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Retraction

Retracted: Analysis of English Education Classroom Student Interaction and Performance Based on Virtual Reality

Security and Communication Networks

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets 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 own 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] M. Li and Z. Madina, "Analysis of English Education Classroom Student Interaction and Performance Based on Virtual Reality," *Security and Communication Networks*, vol. 2022, Article ID 9042553, 10 pages, 2022.

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Research Article

Analysis of English Education Classroom Student Interaction and Performance Based on Virtual Reality

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In order to improve the interaction of students in English teaching and improve the effect of English teaching, this paper combines virtual reality algorithms to construct an interactive virtual space for English teaching. Furthermore, this article advances the virtual reality method from a physics standpoint and uses the Fourier transform to superimpose the cross-correlation function in the frequency domain. At the same time, this study uses the Fourier transform to convert the overlaid result into a cross-correlation function in the time domain, eliminating the noise of virtual reality algorithms, improving immersion in the virtual environment of English instruction, and encouraging student participation. In addition, on the basis of virtual reality analysis, this paper constructs an English virtual reality education platform. Finally, after the platform is built, the effect is verified through experimental teaching methods. The experimental teaching shows that the English education classroom student interaction and performance analysis system based on virtual reality proposed in this paper has certain advantages over traditional algorithms.

1. Introduction

Interpersonal interaction is of great significance and value to the development of individuals, and interpersonal interaction between teachers and students is an important practical activity to promote the development of teachers and students. Moreover, the interpersonal interaction between teachers and students is a hot issue that the current education and psychology circles discuss together [1]. Since the 1970s, a large number of empirical studies on classroom teacher-student interaction have been carried out abroad, and fruitful research results have been obtained. However, there are few independent studies on the interpersonal interaction between teachers and students. Moreover, the research topics on the interpersonal interaction between teachers and students are diverse, but the contents are relatively scattered, lacking systematic research supported by one or several theories. The research methods and means of the interpersonal interaction between teachers and students in the classroom are relatively single, and interview and classroom observation are the main research methods [2]. The domestic research on the interpersonal interaction between teachers and students mainly carries out logical speculative research and empirical description from the essence, characteristics, types, modes, and values of the interpersonal interaction between teachers and students, but there is less systematic empirical research. Therefore, from the perspective of psychology, this paper attempts to systematically sort out the basic theoretical problems of interpersonal interaction between teachers and students and then put forward the research ideas and assumptions of this study on the basis of symbolic interaction theory and other related theories. Furthermore, this paper uses the research method of combining theory and demonstration to explore and verify the constituent factors of the expectation and current situation of the interpersonal interaction between teachers and students, starting with the preparation of teachers' expectation questionnaire for the interpersonal interaction between teachers and students. Furthermore, from the perspectives of teachers and students, this paper compares the differences between the expectation and current situation of interpersonal interaction and constructs a relationship model between teachers' personality, teachers' expectation of interpersonal interaction between teachers and students, and the current situation of interpersonal interaction between teachers and students. Finally, this work employs the classroom observation research technique to delve deeply into the microcondition of the classroom in order to evaluate and explore the psychological mechanisms of interpersonal interaction between instructors and students [3].

Nowadays, the new curriculum reform is gradually moving forward, but due to the influence of traditional English teaching concepts, teachers sometimes criticize students too harshly and sometimes cannot analyze students' problems in detail. The English teaching process in the classroom is centered on the teacher, the teacher is active, and the student is passive. Questions and answers are often used in which the teacher speaks and the students practice. Teachers ignore some of the students' questions that deviate from the focus of the exam. When answering a question, if the student does not answer according to the teacher's thinking, the teacher's attitude is very dissatisfied, and the teacher does not recognize the law of the development of the student's thinking. The poor efficiency of classroom English instruction still occurs after the new curriculum reform has reached a stage. This creates an evident difficulty in the English teaching process: pupils work really hard, and instructors are likewise exhausted. Many instructors are being influenced by test-driven schooling. They are primarily interested in achieving good exam results. They intentionally deny innovative English teaching methodologies and information technologies from entering the classroom throughout the English teaching process. They just follow standard English instruction without question. The method of instilling classroom English teaching ignores the students' own thinking characteristics and only transfers their stored knowledge to the students mechanically. After class, the students are assigned a large number of homework and exercises so that the students can blindly carry out the problem sea training. It has not developed and exercised the students' logical thinking ability well, which has caused the students to be tired of learning, and caused the low efficiency of classroom English teaching and failed to achieve the expected English teaching effect. To change this situation, it is necessary to improve the effectiveness of mathematics classroom English teaching. Therefore, the effectiveness of classroom interactive English teaching has entered people's research horizons.

