people to learn English [8, 9].

English learning has been accompanied by the growth of students. Most students begin to contact English from preschool education or primary school. Junior high school English has become an essential hard test subject, and most students learn English more or less. At the stage of higher education, English is also an extremely important language and subject, but at the stage of university, many students encounter bottlenecks in learning English, and even English

has become a major obstacle in many students' learning career. Constantly, exploring new and more suitable ways of learning English for modern students has become a major trend of development.

After the epidemic, online learning has become a new way of learning. During the online teaching period, QQ, WeChat, and Nail have become the learning tools chosen by most students and teachers. Superstar Erya network course platform, university MOOC, rain class, and BILIBILI software have become learning tools for many students to learn to watch more learning content [10]. However, for many students, online learning lacks self-control and online learning conditions, and online learning is still developing.

Virtual reality is called VR for short [11, 12]. VR was put forward by Haron Lanier, founder of VPL in the early 1980s. This is a technology that can make full use of the graphics system on the computer and various interface devices (such as reality and control) for interactive 3D environment diving. In computer technology, computers and interactive 3D environments are called virtual environments (virtual environments are called EVs). Virtual reality technology is supported by virtual reality simulation platform (VRP) [13]. VR technology can be widely used in urban planning, interior design, bridge and road design, real estate sales, tourism and education, hydropower, geological disasters, education and training, and other fields to provide practical solutions [14]. We boldly innovate and combine VR technology with college English listening, speaking, reading, and writing, which not only promotes the development of VR technology but also helps students make progress in English learning. It is shown in Figures 1–3.

2. VR Technology Research Model

VR technology research model is an improved probabilistic recommendation model based on different aspects of application [15]. The traditional probabilistic estimation model simply estimates the influence of parameters on events, but only estimates it theoretically or experimentally, ignoring the complexity of events in real life, so it can only be a theoretical or unpractical algorithm. In order to solve this problem, based on the traditional probability estimation model, VR virtual technology is added to help solve the problem that the experiment does not conform to reality. It provides a reasonable method model for improving college English listening, speaking, reading and writing. The structure of VR technology research model is shown in Figure 4.

In Figure 4, VR technology is used to evaluate English listening, speaking, reading, and writing. This proportional distribution scheme is a reasonable distribution of proportional standards in experimental exam-oriented education. Therefore, this distribution scheme meets various requirements such as teaching content distribution and teaching examination. For professional examinations, the ratio of each item can be adjusted, and the corresponding preference can be improved.

The influence of VR on English listening, speaking, reading, and writing is evaluated by calculating the moment estimator. According to the corresponding expression, it is as follows.

When a single project is evaluated continuously, the evaluation method is as follows:

$$
\begin{aligned}
\alpha_m &= \int_{-\infty}^{+\infty} x^m f(x; \theta_1, \ldots, \theta_k) d_x, \\
\mu_m &= \int_{-\infty}^{+\infty} (x - E(X))^m f(x; \theta_1, \ldots, \theta_k) d_x.
\end{aligned}
\tag{1}
$$

When a single project is evaluated discrete, its evaluation method is as follows:

$$
\begin{aligned}
\alpha_m &= \sum_{i=1}^{n} f(x_i; \theta_1, \ldots, \theta_k), \\
\mu_m &= E(X - E(X))^m = \sum_{i=1}^{n} (X_i - E(X))^m \\
&\quad \cdot P(X = X_i, \theta_1, \ldots, \theta_k).
\end{aligned}
\tag{2}
$$

For $\theta_1, \ldots, \theta_k$ dependent, when the sample size is relatively large, α_m shows:

$$
\alpha_m = \alpha_m(\theta_1, \ldots, \theta_k) \approx \sum_{i=1}^{n} \frac{X_i^m}{n}.
\tag{3}
$$

When $m = 1, \ldots, k$, the (3) can be converted to the following:

$$
\alpha_m(\theta_1, \ldots, \theta_k) = \alpha_m, \ (m = 1, \ldots, k).
\tag{4}
$$

