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Exploration and Practice of Virtual Simulation Technology in Art Teaching in Colleges and Universities

Chuan Guo[1*]

[1] School of Arts and Media，Xi'an Innovation College of Yan'an University, Xi'an, China

Email Address
493731398@qq.com (Chuan Guo)
*Correspondence: 493731398@qq.com

Abstract:
The exploration and practice of art teaching mode in Colleges and Universities Based on virtual simulation technology is to innovate the way of curriculum presentation from the perspective of Art + technology, promote the integration of traditional art teaching and modern technology under the new situation, further change the traditional learning and appreciation mode of art in Colleges and Universities, enhance students' sense of learning experience, expand thinking space and innovate educational ideas, Break through the fixed thinking and realize the classroom reform with the core concept of "active classroom" and the innovation of corresponding teaching methods and means. Finally, a multi-dimensional interactive teaching system of virtual simulation of art teaching is constructed on the basis of modern virtual technology to promote the comprehensive transformation and innovative growth of art education.

Keywords:
Virtual Simulation Technology, Art Teaching Reform, Exploration and Practice

1. Introduction

Art is a subject integrating induction, perception and frontier. It has strong exploration and practicality. It can improve students' artistic cultivation and promote the all-round development of students' morality, intelligence and physique. In particular, the aesthetic needs and perception of art in art courses in Colleges and universities make them have special teaching requirements and teaching objectives, and the teaching theory is relatively abstract. Therefore, they need more perceptual presentation forms that can stimulate students' passion. The "virtual simulation" technology can meet the needs of art teaching in Colleges and universities to the greatest extent. Virtual simulation technology enables students in the real scene (classroom) environment to have a real dialogue with art masters and their works to realize human-computer interaction. Vivid situational immersion can not only stimulate learners' senses and bring new visual experience, but also improve students' interest in the active construction of knowledge system and their confidence in

learning and exploration, cultivate students' learning initiative and expansibility, and learn critical thinking and innovative way of thinking. To sum up, the combination of virtual simulation technology and art teaching in Colleges and universities can further integrate and develop art courses and new media art, enrich research methods and relevant art theories, promote multi-disciplinary integration, and lead the transformation of new modes of cognition and thinking. Finally, promote the classroom reform with "active classroom" as the core concept and the innovation of corresponding teaching methods and means.

2. The Role of Introducing Virtual Simulation Technology into Art Teaching in Colleges and Universities

2.1. Through Virtual Simulation Technology, Update the Teaching Content and Improve the Teaching Methods

The addition of virtual simulation technology will bring great changes to the art teaching methods in Colleges and universities. Through the improvement of teaching contents and methods, and the exploration of experiential and immersive teaching methods in the classroom, it will promote students' critical cognition of things existing in real life and the integration of multiple disciplines [1].

2.2. Constructing Scientific and Reasonable Teaching Structure

Through the perfect combination of art and technology, students can obtain the teaching objectives to be achieved by classroom teaching in the process of solving problems, learn new professional knowledge and skills in the process of exploring the answers to questions, and organically combine teaching methods and learning methods to achieve teamwork, classroom transcendence and build a scientific and reasonable teaching structure.

2.3. Teachers Realize the Teaching Concept Reform of "Active Classroom" Through Immersive Curriculum Design

As an immersive and open teaching mode, virtual simulation teaching has high requirements for teachers' own quality and teaching design, and requires teachers to have strict logical thinking ability and good immersion and interaction ability. We should be good at mobilizing students' enthusiasm, teaching in fun, and create a "positive classroom".

2.4. Students Learn Through Interactive Courses, Master the Principles of Scientific Thinking and Expand Their Creative Thinking Ability

The successful development of virtual simulation teaching classroom requires the active cooperation of students, which can effectively lead students to start from themselves, complete role transformation, change from passive learners to learning masters, master scientific thinking principles, expand creative thinking ability and learn to learn.

