

Retraction

Retracted: Cultivation of Students' Painting Appreciation Ability Based on Virtual Reality

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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.

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] X. Xu and Z. He, "Cultivation of Students' Painting Appreciation Ability Based on Virtual Reality," *Journal of Sensors*, vol. 2021, Article ID 9115994, 14 pages, 2021.

Research Article

Cultivation of Students' Painting Appreciation Ability Based on Virtual Reality

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The advent of the digital age has had a profound impact on people's lives, and therefore began to add virtual reality content to the art classes of school students, aiming to continuously adapt to the needs of the times for art classes and aesthetics. In order to explore the status quo of the virtual reality technology based on the modern boom in the students' appreciation of painting ability, In this paper, literature analysis, collect data from the old model model reconstruction method and questionnaire, analyze the effect of virtual reality technology for students to appreciate the impact of, simplifies the algorithm. And create appreciation for the culture of virtual experiment platform. In studying the impact of virtual reality technology on appreciating ability, 25% of boys are selected and 75% of girls are selected. 85% of the people who own personal computers conducted experiments, and the results showed that 60% of students log in for 1.5-4 hours, 19% of students log in for 4-9 hours, and 15% of students log in for 9-14 hours. The number of students who log in for more than 14 hours only accounts for 6%. Frequent participation in the appreciation ability through the network model is significantly different from the general painting course appreciation ability, and the performance is extremely significant. In addition, the students' overall affirmation level of information ability is 4.0, which is significantly higher than the even value of the 5.0 scale, which shows that the improvement of college students' painting appreciation ability through the network virtual platform is huge. It is basically realized that starting from the acquisition and processing of virtual platform information, a virtual platform model that has a substantial improvement in students' appreciative ability is designed.

1. Introduction

With the development of online education at educational information environment, the concept of painting education, education, enjoy more and more socially acceptable. The application of virtual reality to education and teaching satisfies this trend and has become an inevitable development of society [1]. Under this kind of environment, the educational virtual community came into being. Some scholars call it "virtual learning community", "online learning community" and so on. It is a new type of learning organization. It is the product of the combination of contemporary social

needs, network technology and teaching and learning theories. It also greatly promotes the development trend of painting education and appreciation education. As a form of online painting education, the educational virtual community provides a more open, free and harmonious online learning environment for college students to learn painting online with its unique characteristics [2]. To promote the development of individual students, which is the key to the survival and development of virtual reality technology in painting education, and is also consistent with the current network education's goal of attaching importance to the individual development of learners. Therefore, it is imperative to

attach importance to learning based on the educational virtual community and strengthen the cultivation of college students' appreciation and learning ability.

The students at school have basically matured in terms of intellectual development, will performance, emotional performance, or personality characteristics and language expression. When they appreciate abstract paintings, they will form their own understanding and understanding through the guidance of the teacher. By projecting the oil painting on paper to the students' surroundings through virtual technology, they will have an immersive sense of body, thereby broadening their horizons, increasing their knowledge, and establishing correct aesthetic concepts [3]. For example, the painting "Nude Girl Coming Down the Stairs", although it is difficult to find the physical characteristics of the woman in the picture, we know that Duchamp uses the cubist technique to express a series of dynamics of going down the stairs, Doctrine by cutting the three-dimensional geometry and composition expressed ad. Virtual reality technology can better express it. This abstraction is contrary to traditional realism, and it is a classic abstract masterpiece. Good and bad can allow students to express their own opinions, display imagination, and active thinking, and cultivate students' understanding of painting appreciation ability.

In the era of virtual reality technology is so hot, many scholars from around the world experimental studies have the ability to appreciate the culture of painting a lot of students. In 2016, I investigated the differences in performance and appreciation of students working in virtual learning environments with two (2D) or three (3D) dimensional visions. 124 randomly assigned first-year dental students performed manual dexterity exercises on the Simodont dental trainer and were automatically assessed. The first group practice 2D vision, the second group practice 3D. All students practiced 5 times, each for 45 minutes, and then used their practiced vision to test. The first group practiced in 3D and took 3D tests, while the second group practiced in 2D and tested in 2D. To pass, you must successfully complete three of the five exercises within the specified time. Students fill out the questionnaire after completing Test 2. The results show that students engaged in 3D vision work have significantly better results than students engaged in 2D work. 95% of students filled out the questionnaire, and more than 90% of students preferred 3D vision. However, from a scientific analysis of the control group point of view, he established the number of the control group is too small, not enough to support the follow-up of the experimental results [4]. In 2019, Zhao S discussed how to improve the appreciation of Chinese painting through the support of interactive technology. Based on the discovery of interactive appreciation and participation in painting, the author analyzes a wide range of current case studies. Then the author summarized how to design interactive technology to support the four aspects of Chinese painting appreciation and participation: (1) Deepening the aesthetic understanding of Chinese painting should not be ignored in the design process; (2) The current case study does not consider the distinction between professional artists and The user experience between amateurs (not good at painting); (3) It is important to use interactive technology to improve the origi-

nality and delicacy of Chinese painting; (4) Use an interactive system to allow users to participate in the appreciation (by encouraging them to talk about art or discuss Their understanding of art) can provide potential design insights for future research. Although his research content and conclusions fit the expected value very well, he did not clarify the flow chart, which is of little practical significance [5]. In 2017, Lee J aimed to evaluate the effects of art therapy through the appreciation of famous paintings of cancer patients suffering from radiotherapy. They pay special attention to anxiety, depression and cancer-related symptoms. From October 2015 to February 2016, prospectively recruited cancer patients receiving radiation therapy, in order to enjoy the paintings based on participation in art therapy. Art therapy is divided into four phases of famous painting appreciation and four phases of creative art creation; these courses are conducted twice a week for four weeks. Use the Hospital Anxiety and Depression Scale (HADS), Hamilton Depression Scale (HDRS) and Edmonton Symptom Assessment Scale (ESAS) to measure cancer-related pain at three points: before the beginning of art therapy, in the fourth After the art therapy session, and after the eighth session. Results Among the 24 registered patients, 20 (83%) completed all eight courses of treatment. According to the linear mixed model using Bonferroni correction, Lee J observed that HADS anxiety and total score improved significantly over time (all $p < 0.05$). In addition, according to the linear mixed model, the HDRS score was significantly reduced ($p = 0.001$). Fewer patients meet the HADS or HDRS criteria for severe anxiety or depression after the intervention. Lee J observed no change in the average ESAS score. Conclusion Art therapy based on the appreciation of famous paintings can significantly improve cancer-related anxiety and depression, and reduce the incidence of severe anxiety and depression during cancer treatment. However, the experimental conclusions targeting cancer patients are not suitable for all ordinary people, and there are errors in his experimental results [6, 7].