2. Related Work

At present, foreign virtual reality technology has a wide range of applications, including military teaching, medical teaching, sports training, and other teaching fields. Virtual reality technology has opened up a broader vision for educators and provided a more effective form of education [4]. The United States is a country with more developed virtual reality technology, and its virtual reality technology level is higher than the world average technology level. Moreover, the research focus of the United States in this field mainly focuses on four aspects: user perception, user interface, background software, and hardware. The famous American laboratory "Ames" has conducted a variety of virtual reality experiments and built training mechanisms such as satellites and aerospace guards, and a virtual reality training system in space, and established a VR education system [5].

The United Kingdom and Japan are also at the forefront of virtual reality technology research. Among them, there are a total of four centers engaged in VR technology research in the UK, and they have made outstanding achievements in multiple fields of application [6]. The Japanese attach great importance to this new type of technology, focus on applying it to the game field, combining augmented reality and virtual reality for game project production, and have produced a large number of well-made virtual reality games. This new form of game experience has been well received by users. The Kyoto Advanced Electronics Institute of Communications (ATR) is committed to the application of image processing technology in human facial expression recognition, and it has also achieved impressive results in the field of virtual reality [7].

Knowledge is a generalized and abstract cognitive result [8]. It is the object of visual design in this research. This kind of generalization and abstraction is a simple treatment of the relationship between objects in the world of objects. On the other hand, in externalized form, it is a symbolic representation of abstract results [9]. The definition of knowledge in scientific research is that it is a description of the state of things and the law of movement [10]. If the visual representation of knowledge is to transform the textual form of knowledge into the form of graphs, then the research work will focus on "with pictures," that is, visual representation, that is, to use visualization technology to represent the visibility of information and knowledge with graphs as the main form [11]. The literature [12] believed that "illustration is a graphical and specific representation of information." The literature [13] defined a diagram as "a concrete graphical display of the represented things." The literature [14] believed that illustrations are to some extent simple images and cartoons, which are used to convey important meanings, and these simple images are often formed based on a set of rules. In cognitive activities, the visual way of using pictures as media symbols is a way of information presentation that is easier to mobilize human visual potential and brain function [15].

The majority of the early use cases for virtual reality technologies in the education industry were in the form of virtual campus roaming. Virtual reality technology can not only realise campus simulation through 3D modelling technology but also can roam the campus through a helmet display kit matched with virtual reality technology. The creation of a virtual campus roaming system may naturally connect the school landscape and the school map [16], not only demonstrating the school's outstanding learning environment but also establishing an amazing campus image. This high-tech display form enables individuals to see and grasp school information from afar, saving school publicity personnel and broadening the field of publicity [17]. Many universities have established virtual campus-related research projects, which have played a very valuable role in publicity and promotion in the process of combining virtual reality technology with contemporary education [18].

With the continuous popularization and development of online education, the function of the virtual campus will not only stay at the level of browsing, and people have more expectations for the virtual campus, such as the teaching environment, student school life, and educational affairs, can appear in the form of three-dimensional visualization. In the process of construction, in addition to the unique characteristics of authenticity, immersion, and dynamic display of the virtual reality environment, interactive design is gradually deepened to make the virtual campus roaming content richer and the user experience more complete [19].

3. Virtual Reality Interactive Model Algorithm

This article uses virtual reality technology to improve the traditional English teaching mode and enhance the interactive effect of English education. The development of a physical system will be reversible as time passes, that is, the evolution process will be reversible, which is known as time reversal symmetry (time reversal invariance).

As illustrated in Figure 1, we suppose that there are three points A, B, and C in an open elastic medium, which might be equivalent to students in English education. A and B are receiving points, while C is the excitation source.

If a pulse excitation source is applied to C, then the virtual reflected light wave field received at point A is $h_{AC}(t)$, which is the empirical Green's function between points A and C. Considering the two factors that the propagation of the virtual reflected light wave is reversible and the scattering point does not change, it can be expressed as [20]

$$h_{CA}(t) = h_{AC}(t). \quad (1)$$

According to the above formula, when applying C pulse excitation to a point, the virtual reflected light wave field received by point A is the same as the virtual reflected light wave field received by point C when applying A pulse excitation. Therefore,

$$\begin{aligned} \varphi_A &= e(t) \otimes h_{AC}(t), \\ \varphi_B &= e(t) \otimes h_{BC}(t), \end{aligned} \quad (2)$$

where $e(t)$ is the excitation function of point C, φ_A and φ_B represent the virtual reflected light wavefields of receiving points A and B, respectively. Through the cross-correlation calculation research on the two virtual reflected light wavefields of A and B, we get [21]

$$C_{AB} = \int \varphi_A(\theta)\varphi_B(\theta + t)d\theta = h_{AC}(t) \otimes h_{BC}(-t) \otimes f(t). \quad (3)$$

In formula (3), $f(t) = e(t) \otimes e(-t)$ only depends on the nature of the excitation source.