3. Research Ideas of Virtual Simulation Technology in Art Teaching Reform

Since the Ministry of Education issued the "education informatization 2.0 action" in 2018, from education informatization 1.0 to 2.0, the industry has paid more attention

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to students' personalized and diversified education, and constantly changed towards intelligent education, intelligent learning environment, personalization and structure. With the continuous improvement of deep learning and virtual simulation technology, virtual simulation and artificial intelligence will become the key technologies of Education 3.0 mode in the future.

Art is an indispensable discipline in the country. From primary school to university, students' aesthetic cognition and perception ability are continuously improved through art education. The teaching of art has always been the traditional mode of teachers' teaching, students' listening, teachers' demonstration and students' learning. For the explanation of some art theories, students will feel boring, and it is difficult to understand the essence of art from the text of books and the explanation of teachers. Therefore, try to use "virtual simulation" technology to make students feel the charm of art teaching, truly experience the display of virtual digitization in art teaching, explore a new digital presentation mode of art courses, organically combine "data information - course interaction - angle immersion - Exploration and reflection", and innovate the fully immersive Teaching paradigm of art courses in Colleges and universities. Realize the 3.0 mode of teaching and learning [2]. (Table 1)

Table 1. Comparison and analysis of teaching modes.

Teaching model	Course presentation	Curriculum interactivity	Angle immersion	Independent exploration	Course effect
1.0Mode	Static 2D	Nothing	Nothing	Commonly	Commonly
2.0Mode	2D+3D	Nothing	Commonly	Commonly	Preferably
3.0Mode	Dynamic 3D	Preferably (Situational interaction)	Preferably(Deep immersion)	Preferably (Exploration and reflection)	Preferably

The learning system of virtual simulation technology, intelligent family library and scene based reality education all change the teaching and learning mode of education to deep learning, cutting-edge technology and intelligent structure. The immersive teaching of virtual simulation turns teachers into "guides" in the learning community, encourages learners to become creators of learning content, network connectors and system builders, and stimulates the changes of learners' cognitive ability and mental structure in the perception of deep immersion. [3] Finally realize the transformation of "active classroom" and learn the ability to learn.

4. Application Analysis of Virtual Simulation Technology in Art Teaching Reform

4.1. Reform of Teaching Methods Based on "Virtual Simulation"

The application of virtual simulation technology in art teaching can greatly change the limitations of traditional teaching and let students combine boring art knowledge with their own practical experience. Therefore, in the process of art teaching in Colleges and universities, teachers actively use "virtual simulation" technology and vivid situation to attract students to actively construct, learn and explore the knowledge system. Students wear virtual simulation helmets and handheld sensing devices, immerse themselves in the palace of art, and focus on immediate knowledge and endless curiosity. Through the integration of new media technology, students can truly feel the charm of art. So as to achieve the expected teaching objectives, effectively improve students' learning interest and strengthen the cultivation of students' innovative thinking.

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4.2. Construction of Discipline System with "Positive Curriculum" as the Core

Based on the virtual simulation technology, starting with the degree of educational immersion experience, this paper extracts the principle of virtual simulation technology, enriches the paradigm of art teaching, finds a new model more suitable for teaching, and changes the visual presentation of art teaching. Build a curriculum family library and introduce digital museums and art galleries to let students experience art teaching, understand relevant virtual simulation technology knowledge, and realize the integration and complementarity among disciplines. [4] It also provides perfect audio-visual enjoyment for students from multiple angles, so that students can experience and participate in the whole learning process, and can really teach in fun, find problems, explore problems, independent students and interactive experience, so that teachers can change from a filler to a symphony conductor, and make learners' various discussions and arguments into a wonderful symphony. Realize the 3.0 model of education and build a discipline system with "positive curriculum" as the core.