The whole sample is evaluated by sample matrix, and the whole moment is called unbiased estimation. The corresponding unbiased estimation is explained for the first-order origin moment α_{n1} and the second-order center moment m_{n2}:

$$
E(\alpha_{n1}) = \frac{1}{n} E\left(\sum_{i=1}^{n} X_i\right) = \frac{1}{n} \sum_{i=1}^{n} E(X) = \alpha_1.
\tag{5}
$$

The estimation of the second-order central moment is shown as follows:

$$
\begin{aligned}
E(m_{n1}) &= \frac{1}{n} E\left(\sum_{i=1}^{n} (X_i - \overline{X}_n)^2\right) = \frac{1}{n} E\left(\sum_{i=1}^{n} (X_i^2 - 2X_i\overline{X}_n + 2\overline{X}_n^2)\right), \\
&= \frac{1}{n} \sum_{i=1}^{n} E(X_i^2) - \frac{1}{n}\overline{X}_n E\left(\sum_{i=1}^{n} X_i\right) + E(\overline{X}_n^2) = \frac{1}{n} \sum_{i=1}^{n} E(X_i^2) - E(\overline{X}_n^2).
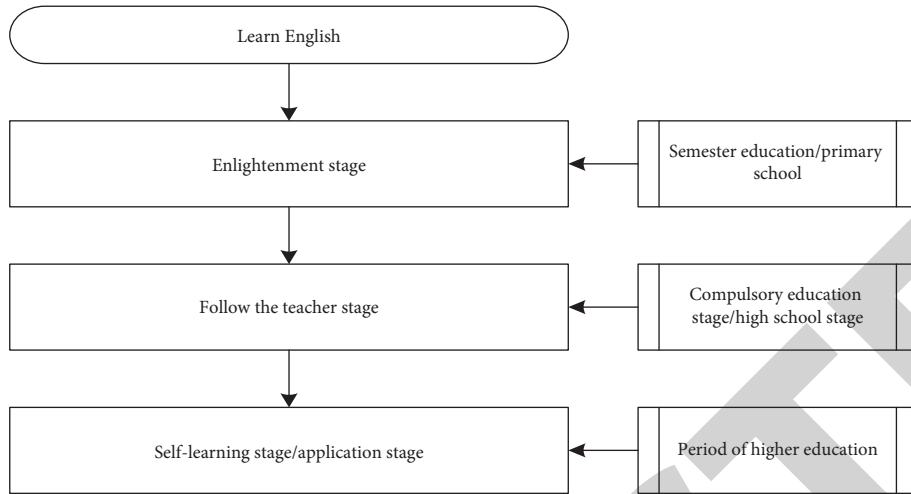\end{aligned}
\tag{6}
$$

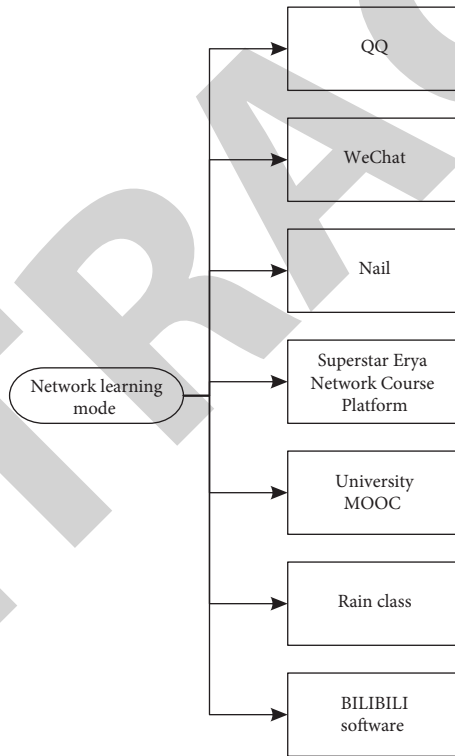FIGURE 1: English learning at different stages.

FIGURE 2: Students' learning methods during the epidemic network period.