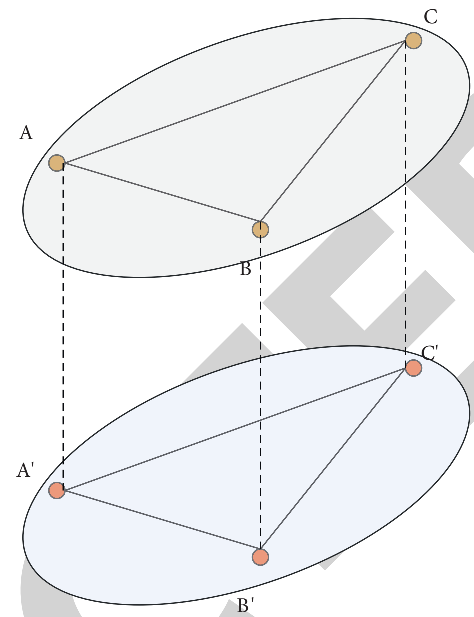

Figure 1: Imaginary physical experiment diagram (A, B, C—three points located in the open system).

According to the theory of inversion symmetry, when a pulse is applied to point B, the virtual reflected light wave field received at point C is $h_{BC}(t)$. At the same time, when $h_{BC}(-t)$ is applied to point C, the virtual reflected light wave field at point A is $h_{BC}(-t)$. According to the two factors of the reversibility of the propagation of the virtual reflected light wave and the unchanged scattering point, we can get

$$h_{CB}(-t) \otimes h_{AC}(t) = h_{AC}(t) \otimes h_{BC}(-t). \quad (4)$$

Formula (4) shows that the pulse excited at point C forms a virtual reflected light wave field at the two points A and B. The cross-correlation function obtained by performing the cross-correlation operation on the two virtual reflected light wave fields can be expressed as $h_{AC}(t) \otimes h_{BC}(-t)$. However, the result we need is Green's function, and there is a relationship between Green's function (EGF) and cross-correlation function (NCF), then we have to find the relationship between the two. We assume that there are many different points C in the medium, and time reversal of them is satisfactory. When a pulse is applied to point B and it continues to propagate, it will eventually be absorbed by point C without any loss due to multiple scattering. At the same time, the time reversal operation is performed on the virtual reflected light wave field, and all the virtual reflected light waves will be transmitted back. In this way, the virtual reflected light wave field received at point A can be expressed as $h_{BC}(-t)$. When the virtual reflected light wave accumulates at point B ($t = 0$), it spreads out from point B. When $tr > 0$, the virtual reflected light wave field obtained at point A is $h_{BC}(t)$. The mathematical formula for time reversal operation on a large number of points C is

$$\sum h_{AC}(-t) \otimes h_{CB}(t) = h_{BA}(-t) \otimes h_{BA}(t). \quad (5)$$

It can be seen from formula (5) that if there are a large number of pulse excitations at point C, the cross-correlation function can be expressed as

$$C_{AB}(t) = \sum h_{AC}(-t) \otimes h_{CB}(t). \tag{6}$$

Compared with formula (6), the cross-correlation function is linked with the empirical Green function, and the mathematical expression is

$$C_{AB}(t) = h_{AB}(-t) \otimes h_{AB}(t). \tag{7}$$

Therefore, in an open elastic medium system, the empirical Green's function between two points can be obtained through the time reversal symmetry theory and a reasonable placement of C points.

As shown in Figure 2, in the three-dimensional Cartesian coordinate system, there are two receiving points 2 (R, 0, 0) and 1 (0, 0, 0) located on the x-axis. Second, the scattering point is located at the periphery of the receiving point. C is the propagation speed of the medium, and the cross-correlation function of points 1 and 2 is [22]

$$C(\tau) = \sum_S \frac{C_S\left(r_1^{(s)} - r_2^{(s)}/c + \tau\right)}{r_2^{(s)} r_1^{(s)}}. \tag{8}$$

Among them, C_s is the autocorrelation function of the signal $S_s(t)$, and S is the scattering point around the receiving point. They have the following relationship:

$$C_s(\tau) = \int S_s(t) S_s(t+\tau) \mathrm{d}t. \tag{9}$$

When formula (8) is Fourier transformed, the expression form of the cross-correlation function in the frequency domain is obtained:

$$C(\omega) = \overline{S(\omega)}^2 \sum_S C_S \frac{e^{\omega i \left(r_2^s - r_1^s\right)/c}}{r_2^s r_1^s}. \tag{10}$$

This is the cross-correlation function in the frequency domain. According to the steady-state phase approximation theory, formula (10) can be rewritten as

$$C(\omega) = 8\pi^2 \overline{S(\omega)}^2 \left(\frac{c}{i\omega}\right) \times \left(-\frac{e^{-ikR}}{4\pi R} \int n\mathrm{d}x - \frac{e^{ikR}}{4\pi R} \int n\mathrm{d}x\right). \tag{11}$$

In formula (11), n represents the number of scattering points per unit volume, and $\overline{S(\omega)}^2$ is the average value of the power spectrum $S_s(\omega)$. It is called the pre-Green's function. In contrast, $-e^{ikR}/4\pi R$ is called the lagging Green's function. It can be seen that only the virtual reflected light waves emitted from the scattering points near the receiving line are cross-correlated.