4.3. Exploration of Teaching Model Based on "Multi-Dimensional Visual Immersion"

Through the application of virtual simulation technology, students can truly feel the charm of art, enter the scene of Van Gogh's painting, stand aside, quietly feel the soul of art masters and listen to the voice of art works. You can also enter the production site of handicrafts and "start" to feel the charm of these intangible cultural heritage. Of course, you can really enter such magnificent buildings as the Forbidden City and Versailles Palace to feel the charm brought by different cultures. From different angles, the beauty observed is also different. Students can enter the interior of the art course from different angles of looking down, at ordinary times and looking up, so as to turn the originally boring and dry content into a visual feast, improve students' interest in learning to a great extent and realize the transformation of "active classroom".

4.4. Course Interactive Practice Based on "Holographic Projection Technology"

Holographic image is a kind of 3D technology and a visual presentation of virtual simulation technology. It can realize the mixing of virtual world and real world and produce several real situations. It can enable students to enjoy, cut and learn art works independently according to their understanding of learning, and improve students' exploration and cultivate students' divergent thinking by analyzing the details of art works. Then it is found that the beauty of art from different angles can easily and effectively break through the key and difficult points of teaching, and explore and reflect through situational interaction and deep immersion in the "active classroom".

5. Construction of College Art Curriculum Resource Family Library Based on "Interactive Immersion"

5.1. Development of Theory Curriculum Resource Family Database

The teaching of theory course is relatively boring, so it is more necessary to integrate rich and colorful virtual simulation technology. [5] Especially art history and appreciation courses. In the traditional teaching of such courses, teachers often use the form of text + pictures to explain to students, or assist teaching through relevant video explanation. The use of virtual simulation technology can copy and restore art sites,

historical sites, famous teachers and paintings with high fidelity, so that people who are thousands of miles away and cannot visit the scene can have face-to-face dialogue with art sites, historical sites, historical figures and famous paintings, so as to realize the shuttle of time and space. Such as the Greek temple, the Egyptian pyramid and the Potala Palace in Tibet, those once ancient and mysterious are reproduced in the art course teaching through virtual simulation technology, giving students a strong sense of introduction and deep visual immersion, enabling students to more actively participate in classroom learning, put forward their own opinions and arguments, and explain and demonstrate problems through collective discussion, realize their all-round development.

5.2. Development of Practice Curriculum Resource Family Database

The use of virtual simulation technology in practical courses can make students watch and experience the happiness of practice more truly. Taking sketch course as an example, it is realized by placing still life in conventional teaching. When teachers explain light, space, structure, volume and outline, they can only rely on students' imagination and understanding, especially the spatial perspective of still life and the change of structure from different perspectives, which has become a difficulty in sketch teaching. The addition of virtual simulation technology has perfectly changed this point. Through virtual panorama, students can present the still life and its internal structure that do not exist in reality, make the original rigid still life "live" and make the static educational resources dynamic. Through the height simulation of the light and shade, texture, light, structure, volume and contour of the virtual still life display and the change of angle perspective, teachers let students truly feel the changes of light, perspective and structure. At the same time, students can also interact with the scene. Through simple manual scaling, students can watch and experience the perspective relationship of still life from the perspective of top, bottom and head up, and can arbitrarily scale and adjust the changes of object occlusion and light shadow relationship caused by still life. Students can also enter the "interior" of still life and personally experience the "interior" structure of still life.

5.3. Exploration of Interactive Experience Teaching Guided by "Digital Museum and Art Museum"

"Google art project" once used digital media technology to shoot works of art and establish museums. In the construction process, ultra-high resolution cameras were used for the preliminary design and processing of Museum works. At present, all localities are also trying to use new technologies to build digital art museums. The introduction of digital museum into the teaching of art courses in Colleges and universities can change the presentation mode of the classroom at a certain level, and better promote the reform of art teaching methods and curriculum system in Colleges and universities in the development, utilization and protection of resources. At the same time, the introduction of digital museums and art galleries can cultivate students' aesthetic perception from a macro and aesthetic education perspective, and change the experience and way of appreciation of art works to a certain extent.