Expect the probability distribution in Table 1, assuming an average distribution, and the formula is shown as follows:

$$E(X_1) = \frac{(X_1 + X_2 + X_3 + X_4)}{4}, \tag{7}$$

$$E(\theta) = E(X_1). \tag{8}$$

In the process of English teaching, the probability analysis of listening, speaking, reading, and writing is carried out, assuming that the distributions are {$X1$, $X2$, $X3$, $X4$}, as shown in Table 1.

Under the same number of people in the previous period, different proportions are set to get different expectations, as shown in Table 2.

In Table 2, the scores of listening, speaking, reading, and writing are assigned, and the proportion method or weight below the scores. The score is multiplied by the weight and accumulated to obtain the corresponding $E(X)$ value. Different $E(X)$ values are evaluated to get the corresponding optimal proportional structure. In Table 2, the value of $E(X)$ is too large or too small. It is reasonable to choose an intermediate value.
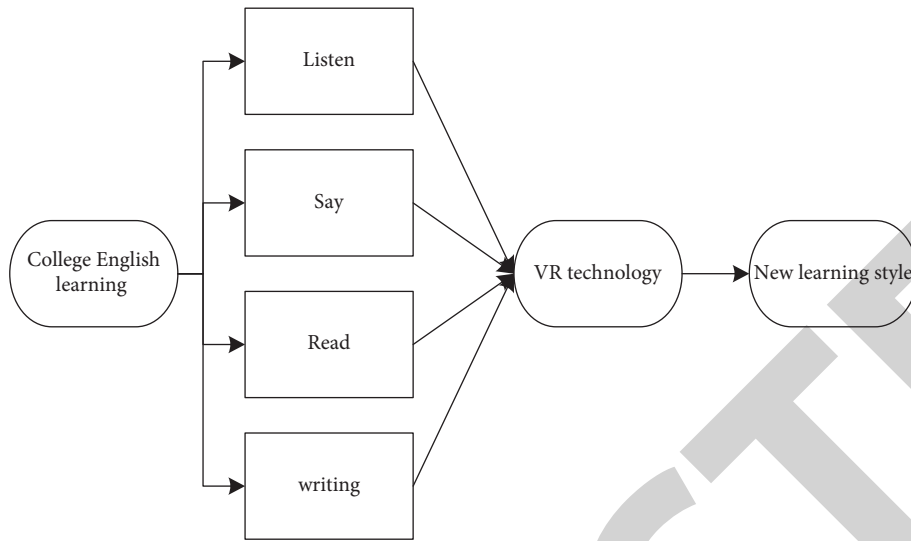
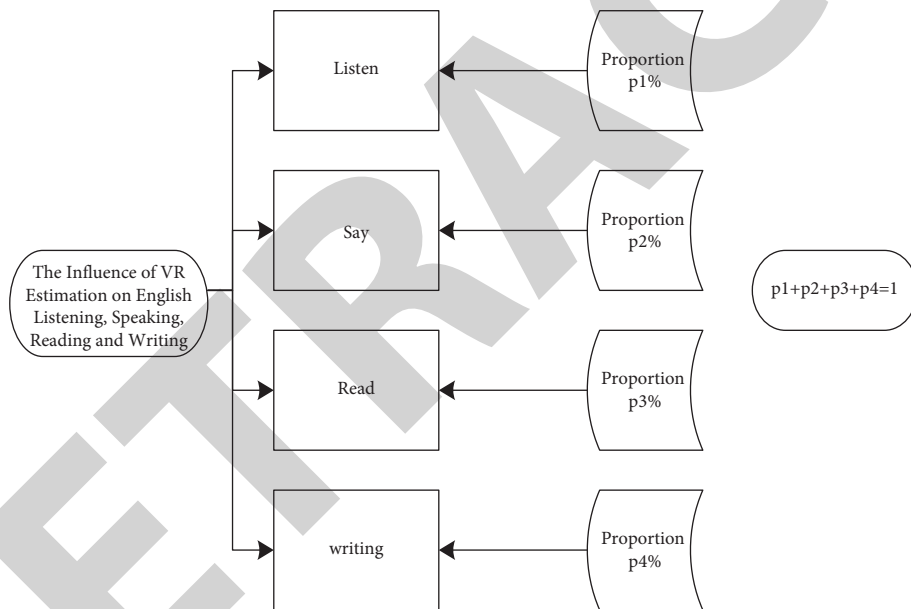FIGURE 3: VR combined with a new way of English learning.