If it is assumed that the continuous virtual reflected light waveform data recorded by two stations are $x(t)$ and $y(t)$, the cross-correlation function can be expressed as [23]

$$R_{xy}(\tau) = \sum_{t=-\infty}^{\infty} x(t) y(\tau + t). \tag{12}$$

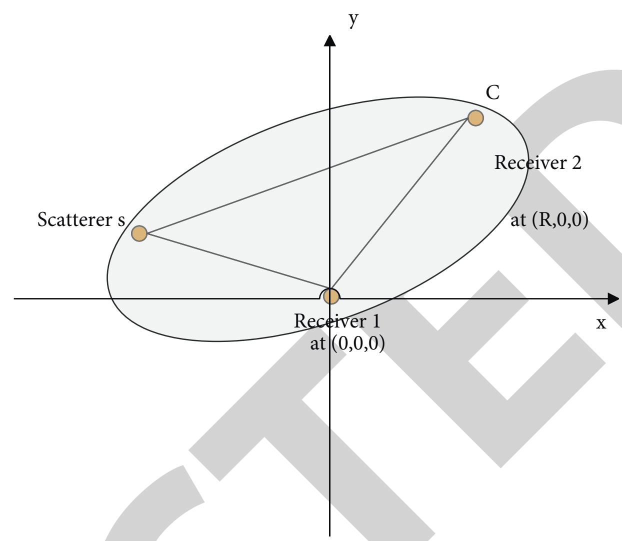

Figure 2: Schematic diagram of the path of scattering point S propagating to receiving point 1 (0, 0, 0) and receiving point 2 (R, 0, 0).

If $x(t) = y(t)$, the above formula can become the autocorrelation function $R_{xx}(t)$, and formula (12) can be transformed into

$$R_{xx}(\tau) = \sum_{t=-\infty}^{\infty} x(t) x(\tau + t). \tag{13}$$

If $g(\tau)$ is assumed to be the linear convolution of $x(\tau)$ and $y(\tau)$, then

$$g(\tau) = x(\tau) * y(\tau) = \sum_{t=-\infty}^{\infty} y(t) x(t - \tau). \tag{14}$$

When transforming the formula (12), we can get

$$\begin{aligned} R_{xy}(\tau) &= \sum_{t=-\infty}^{\infty} x(t) y(\tau + t) \\ &= \sum_{t=-\infty}^{\infty} x(t-\tau) y(t) = \sum_{t=-\infty}^{\infty} x(t-\tau) y(t). \end{aligned} \tag{15}$$

By comparing (15) and (16), we can get

$$R_{xy}(\tau) = x(-\tau) * y(\tau). \tag{16}$$

Among them, " $*$ " stands for complex conjugation. If $x(t)$ and $y(t)$ are power signals, and the power function is not integrable in the interval $[-\infty, +\infty]$, the cross-correlation function can be defined as

$$R_{xy}(\tau) = \lim_{x \longrightarrow -\infty} \frac{1}{2N} \sum_{t=-N}^{N} x(t) y(\tau + t). \tag{17}$$

It is important to note that in the above-mentioned cross-correlation function $R_{xy}(\tau)$, x and y cannot be reversed, and $R_{yx}(\tau)$ and $R_{xy}(\tau)$ are inconsistent.

In fact, the background noise mentioned in this paper represents a random signal, and usually, only statistical analysis can be done for random signals. Therefore, the results of their noise cross-correlation also need statistical analysis.

We assume that the length of the background noise signal $x(t)$ and $y(t)$ is N, and the signal outside the length is zero. If the background noise signal is divided into N points, $x_N(0)$, $y_N(0)$, $x_N(1)$, $y_N(1)$, …, $x_N(N-1)$, $y_N(N-1)$, then the cross-correlation function $R_{xy}(\tau)$ can be expressed as a mathematical formula:

$$R_{xy}(\tau) = \frac{1}{N}\sum_{t=0}^{N-1} x_N(t) y_N(\tau + t). \tag{18}$$

If the length of the background noise signal $x(t)$ and $y(t)$ is N, and only N points can be obtained, then for each fixed delay t, we can use only $N-1-|m|$ data, and the range is within $0-N-1$, and $x(t) = x_N(t)$, and $y(t) = y_N(t)$. Therefore, in the actual calculation of $\overline{R}_{xy}(\tau)$, formula (12) can be rewritten as

$$\overline{R_{xy}}(\tau) = \frac{1}{N}\sum_{t=0}^{N-1-|\tau|} x_N(t) y(\tau + t). \tag{19}$$