The innovations of this article are: (1) By investigating some high schools, we found that almost no schools offer courses based on virtual reality 3D, but our school has a unique advantage in the creation of 3D programs, and this thesis tries to fill the gap (2) This thesis closely follows the characteristics of the times, uses advanced post-modern curriculum concepts, introduces the highest-end virtual digital technology into the art classroom, and compiles a unique appreciation course suitable for high school art classrooms. (3) Analyze the advantages and disadvantages of existing virtual appreciation gaze estimation methods, take into account the particularity of virtual reality application scenarios, reduce user discomfort and fatigue, and reduce gaze calibration points without affecting the accuracy of the appreciation estimation. Through the above work, students have greatly improved their drawing learning and appreciation abilities under virtual reality technology.

2. Realization Method of the Research on the Cultivation of Students' Painting Appreciation Ability Based on Virtual Reality

2.1. Ability to Appreciate Painting. Goethe said: "Appreciation is not cultivated by viewing medium-sized works, but

by viewing the best works.” Therefore, the ability of painting appreciation is to improve students’ aesthetic appreciation, and we must pay attention to classic art appreciation. “It was difficult for the sea to be water”. Only by absorbing the nourishment of excellent culture from ancient and modern Chinese and foreign classics can students establish a high-level appreciation platform in the spiritual world. They have a pair of insights that can appreciate beauty, and have the ability to judge beauty. Only when visual culture is popular and new art phenomenon will produce objective evaluation [8]. In addition, in the choice of appreciation of cartoons, we should also guide students to pay attention to some excellent works at home and abroad, and cultivate their good aesthetic taste, instead of blindly chasing trends and fashions, and treating unhealthy and low-level tastes of aesthetic objects. Produce due judgment ability.

After enjoying, be sure to say out loud, by the appreciation of classical painting to develop students’ critical ability. Appreciating classic abstract oil paintings can cultivate students’ ability to criticize. Because abstract paintings look obscure, it allows students to speak freely and express their opinions. The selected abstract oil paintings are all classics left over from history. In this way, students can be prevented from going astray and guided by an expert’s reasonable appreciation point of view in the process of speaking freely. In the course of class, students should be guided to speak more. Through the comments of classic abstract oil paintings, the development of students’ language ability, thinking ability and other abilities can be promoted, thereby inspiring their desire to transform nature. Therefore, abstract action is different from a figurative art category, it can better allow students to participate in comments, which is also the reason why our aesthetic education has far-reaching significance [9].

2.2. Virtual Reality Technology. What is virtual reality technology? This definition has been developing along with changes in social and historical conditions. Virtual reality technology is based on network information technology as its core, and it displays visual, auditory, tactile, smell and other sensible environments within a certain range in the digital environment [10]. It is a new technology that has emerged with the rapid development of science and technology [11]. The history of human development is the process of exploring and controlling nature. In this process, virtual reality technology was born to better study nature. The start of virtual reality technology does not come randomly. When the development and progress of modern technology, especially psychology, computer graphics, computer image processing, computer vision, statistics and other disciplines closely cooperate, if the technology in each discipline stagnates Without advancement, virtual reality technology cannot be produced [12]. The current virtual reality technology has undergone many repeated experiments in the process of research. Virtual reality technology has the following three important properties, which are often referred to as the three-dimensional characteristics of virtual reality:

2.2.1. Conceptual. The virtual environment is built on the basis of people’s imagination, which mainly depends on the designer’s ideas to help humans achieve a certain goal [13].

2.2.2. Immersion. This means that when consumers enjoy virtual reality technology, the world they live in is another virtual world, and there is a big gap between them and the real world.

2.2.3. Real-Time Interactivity. This means the degree of autonomy of the user’s ability to respond to objects in the simulated environment and feedback from the environment [14].

2.3. Virtual Learning Model. The virtual learning model is actually multiplied on the basis of the network community. The virtual learning model uses hardware model technology as its material guarantee for sustainable development. It is based on the content of interesting activities such as topic research and seminars. It is based on the active exchange and interaction of teachers and students as its internal mechanism. Community cultural psychology is its sustainable development. The root of [15]. The virtual learning community provides people with a more free and harmonious multi-user learning environment. Members can not only actively participate in community learning activities, obtain valuable information in the community, but also share learning resources with everyone, communicate and cooperate with each other to promote Own learning and development. The virtual reality learning platform based on this research is provided by Moscow State University. As shown in Figure 1 [16].

It can be seen from Figure 1 that it includes student information, teacher information, learning resources, discussion forums, and other important components of intelligent evaluation [17]. Among them, student information includes personal information, materials, etc., and you can log in to the community for painting appreciation at any time. Teacher information mainly refers to assigning homework and answering students’ questions, which is conducive to supervising students’ learning and helping students solve difficulties encountered in appreciation [18]. Therefore, a three-dimensional spatial geometric transformation matrix S_w can be obtained by combining several matrices. The formula is as follows:

$$S_w = \begin{Bmatrix} x_5 x_6 x_7 x_8 & y \\ x_{15} x_{16} x_{17} x_{18} & y \\ x_{25} x_{26} x_{27} x_{28} & y \\ x_{35} x_{36} x_{37} x_{38} & y \end{Bmatrix} \quad (1)$$

From the perspective of the transformation of the three-dimensional matrix, the four sub-matrices of S_w can be analyzed, in which scaling and rotation are performed according