FIGURE 4: The influence of VR estimation on English listening, speaking, reading, and writing.

TABLE 1: VR affects the probability of English listening, speaking, reading and writing.

Category	Listen	Say	Read	Writing
Proportion	$X1$	$X2$	$X3$	$X4$

TABLE 2: Expected values under different examples.

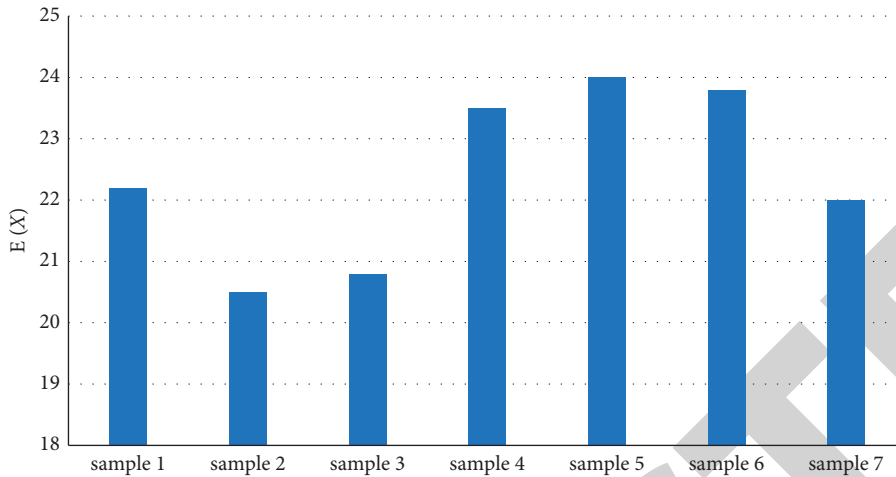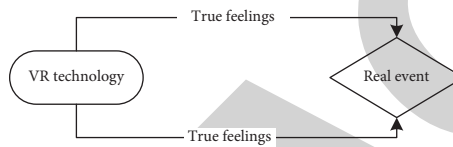| Sample	Listen	Say	Read	Writing	E(X)
Sample 1	10 30%	49 30%	2 30%	39 10%	22.2
Sample 2	40 20%	30 30%	15 30%	15 20%	20.5
Sample 3	90 20%	5 30%	3 30%	2 20%	20.8

FIGURE 5: Values of different journals.
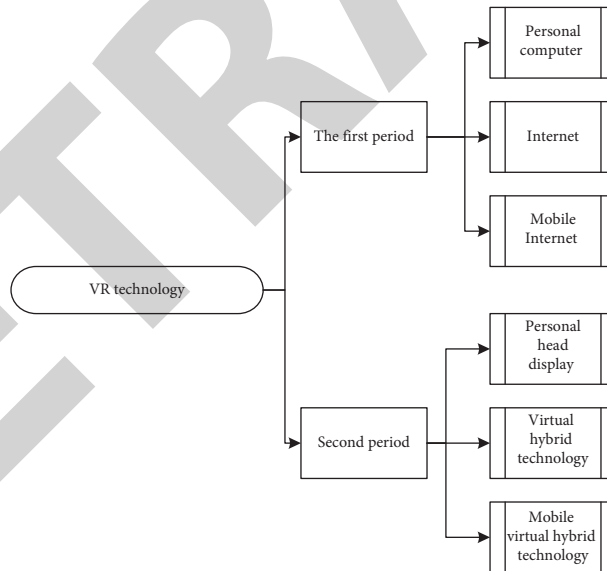

FIGURE 6: VR experience process.

FIGURE 7: Development of VR in different periods.

When the personnel relationship with different proportional relationships is set at any time, different journal values are generated, as shown in Figure 5:

3. English Learning Methods Based on VR Technology

3.1. English Learning Process. VR technology can create and experience the computer simulation technology of virtual world, and can give users a real immersive experience, as if they were in an event. It is shown in Figure 6.