Under normal circumstances, the number of sampling points for the calculation of the background noise cross-correlation function is very large, and the calculation in the time domain using the above formula is time-consuming, which is not conducive to fast calculation. We can first perform Fourier transform of the cross-correlation function and superimpose it in the frequency domain and then transform the superimposed result into a cross-correlation function in the time domain through the Fourier transform.

$$\begin{aligned}\sum_{\tau=-(N-1)}^{N-1} R_{xy}(\tau)e^{-j\omega\tau} &= \frac{1}{N}\sum_{\tau=N-1}^{N-1} x_N(t) y_N(\tau + t)e^{-j\omega\tau}\\ &\frac{1}{N}\sum_{\tau=N-1}^{N-1} x_N(t)\sum_{\tau=N-1}^{N-1} y_N(\tau + t)e^{-j\omega\tau}.\end{aligned} \tag{20}$$

When the time series $x(t)$ and $y(t)$ are extended to $(2N-1)$ point, we can get

$$\begin{aligned}x_{2N} &= \begin{cases}0, & N \le t \le 2N-1,\\ x_N(t), & t = 0, 1, \ldots, N-1,\end{cases}\\ y_{2N} &= \begin{cases}0, & N \le t \le 2N-1,\\ y_N(t), & t = 0, 1, \ldots, N-1.\end{cases}\end{aligned} \tag{21}$$

Thus, formula (20) can be rewritten as

$$\begin{aligned}&\sum_{\tau=-(N-1)}^{N-1} R_{xy}(\tau)e^{-j\omega\tau}\\ &= \frac{1}{N}\sum_{\tau=N-1}^{N-1} y_{2N}(\tau + t)e^{-j\omega\tau}\sum_{t=0}^{2N-1} x_{2N}(t)e^{j\omega\tau}.\end{aligned} \tag{22}$$

When $k = t + \tau$, formula (22) can be expressed as

$$\sum_{\tau=-(N-1)}^{N-1} R_{xy}(\tau)e^{-j\omega\tau} = \frac{1}{N}\sum_{l=0}^{N-1} y_{2N}(l)e^{-j\omega(l)}\sum_{t=0}^{2N-1} x_{2N}(t)e^{j\omega\tau}. \tag{23}$$

$x_{2N}(t)$ and $y_{2N}(t)$ are Fourier transformed, which are denoted as $X(\omega)$ and $Y(\omega)$ at this time, so the formula (23) can be changed to

$$\sum_{\tau=-(N-1)}^{N-1} R_{xy}(\tau)e^{-j\omega\tau} = \frac{1}{N}Y(\omega)X^{*}(\omega). \tag{24}$$

It can be seen that the main steps for calculating the cross-correlation function are as follows. First, the time series $x(t)$ and $y(t)$ are zero-filled, and then, the cross-correlation function is Fourier transformed, and the product of the complex conjugate of $x(t)$ and $y(t)$ in the frequency domain is divided by N. After that, the cross-correlation function $R_{xy}(\tau)$ in the time domain is obtained through the inverse Fourier transform.

4. Analysis of English Education Classroom Student Interaction and Performance Based on Virtual Reality

In an ideal state, virtual reality should reach the point where it is difficult for users to distinguish between true and false, and it may even be truer than what actually exists in the real world. This immersion is mainly to allow users to concentrate more. In order to achieve this goal, virtual reality needs to have three basic technical elements as shown in Figure 3.

It can make teaching products have basic user acceptance before they are put into operation so that teaching products can take the lead. The five user experience elements of the product are from the bottom to the top, from the conceptual framework to the interface vision, gradually face the user interface, and gradually contact the user's actual experience. The structure is shown in Figure 4.

Users' learning experiences are primarily focused on the two areas of "ease of use" and "functionality" so that users may acquire "cognitive impact" via "interactive experience." The subjective experience created by the user in individual activity, which is especially expressed in the process of communication between the user and the item, is known as interactive experience. The rationality and convenience of the user experience process need to follow the seven elements of interaction design, as shown in Figure 5, to achieve the goal of optimizing user experience.

The virtual reality interactive experience learning process is shown in Figure 6.