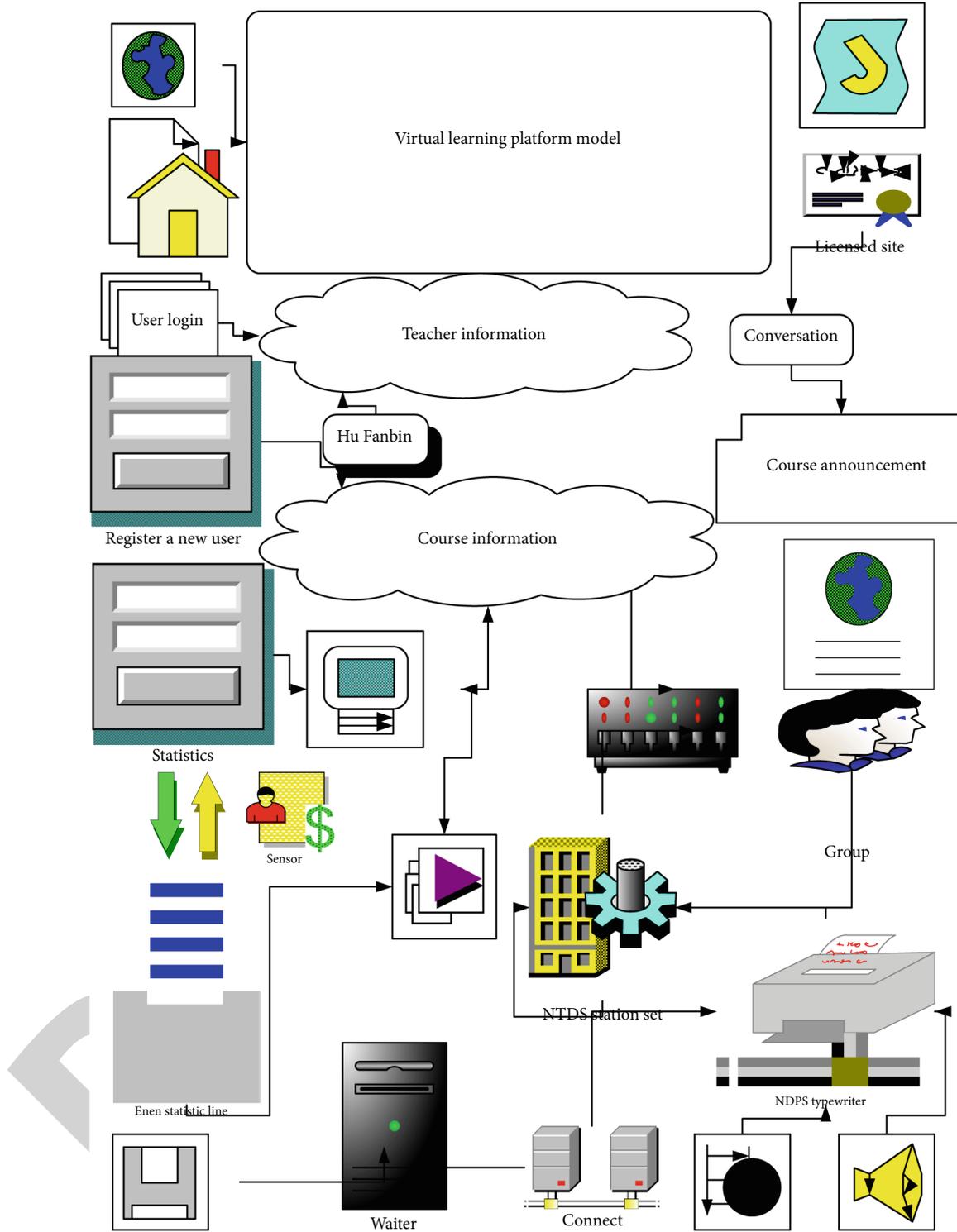


FIGURE 1: The Main Interface of the Virtual Community of “Learning Science and Technology”.

to the axis; $[x_{35}, x_{36}, x_{37}]$ represents translation transformation; $[x_{38}]$ represents scale transformation;

$$\begin{bmatrix} x_8 \\ x_{18} \\ x_{28} \end{bmatrix}$$

(2)

represents projection transformation. The following mainly describes the translation, rotation, and scaling transformation methods in detail [19].

2.3.1. *Translation Transformation.* The coordinates of the grabbing robot are translated along the A, B, and C axes by the offsets of w_a , w_b , and w_c , and the homogeneous

coordinates of the robot after the translation matrix transformation can be obtained as D_s :

$$D_s = [a \ b \ c \ 1] \begin{bmatrix} 1 & 0.1 & 0.1 & 0.1 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1.1 & 0 \\ wa & wb & wc & 1 \end{bmatrix} = [a+wa \ b+wb \ c+wc \ 1] \quad (3)$$

It can be concluded that the coordinate of the point after the robot translation transformation is $q_s = (a+wa \ b+wb \ c+wc)$.

2.3.2. Rotation Transformation. In the three-dimensional geometric transformation, the rotation transformation is more complicated. Because the space coordinate system is composed of A, B and C axes, Three-dimensional model conversion will be different according to the rotation axis [20].

After projection calculation, it can be seen that the coordinate relationship between the two points is: $b' = b\xi - c\psi$; $c' = b\psi + c\xi$; $a' = a$; it can be seen that the process of rotating and transforming around the a-axis is as follows:

$$q' = [a \ b \ c \ l] \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & \xi & \psi & 0 \\ 0 & \psi & \xi & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} = [a \ b\xi - c\psi \ b\psi + c\xi \ 1] \quad (4)$$

Then we can calculate the rotation transformation around the B axis and the rotation transformation around the C axis through the same projection method as follows.

2.3.3. Scale Conversion. The model in the virtual space is scaled with the origin on the left as the center, and scaled and transformed according to the proportions of N_x , N_y and N_z along the coordinate axis, and the second coordinate obtained is P_n :

$$P_n = [a \ b \ c \ l] \begin{bmatrix} N_x & 0 & 0 & 0 \\ 1 & n_y & 0 & 0 \\ 0 & 0 & n_z & 0 \\ 1 & 0 & 0 & l \end{bmatrix} = [an_x \ bn_y \ cn_z \ l] \quad (5)$$

Then get the corresponding coordinate point $P_n = (an_x \ bn_y, cn_z)$. Through the above geometric transformation, the position of the three-dimensional model in space can be determined, and the rapid transformation of the three-dimensional model in space can be realized, so as to clarify the position change process of the object in the interactive process [21].

In contacting the degree of adaptation of the eyes of the user and the virtual environment, the ray intensity selected in this virtual system is 350 mW/sr, The human eye is assumed in this environment exposed to light for far more than 900 seconds, and the human The distance from the eye to the ray is about 5 cm, so the ray illuminance value at this time needs to be solved, and the calculation formula is shown in formula (6):

$$K = u/w^2 (nv/zn^2) \quad (6)$$

Among them, K refers to the illuminance of radiation, u refers to the intensity of radiation, and w refers to the distance of the near-infrared light from the human eye. The calculation can be obtained as shown in equation (7):

$$K = 9.5 (nv/zn^2) \sum_{dyg}^{\exp} \max \iint_{uzi} nzv \quad (7)$$

In practical applications, the first few terms of the function series expansion of $s = 0$ time can be used for quantitative analysis [22]. For ordinary network platforms, the first two expressions are usually used, where g_1, g_2 is the coefficient of distortion. If the acquired image has severe distortion, for example, the distortion caused by wearing a virtual lens is very serious, then the third radial distortion coefficient g_3 [23] needs to be used. Therefore, the radial position of a certain point of the image can be represented by the following mathematical model as shown in equation (8):

$$\begin{cases} a_z = a(1 + g_1s^2 + g_2s^4 + g_3s^6) \\ b_z = b(1 + g_1s^2 + g_2s^4 + g_3s^6) \end{cases} \quad (8)$$

Where (a, b) is the original position of the distorted pixel on the collected image, and (a_z, b_z) is the new position of the distorted pixel after correction [24].