The first period of VR technology brought people personal computers, Internet, and mobile Internet. The second period will bring people personal head display, virtual hybrid technology, and mobile virtual hybrid technology. It is shown in Figure 7.

Just as the Internet has developed to enable everyone to use electronic computers, VR technology will also develop to
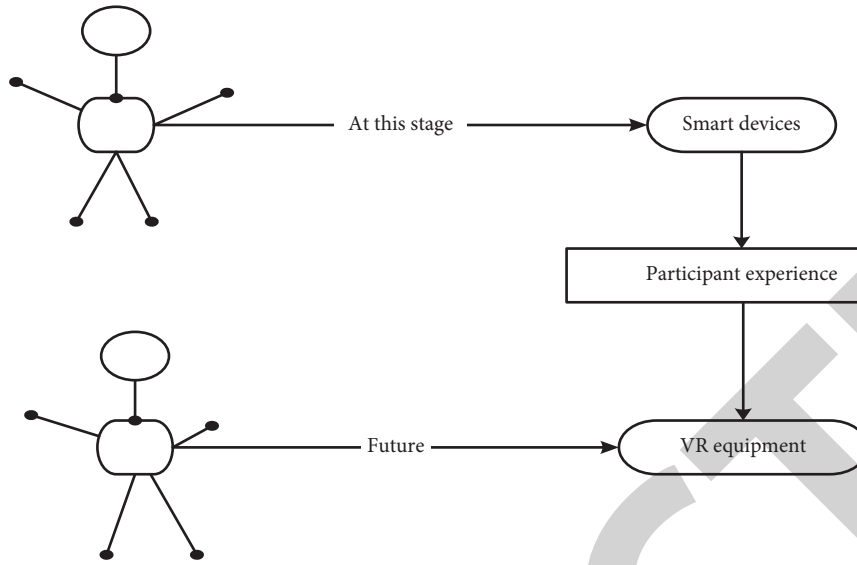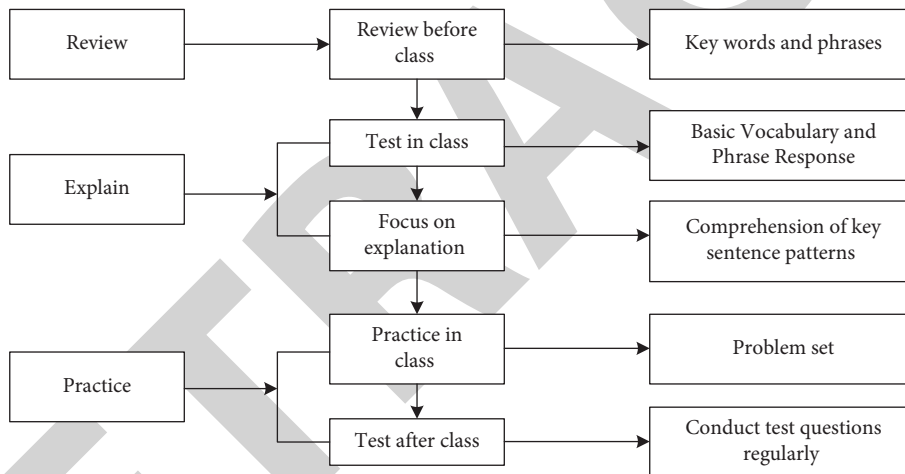
FIGURE 8: VR intelligent process.

FIGURE 9: Traditional classroom teaching design.

TABLE 3: Achievement statistics under traditional English learning mode.

Sample	Listen	Say	Read	Write	Total
No 1	18.6	12.6	13.5	20.6	65.3
No 2	19.4	13.4	14.2	18.6	65.6
No 3	18.8	12.4	13.2	21.3	65.7
No 4	19.6	11.6	11.2	20.1	62.5
No 5	17.6	12.8	12.4	18.9	61.7
No 6	18.8	14.3	13.6	17.3	64
No 7	20.7	12.7	12.8	18.4	64.6
No 8	20.2	12.3	13.1	18.3	63.9

enable everyone to own and use VR machines and equipment in the future. This is the irresistible development direction of scientific and technological progress, and VR technology will be applied to people's lives, including intelligent English learning. It is shown in Figure 8.