The scheme of knowledge representation is presented by the three parts of the framework, operation method, and visual element design of visual representation of knowledge. It can benefit at least two sorts of people: those who create and generate digital teaching and learning materials, and those who participate in such activities. The program can be used in a variety of situations in information education and teaching, such as activity design, learning content analysis,

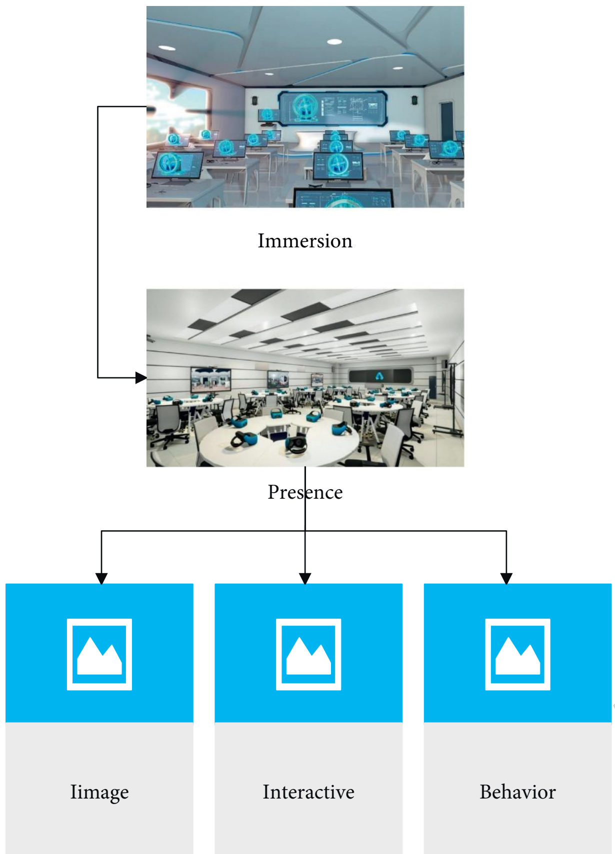

Figure 3: Technical elements and features of virtual reality.

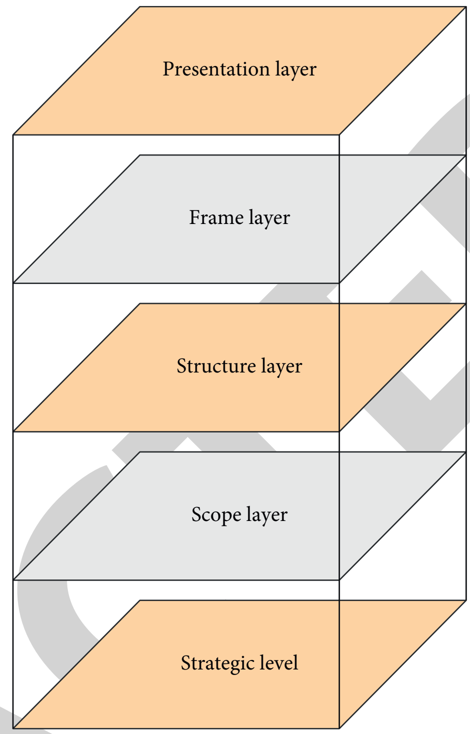

Figure 4: Five levels of user experience elements.

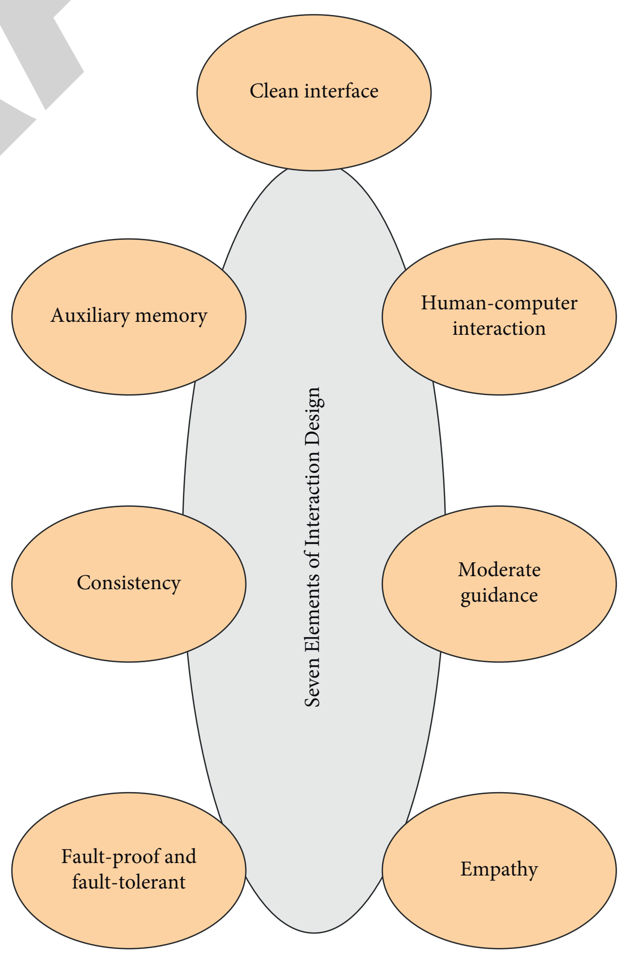

Figure 5: Seven elements of interaction design.

and problem thinking. Figure 7 is a schematic diagram of knowledge representation operations that can be used in teaching and learning activities.