To quantitatively analyze the tangential distortion of the lens mathematically, it can be described by two distortion coefficients q_1, q_2 , and its mathematical model is shown in equation (9):

$$\begin{cases} a_z = a + [2q_1b + q_2(s^2 + 2a^2)] \\ b_z = b + [q_1(s^2 + 2b^2) + 2q_2a] \end{cases} \quad (9)$$

The mathematical model of the combined radial and tangential distortion of the lens is shown in equation (10):

$$\begin{bmatrix} a_z \\ b_z \end{bmatrix} = (1 + g_1s^2 + g_2s^4 + g_3s^6) \begin{bmatrix} a \\ b \end{bmatrix} + \begin{bmatrix} 2q_1b + q_2(s^2 + 2a^2) \\ q_1(s^2 + 2b^2) + 2q_2a \end{bmatrix} \quad (10)$$

After the above formula has calculated the distortion coefficient of the lens, it can be used as a known condition to correct the image [25].

When the eye movement is relatively marginal relative to the position of the lens, serious pupil distortion will occur at this time, which is specifically manifested as irregular divergence or absence [26]. In this system, image processing is used to approximate the pupil center, and the specific processing procedure is shown in Figure 2 [27].

As shown in Figure 2, logarithmic nonlinear transformation means that the gray value between the transformed image and the image before transformation satisfies the logarithmic relationship, and its general formula is shown in equation (11):

$$l'(a, b) = u_j[l(a, b)] \int fcc \quad (11)$$

Among them (a, b) are the pixel coordinates in the image, l (a, b) refers to the gray value corresponding to the pixel coordinates, and $l'(a, b)$ refers to the gray value of the original coordinate point after logarithmic nonlinear transformation Gray value [28].

Exponential nonlinear transformation means that the gray value between the transformed image and the pre-transformed image satisfies the exponential relationship, and its general formula is shown in equation (12):

$$l'(a, b) = x^{l(a,b)} \sum_{\beta} x, ymz \exp x_z y_z z \quad (12)$$

Where x is the base of the function, (a, b) is the pixel coordinates in the image, l (a, b) refers to the gray value corresponding to the pixel coordinates, and $l'(a, b)$ refers to the The gray value of the original coordinate point gray value after logarithmic nonlinear transformation. It should be pointed out that the exponential transformation is mainly used to expand the high grayscale area, which can extend the gray value of the brighter pixels in the original graphics, and is generally suitable for over-bright images.

The nonlinear transformation function used in this system is shown in equation (13):

$$l'(a, b) = [l(a, b) * (500 - l(a, b))]^y \quad (13)$$

The ultimate goal of this algorithm is to obtain close and independent classes through continuous iteration. Given a set of observations (a_1, a_2, \dots, a_m) , and each a_u is a w-dimensional vector. g – mean clustering aims to be divided into g categories, where $g < m$, so that the original data information can be expressed as shown in equation (14):

$$T = \text{agenda} \sqrt{x_{cg} \sum_z \min(x_a, y_b, z_c) \{t_1, t_2, \dots, t_g\}} \quad (14)$$

In other words, the goal is to find the minimum value of the mathematical model of equation (15):

$$xsk_t \max \sum_{u=1}^g \sum_{a \in t_1} \|a - v_u\|^2 \quad (15)$$

Where a_u is the average value of t_u , the clustering processing steps in this system are: randomly select k objects in the data domain as the initialization condition, that is, the cluster center, and place each data in the data domain with the shortest distance principle. Into the nearest class.

The gray-level histogram counts the number of gray-level pixels in the image, or the probability of the gray-level pixels. The structure of the one-dimensional grayscale histogram is shown in equation (16):

$$\begin{cases} F(q) = [f(a_1), f(a_2), \dots, f(a_m)] \\ f(a_u) = \frac{T(a_u)}{\sum T(a_u)} \end{cases} \quad (16)$$

Where $T(a_u)$ represents the number of pixels, and $\sum T(a_u)$ represents the total number of pixels [29]. For the grayscale histogram of an image, the abscissa is the grayscale; the ordinate is the frequency of the grayscale, and it can also be the number of pixels that count the grayscale value. In the previous part, we have analyzed the characteristics of the human eye environment. Next, we will realize the precise identification and positioning of the platform, and extract the painting appreciation data. The specific implementation process is shown in Figure 3.

It can be seen from Figure 3 that the judgment condition of the appreciation point in this system is between 100 and 850. If the area that does not meet this condition is not an appreciation area, then jump out of this layer and continue to process the next area. Continue processing for the 10 areas that meet the pixel point conditions, that is, the gray value condition judgment. The gray value judgment condition in this system is between 55 and 110. If this condition is met, it is a set of pending areas of appreciation. It is not the painting appreciation area that does not meet the gray value judgment conditions. At this time, it is also necessary to jump out of this layer and continue to judge and process the next area.

3. Virtual Reality, the Design and Realization Method Experiment on the Cultivation of Students' Painting Appreciation Ability

3.1. Survey Content and Objects. This section hopes to use simulation studies on the current situation of junior high school students, a brief description of whether simulation can develop their capabilities and identify differences. The test was used a year ago to conduct an open test on representatives of different grades in the only middle school in a village in a poverty-stricken county. This test selected several of the three classes of x, y, and z. A survey conducted by students of different ages. Due to the different conditions, the test was conducted only by the only school in the county, and the final collected data was somewhat restrictive and could not represent the relevant situation of fake experiments in all other parts of the country. The investigation was carried out as an open test, and it mainly focused on the current situation of students' appreciation of the subject