According to the report, in the era of artificial intelligence, mixed reality and immersive experience are playing an increasingly important role in modern education. VR technology can help us learn at a lower cost, in a shorter time and more effectively. These data show that the test scores of students who use immersion technology will increase by 22%. With the continuous popularization of educational internationalization and the rapid growth of English education demand, the integration of VR technology into learning is bound to become an important step in the reform and modernization of college English education industry.

TABLE 4: Achievement statistics under VR English learning mode.

Sample	Listen	Say	Read	Write	Total
No 1	19.3	14.9	14.8	22.3	71.3
No 2	20.6	15.3	15.1	20.6	71.6
No 3	19.8	13.5	14.6	23.5	71.4
No 4	21.3	13.2	13.4	21.2	69.1
No 5	19.5	13.6	14.5	19.5	67.1
No 6	19.8	15.2	15.9	19.3	70.2
No 7	21.8	14.8	14.6	19.6	70.8
No 8	21.9	13.7	15.2	19.7	70.5

3.2. Advantages of VR Technology

3.2.1. Learners' Practical Experience. Virtual reality technology gives College English learners an immersive feeling that traditional educational media cannot achieve, and can significantly improve the conversion rate of knowledge. With the 360-degree panoramic screen, you can meet Americans in English, just like you do in your native language environment. On-the-spot learning scene enables students to have a deeper understanding of how spoken English is used in real life, which significantly improves learning efficiency and achieves higher English learning results.

3.2.2. Learners Have More Authentic and Interesting Conversations and More Authentic English and American Language Environments. VR technology simulates the English and American real-life language environment, so that college English learners can feel the foreign language atmosphere, cultivate their interest in learning, and improve their learning initiative. After many simulations of facing foreigners in real life, students can communicate with foreigners more skillfully, and even after going abroad, students can speak English fluently.

3.2.3. Innovate Learning Mode to Attract Students and Parents. The educational ideas in 1980s and 1990s, which grew up in the Internet age, have also changed obviously. Due to the high utilization rate of digital education and the influence of education in Europe and America, children's thinking on education has become more profound and systematic. It is more important to improve the quality of interactive experience education and professional knowledge. VR technology is a new way for college English listening, speaking, reading, and writing.

3.2.4. The Present Situation and Future of VR Education Applied to English. VR is used to learn architecture, organizational structure, virtual hypothesis, and video courses, but VR technology is rarely applied. VR technology is very difficult to get the recognition of students, teachers and parents, not to mention changing the way of education. The fundamental problem is that many VR technicians want to apply the past education methods and methods directly to VR technology. In fact, it is to put a new shell on the old way. The application of VR technology to education is not "decoration," but a complete change in modern language education methods.

4. Comparison of the Application of VR Technology in English Teaching

4.1. Traditional Classroom Teaching Design. In traditional classroom teaching, the corresponding content is usually displayed with the help of electronic whiteboard and office software PPT. The specific implementation steps in the classroom are shown in Figure 9:

4.2. Application of VR in English Teaching. This paper selects some contents in college English to practice and apply English listening, speaking, reading and writing under VR technology, after two years, all the subjects have completed the study of English teaching content, and have a certain familiarity with the teaching materials. All the experimental contents are carried out in the form of review lessons. All the subjects meet the requirements of the subjects, have the same educational and cultural background, and have the same basic English level. 80 of them were tested, and 10 of them were averaged in one group. The scores of listening, speaking, reading, and writing are 30, 20, 20, and 30, respectively. Traditional teaching and VR English teaching are shown in Tables 3 and 4.