After constructing the above system model, the effectiveness of the teaching mode of this paper is studied through experimental teaching.

5. Analysis of English Education Classroom Student Interaction and Performance Based on Virtual Reality

This article constructs a virtual reality-based English education classroom student interaction and performance analysis system and conducts experimental teaching on this basis to evaluate the system of this paper. This study creates a test and control group and performs the experiment in two university classrooms with 42 students each. The English scores of the students in the two courses are essentially the same, according to pretest inquiry and analysis. After that, we begin our trials on this foundation. The test and control courses are chosen by lottery, and after one academic year of instruction, the English learning scores, learning excitement, student interaction, and student performance of the two classrooms are counted independently. The test results are counted by means of percentile evaluation and analyzed by statistical graphs. The results obtained are shown in Tables 1 to 4.

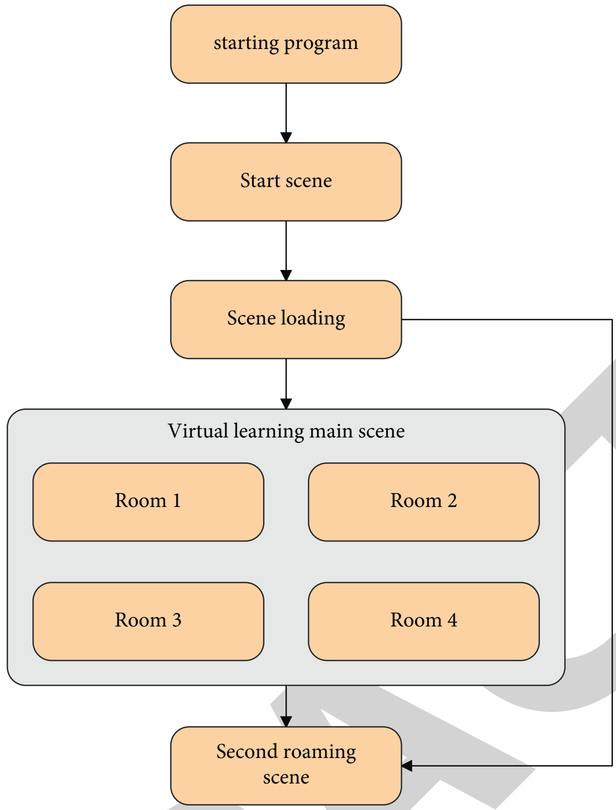

Figure 6: Virtual reality interactive experience process.

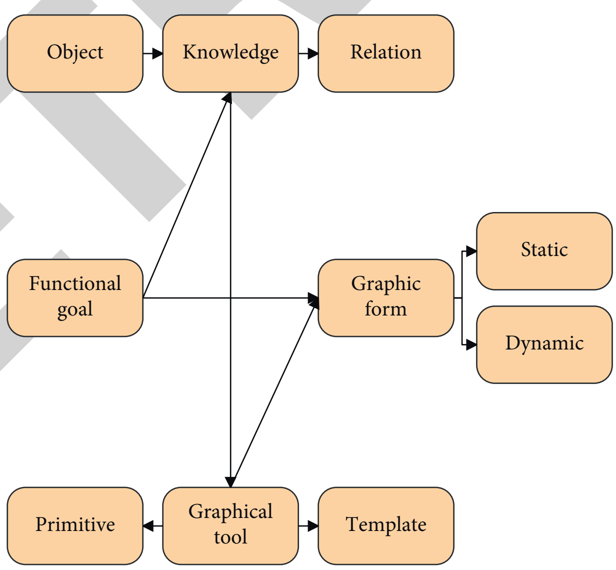

Figure 7: Schematic diagram of visual knowledge representation.

Tables 1–4 show that the test class outperforms the control class in four areas: English learning scores, learning excitement, student engagement, and student performance. The English scores and performances of the students in the two classrooms were, however, comparable prior to the start of the experimental instruction. Students in the test class perform better than those in the control class after one academic year of experimental education.

From the above research, the virtual reality-based English education classroom student interaction method proposed in this paper has certain advantages compared with traditional algorithms, which can effectively improve

Table 1: Comparison of English learning scores of students in the test class and the control class.