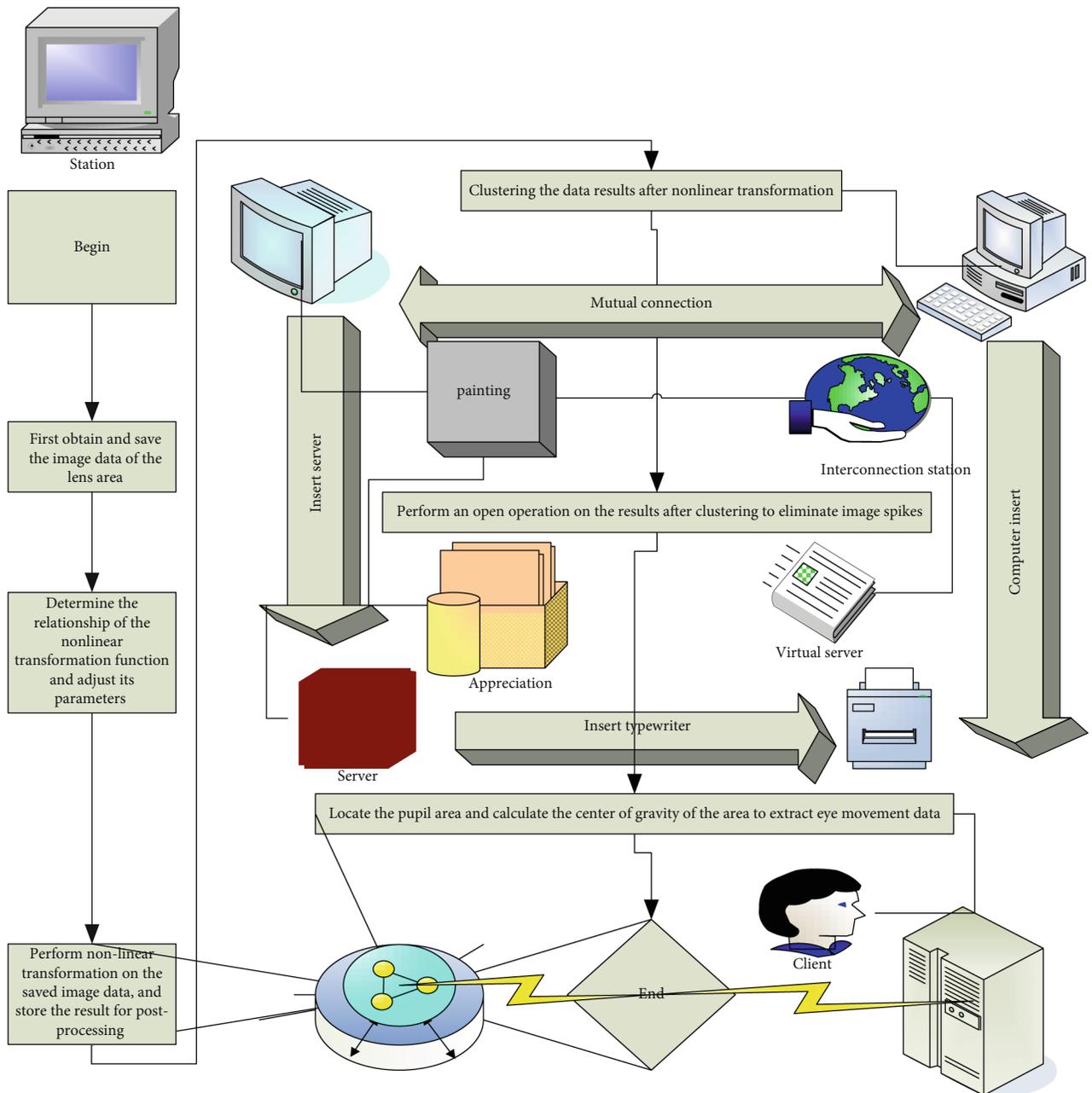


FIGURE 2: Flow Chart of Approximately Positioning the Pupil Center.

of using simulation painting after using the content of simulation experiment for one academic year.

3.2. *Questionnaire Content.* After continuous testing, we developed a simulation of the current situation of the students enjoy. By listing five areas, I made a simple research and designed the test of the virtual experiment. The test included several questions. The open test is a research conducted by the author in combination with the cultivation of the appreciation ability of the painting course and the importance of aesthetics in the students' minds, and the literature search work. On the basis of the temporary new virtual course, a lot of tests related to the core content of

the course are tested. The topic was reconstructed and rewritten, and it was concluded that it can reflect the correct appreciation and play ability of the lower grade students in the virtual environment, and refer to the statement process of other subjects on the characteristics, and finally reached the first draft and set it as an open test, as shown in Table 1.

It can be seen from Table 1 that the number of boys selected in this survey is over 55.6% of the total, and the number of girls is under 44.4% of the total. Taking into account the difficulty of this survey and making the analysis results more convincing, stratified sampling is used to select a part of the students in the three levels of X, Y, and Z in the third grade for the survey. The three levels of the class size is