Table 3 shows the distribution of listening, speaking, reading, and writing scores in traditional English teaching, and Table 4 shows the distribution of listening, speaking, reading, and writing scores in English teaching using VR technology. The two tables are divided into 8 groups of students for testing, and the scores of these 8 groups of students are random. After the implementation of VR technology, the overall level of English has been improved, which fully demonstrates the advantages and significance of adopting VR technology in English teaching practice. It can be seen from Tables 3 and 4 that VR English learning mode has improved compared with traditional English learning results, and the effect of improving scores is obvious, as shown in Figure 10.

It can be seen from Figure 10 that the learning effect after adopting VR technology has been obviously improved, especially in the fourth group, with an average score of 6.6 points. This group has poor grades, but there is much room for improvement. Therefore, VR technology has a good learning effect on English learning.

The following is a comparison from various aspects of listening, speaking, reading, and writing. Through experimental teaching, students' mastery of listening, speaking, reading, and writing questions has also been improved.
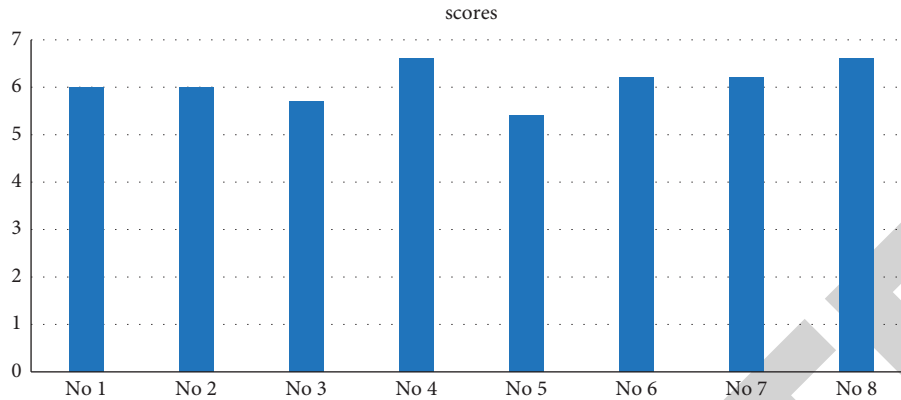
scores

Figure 10: VR and the total score improvement of traditional learning.
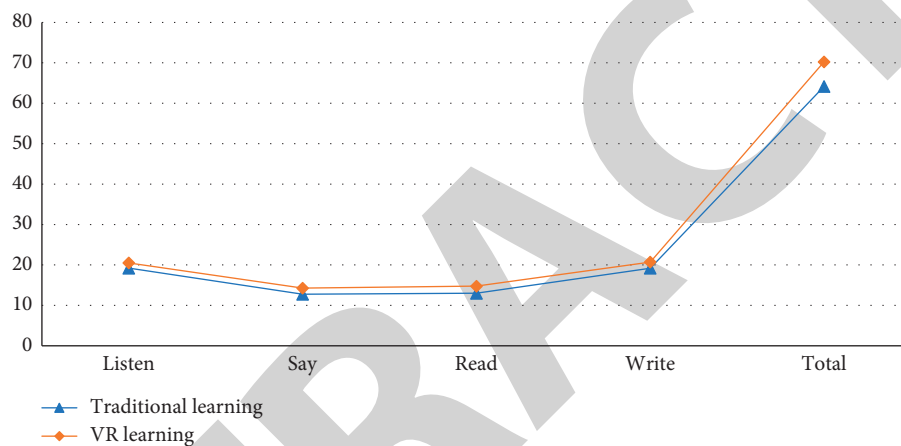

Traditional learning
VR learning

Figure 11: Comparison of VR and traditional learning achievements.

Because all grammar knowledge points of questions are collected, students need to rely on classroom explanation to make them.

Understanding and mastering the data comparison of this question shows that different groups of students have basically the same mastery of this question. The improvement of each method of listening, speaking, reading, and writing is shown in Figure 11.

5. Conclusion

To sum up, it is feasible to apply VR technology reasonably to English listening, speaking, reading, and writing. Using VR model can effectively help to apply it to English learning, and students' academic achievements and learning enthusiasm can be improved. VR technology will continue to develop in the future.

Data Availability

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

Conflicts of Interest

The author declares that there are no conflicts of interest regarding this work.

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