Number	Control class	Experimental class
1	95	100
2	95	99
3	92	98
4	91	98
5	89	98
6	89	97
7	89	97
8	89	95
9	87	92
10	87	92
11	83	92
12	83	91
13	82	91
14	80	91
15	80	90
16	79	90
17	78	88
18	78	86
19	78	86
20	74	84
21	72	83
22	71	83
23	70	83
24	69	82
25	68	81
26	66	80
27	64	79
28	63	79
29	60	79
30	58	78
31	58	76
32	57	76
33	56	76
34	56	75
35	55	72
36	54	72
37	54	71
38	50	70
39	49	70
40	49	70
41	48	66
42	47	65

Table 2: Comparison of the learning enthusiasm of students in the test class and the control class.

Number	Control class	Experimental class
1	99.2	99.6
2	97.4	99.1
3	93.6	98.9
4	89.7	97.3
5	86.6	97.0
6	86.2	94.4
7	83.2	94.2
8	82.8	89.7
9	79.9	89.6
10	78.3	87.8
11	72.8	87.1
12	72.1	85.7
13	71.9	83.9
14	71.9	83.0
15	71.2	80.7
16	66.6	79.7
17	60.0	78.6
18	58.9	78.0
19	57.8	73.6
20	54.5	73.1
21	53.8	72.2
22	53.4	71.5
23	51.7	71.5
24	50.8	69.7
25	50.8	69.5
26	50.1	67.9
27	47.2	67.2
28	47.0	66.1
29	43.7	65.5
30	43.6	62.4
31	42.3	62.3
32	41.8	61.1
33	39.2	60.8
34	38.8	60.6
35	38.4	59.9
36	35.8	58.4
37	33.2	58.4
38	32.7	58.2
39	32.6	58.2
40	31.8	57.4
41	28.3	56.8
42	27.3	56.7

Table 3: Comparison of student interaction in the test class and the control class.

Number	Control class	Experimental class
1	97.1	98.7
2	95.0	94.1
3	94.7	90.4
4	93.2	88.9
5	92.8	84.4
6	91.8	82.8
7	91.5	82.7
8	89.1	81.6
9	86.5	81.4
10	85.1	80.5
11	82.8	80.5
12	82.6	80.1
13	82.4	78.5
14	82.3	77.4
15	80.1	75.9
16	76.7	75.2
17	73.8	74.7
18	73.5	71.7
19	73.5	71.4
20	72.5	71.2
21	72.3	67.9
22	71.2	67.1
23	68.0	66.6
24	66.2	66.5
25	64.2	65.2
26	58.3	65.0
27	55.1	64.7
28	54.4	64.5
29	52.9	59.6
30	52.2	59.3
31	51.1	59.0
32	50.6	58.0
33	49.6	57.4
34	49.1	57.2
35	46.0	55.8
36	45.5	54.3
37	45.1	54.1
38	43.4	53.8
39	43.4	52.8
40	40.7	52.6
41	36.3	51.7
42	35.3	51.2

Table 4: Comparison of student performance in the test class and the control class.

Number	Control class	Experimental class
1	93.3	99.9
2	93.2	99.2
3	93.1	95.6
4	91.3	94.6
5	91.3	90.5
6	89.5	88.9
7	89.3	88.6
8	88.0	88.3
9	83.3	87.3
10	80.6	87.1
11	78.1	86.5
12	75.3	85.0
13	74.0	84.4
14	70.7	82.3
15	68.5	81.9
16	65.0	78.9
17	64.8	77.6
18	63.0	77.1
19	58.2	76.9
20	57.4	75.2
21	54.8	75.0
22	54.5	72.4
23	53.0	72.3
24	51.9	71.9
25	51.3	71.6
26	50.5	69.1
27	49.7	67.5
28	49.6	67.3
29	48.1	67.3
30	47.8	65.3
31	46.1	64.3
32	43.3	63.4
33	39.1	63.2
34	38.3	62.7
35	35.6	59.5
36	33.7	58.9
37	33.3	58.3
38	32.9	55.7
39	32.7	55.5
40	31.2	55.4
41	30.9	52.1
42	30.4	50.2

traditional English teaching, and on this basis, it can further enhance the effect of English teaching.

6. Conclusion

Virtual reality technology is a new type of digital media technology. It uses high-tech computer means to simulate or surpass real scenes, construct a diversified virtual three-dimensional environment, and cooperate with multisensory channel feedback such as vision and hearing to provide users in the virtual environment with a real experience. In addition, participants in the virtual environment may employ specific technology to communicate with the outside world. With the advent of the digital information era, current information technology is continually altering people's production and lives, while also having a significant influence on people's methods of thinking, learning, and so on, resulting in a continuous promotion of educational adjustment and reform. This article blends virtual reality technology with experimental teaching to examine English education classroom student engagement and performance as well as the present state of English instruction. Through experimental teaching, we know that the English education classroom student interaction and performance analysis system proposed in this paper has certain advantages over traditional algorithms and can effectively improve traditional English teaching.

Data Availability

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

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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