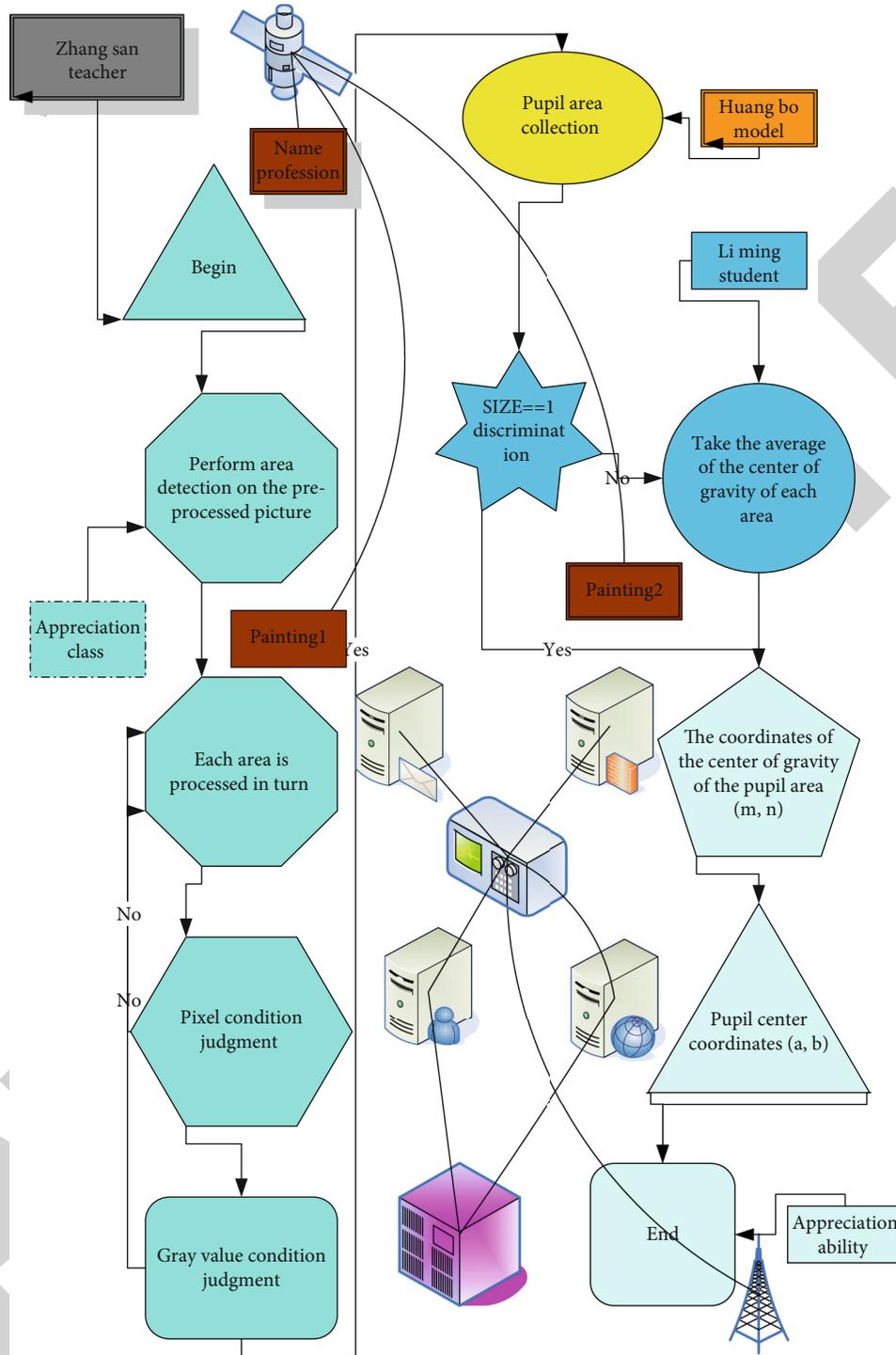


FIGURE 3: Pupil Recognition Flow Chart.

basically balanced and meets the statistical requirements. The school in this survey is a high school in Guizhou. Taking into account the interests and abilities of students, some students will participate in the drawing. Based on the needs of this survey, the author will use it as a variable to analyze the number of people and count the number of people in the virtual experiment teaching process. The teaching methods adopted by different teachers in China are not the same.

3.3. *Distribution of Questionnaires and Data Analysis.* In this survey, a total of 300 questionnaires were distributed, 279 questionnaires were collected and the takeover rate was 95.6%, of which 270 were valid questionnaires, and the valid questionnaire rate was 5.2% to meet the statistical requirements. The relevant database of the test is used for data review and analysis. Apply physics, chemistry, materials, engineering and other methods to investigate the demographic information of the interviewees, the reliability of

TABLE 1: Characteristics of Survey Subjects.

Survey object	Classification	Frequency	Percentage	Effective percentage	Cumulative percentage
Gender	Sex: Male	154	55.6	55.6	55.6
	Gender: Female	124	44.4	44.6	99
Class	X,Y,Z	94	33.6	35.7	65.7
Do you often participate in painted and appreciative activities	Yes	65	95.3	95.3	95.3
	No	147	5.6	5.6	96
Teacher teaching style	Teacher demonstration	92	32.8	32.8	78.5
	Play video instruction	128	45.7	45.7	45.7

TABLE 2: Total Statistics of Projects.

Question	Scaled average after deleting items	Scaled variance after deleting items	After correction Item and total score	Correlation squared multiple correlation	Kronbach's coefficient after item deletion
You already know very well about the virtual experiment	69.2892	153.3	0.507	0.418	0.888
Do you think virtual experiments can completely replace real experiments	69.4167	153.279	0.414	0.299	0.691
Do you think the interface in the high school chemistry virtual experiment platform is very beautiful	68.9804	148.857	0.597	0.494	0.886
You can accurately describe experimental phenomena through virtual experiments	69.1863	155.295	0.457	0.346	0.889

the questionnaire, the research dimension and the test of difference. In order to reduce the error of the analysis results, this paper analyzes the reliability of the parameter characteristics of the questionnaire in the above table. The function relations meet the requirements of analysis and statistics.

It can be seen from Table 2 that through the above analysis examples, it can be determined that the overall reliability of the questionnaire is good and relevant data statistical analysis can be carried out. Through the independent sample T test, it can be clearly seen that students of different genders have significant differences in sustainable exploration and painting appreciation, and there are no significant differences in other dimensions. However, it can be seen from the comparison of average values that boys are generally higher than girls in appreciation.

4. Experimental Results of the Design and Realization Method of the Research on the Cultivation of Students' Painting Appreciation Ability Based on Virtual Reality

4.1. Survey Content and Sample Analysis. Once again on the basis of the above, we will further study the impact of virtual reality technology on appreciating ability. The proportion of male students in this study is 25 and that of female students

is 75. The number of people owning a personal computer accounts for 85%. The weekly time of students logging in to the education virtual platform is shown in Figure 4:

It can be seen from Figure 4 that 60% of students log in for 1.5-4 hours, 19% of students log in for 4-9 hours, 15% of students log in for 9-14 hours, and the number of students who log in for more than 14 hours Only 6%. Independent sample tests to virtual painting community-based learning, the ability to compare the total scale and each factor score students to appreciate whether gender differences exist. The results are shown in Table 3.

It can be seen from Table 3 that there is a statistically significant difference in the oil painting appreciation ability of the painting learners based on the education virtual community of different genders, and their $q=0.051 < 0.04$ has a statistically significant difference. There is no statistically significant difference between male and female students. An independent sample test is used to compare whether there is a difference in the presence or absence of computers in the total scale of appreciation and learning ability based on the educational virtual community and the scores of each factor. The results are shown in Figure 5.

It can be seen from Figure 5 that there is a statistically significant difference in the aesthetic ability of drawing learners based on the education virtual community on the "whether there is a personal computer". The scores of

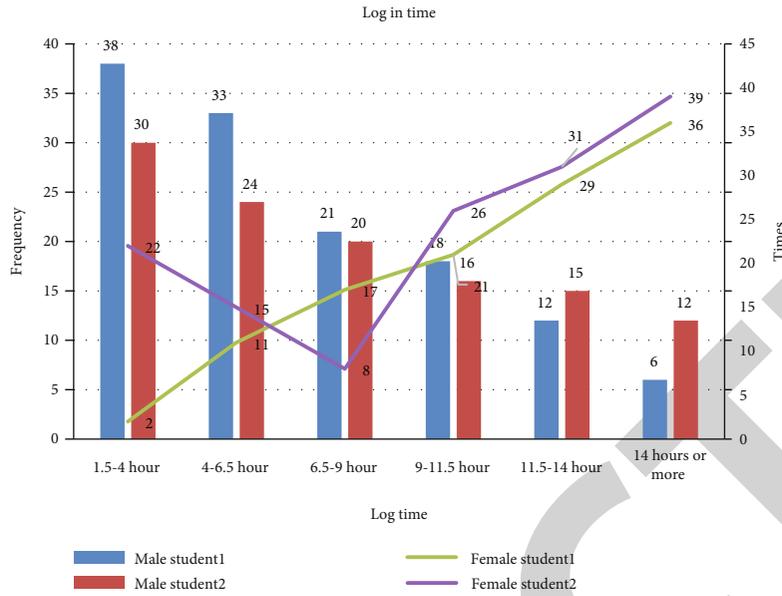


FIGURE 4: The Weekly Time When Students Log In to the Community.

TABLE 3: Comparison of Differences in the Differences between Students Based on the Education Virtual Community’s Painting Appreciation Ability.

Variable	Gender	Meaning	L	S	Exp
Emotional factors	Boys	4.10	0.059	0.617	0.369
	Girls	3.99			
Self-monitoring	Boys	3.98	1.864	1.847	0.051
	Girls	3.29			
Information capability	Boys	3.49	0.34	0.498	0.610
	Girls	3.45			
Self-evaluation	Boys	3.59	0.274	0.577	0.514
	Girls	3.49			
Ability to cooperate with others	Boys	4.18	1.294	1.597	0.099
	Girls	3.68			

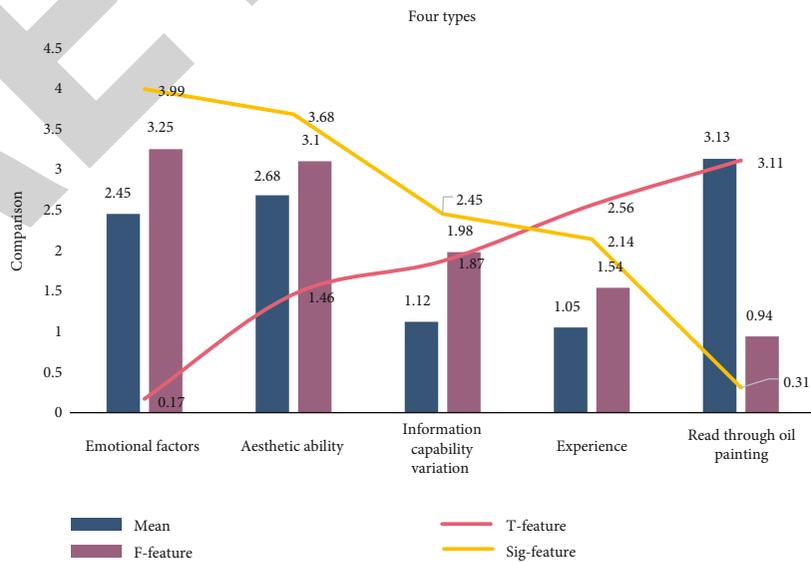


FIGURE 5: Comparison of Differences between Students’ Appreciation and Learning Ability Based on Educational Virtual Communities and Whether They Have Computers.

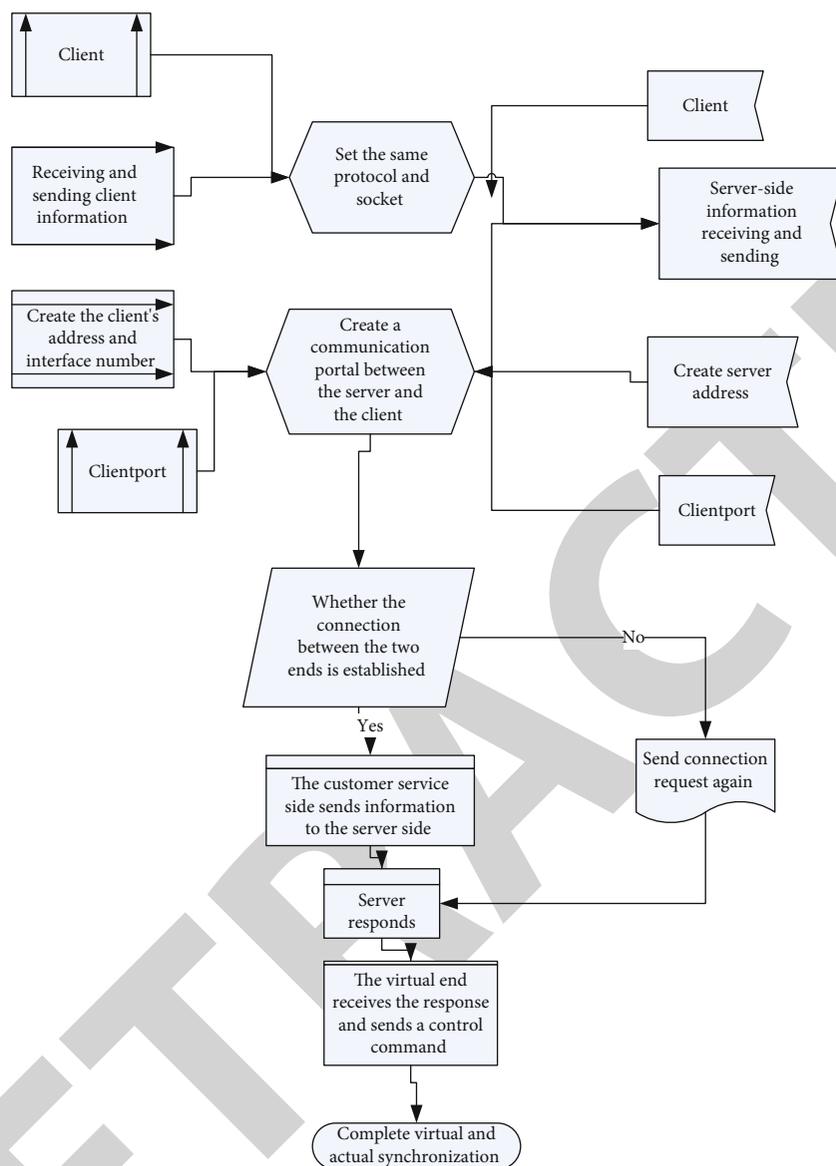


FIGURE 6: Realization Process of Virtual and Real Communication.

TABLE 4: Descriptive Statistics in Terms of Information Capabilities.

	M	MEAN	STD.Deviation
Frequently obtain important learning information from the community	45	3.4800	0.74841
Collect useful learning resources often	45	3.7500	1.85896
Often participate in community discussions to deepen the understanding of knowledge	45	3.4100	0.84855
Can summarize and organize valuable learning information in time	45	3.4900	0.89417
Can make full use of learning resources in the community	45	3.4500	1.147701

TABLE 5: Analysis of Variance in Information Ability.

Model	Sum of squares	Df	Mean square	f	Sig
Regression	9.012	4.5	1.699	4.984	0.111
Residual	14.987	41	0.314	1.021	0.641
Total	23.415	51	0.001	1.154	0.152

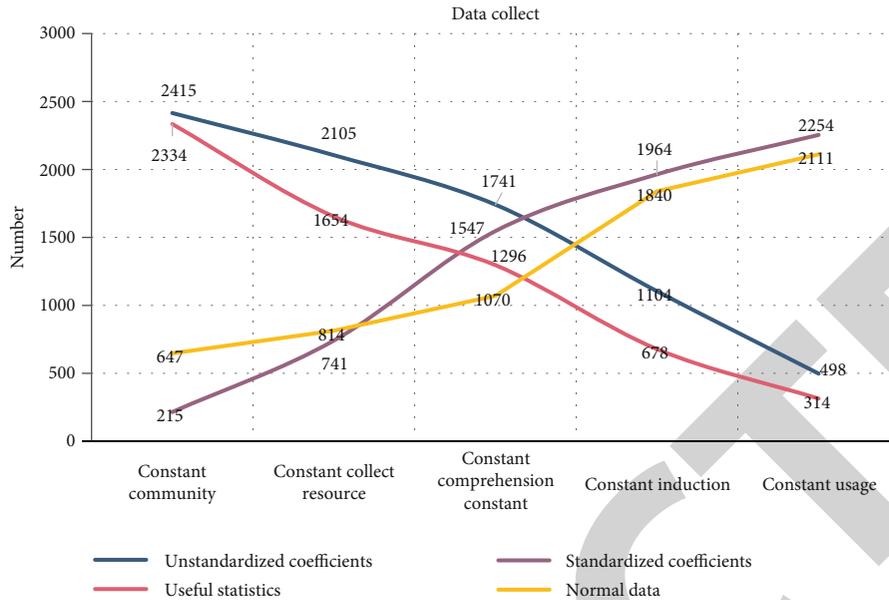


FIGURE 7: A Diagram of Analysis of Variance in Terms of Information Capability.

students with personal computers are significantly higher than those without personal computers. There is no statistically significant difference in “whether there is a personal computer” in terms of “whether there is a personal computer” in terms of information ability, aesthetic ability, and ability to read through oil paintings.

4.2. A Virtual Appreciation Platform Model That Integrates Various Factors. Through the design of the virtual end and the actual appreciation end of the system, that is, the design and realization of the server end and the client end, respectively. Finally, it only needs to realize the communication connection between the server and the client, and then the virtual and physical devices can run at the same time. As the network layer and transport layer protocol, it mainly helps data information to be transmitted in the network. At the same time, the streaming Socket is selected as the communication transmission mode, and the communication between the virtual and the entity is realized by creating Socket sockets at both ends. If it can be ensured that the system of the virtual end and the system of the actual end are in good communication, only then can the virtual device and the actual device operate synchronously and achieve real-time consistency. The specific process from the virtual platform to the painting appreciation process is shown in Figure 6.

It can be seen from Figure 6 that through the study of network painting, it is found that if two computer terminals are to be connected, a complete network identification is required. Here, an identification group is used to represent: protocol, local IP, local port number, destination IP, Destination port number, in this way, a complete loop from virtual painting to improvement of appreciation ability can be formed. At this time, the user can not only perform virtual control of the oil painting in the virtual scene alone, but also use the platform model to receive control com-

mands from the virtual terminal to realize the operation of the appreciation process. As shown in Table 4.

It can be seen from Table 4 that the results show that the students’ affirmation level for each item is significantly higher than the median value of the five-point scale. The overall affirmation level of students’ information ability is 4.0, which is significantly higher than the median value of the five-point scale, which reflects the influence of information ability on college students’ drawing appreciation ability based on the educational virtual platform.

It can be seen from Table 5 that the overall regression effect of information ability factors on the level of platform knowledge sharing has reached a significant level, indicating that the degree of fit is high, and the linear relationship between the explained variable and the explanatory variable is significant, so the establishment of a significant model is Appropriately, see Figure 7 for further explanation.

It can be seen from Figure 7 that the influencing factors of the ability to collect painting information are often obtaining important learning information from the virtual platform, often collecting useful learning resources, often participating in discussions through the network model to deepen the understanding of knowledge, and making full use of the learning resources. There are significant differences in the appreciating ability based on the educational virtual painting course in other aspects, indicating that it is extremely significant, while the regression effects of other ability factors are not significant. The level of information ability is an important component of the autonomous learning ability based on the educational virtual community. Mainly reflected in the acquisition, analysis and application of information. Frequent collection of useful appreciation resources can enable students to selectively screen the huge resource library to improve themselves, achieve the effect of effective use of the virtual reality platform, and achieve the improvement of appreciation ability and training.

5. Conclusions

Based on the related theory of philosophy of science and technology, This paper discusses the technical characteristics of virtual reality technology and its impact on the ability to appreciate, in order to correctly understand and evaluate the impact of new technology, and maximize its strengths and avoid weaknesses to give play to the advantages of new technologies. This article uses literature analysis method, old model reconstruction method and questionnaire method to collect model data, analyzes the influence of virtual reality technology on students' appreciation ability, and simplifies the algorithm. And create a virtual experiment platform suitable for cultivating appreciation ability. In the study of the impact of virtual reality technology on appreciating ability, 25% of boys and 75% of girls are selected. The experiment was conducted by a population of 85% with a computer. The results showed that 60% of the students log in for 1.5-4 hours, 19% of the students spend 4-9 hours, and 15% of the students spend 9-14 hours. The number of students over 14 hours is only 6%. Frequent participation in the appreciation ability through the network model is significantly different from the general painting course appreciation ability, and the performance is extremely significant. In addition, the students' overall affirmation level of information ability is 4.0, which is significantly higher than the even value of the 5.0 scale, which shows that the improvement of college students' painting appreciation ability through the network virtual platform is huge. The shortcomings of this thesis are: First of all, the research on the cultivation of appreciation ability based on educational virtual painting is aimed at the course of "Art Learning and Appreciation". Therefore, whether the conclusions drawn are equally applicable to the teaching practice of other books remains to be Further verification; secondly, due to the limitations of the research, it is not clear to put forward the overall design goals of the system and analyze the needs of each module. The system can not be used to build experimental platform to target more students. Therefore, in the future model refinement, it is necessary to substitute the preliminary conclusions obtained in this article into other disciplines and real-life practice processes, expand the content of the conclusions, and make the virtual platform model more reliable and more extensive in cultivating appreciation ability application.

Data Availability

No data were used to support this study.

Conflicts of Interest

The author declares that there are no conflicts of interest regarding the publication of this article.

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