6. Construction and Exploration of Multi-Dimensional Interactive Teaching System of Virtual Simulation

Art teaching is a practical course. In the process of learning, we need to try a lot of painting pens and reflect on the course. By introducing virtual simulation technology

into the course, we can master the overall situation of students' classroom learning, make qualitative and quantitative analysis, and help us to reform and explore teaching methods and modes. Through the addition of virtual simulation technology, we can innovate the multi-dimensional interactive teaching system of fine arts such as Chinese painting and sketch, which plays a certain role in promoting students' thinking ability and space guidance. Taking Chinese painting teaching as an example, we can more intuitively show students the pen, ink and color theory of Chinese painting and practical operation links through virtual simulation technology, create Chinese painting situations, stimulate students' interest in learning, and form a more complete teaching system for Chinese painting teaching courses. Therefore, in the teaching exploration, we have constructed a multi-dimensional interactive teaching system of virtual simulation, divided the introduction of virtual simulation interactive teaching into three parts, guided interactive module (before the course), immersive interactive module (in the classroom) and reflective interactive module (after the course), changed the original traditional teaching system dominated by in class and after class, and built a prominent pre-class teaching system. The new system of teaching and learning in interactive class and after class can give more play to students' initiative and thinking. At the same time, the construction system has obtained the copyright of computer software from the State Copyright Administration of the people's Republic of China. (Figure 1)
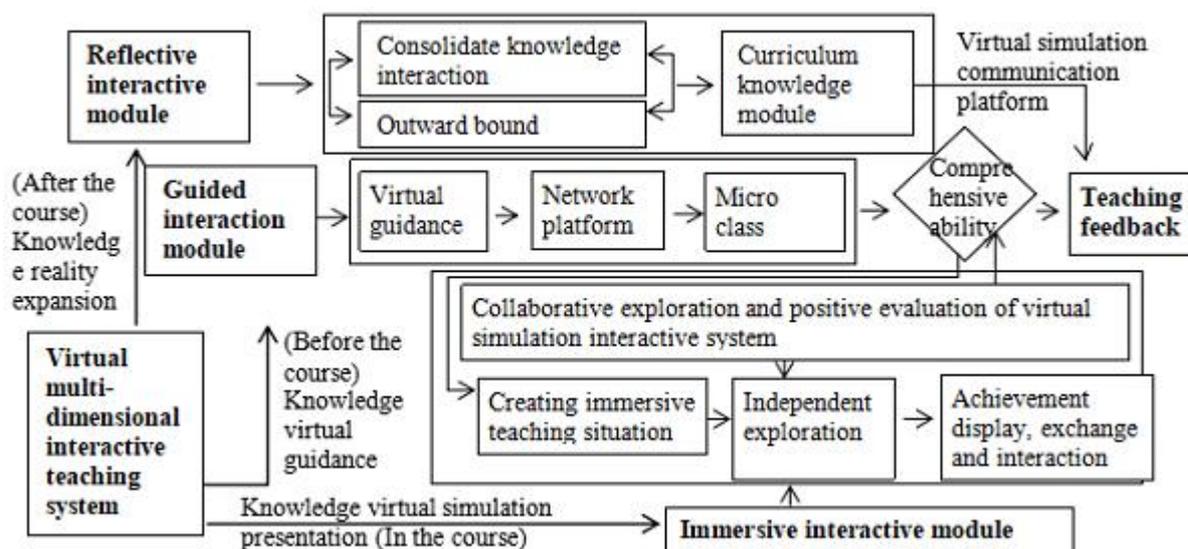

Figure 1. Multi Dimensional Interactive Teaching System Of Virtual Simulation.

6.1. Guided Interactive Module - Knowledge Virtual Guidance, Interactive Exploration and Construction of Teaching Family Database

The construction of multi-dimensional interactive teaching system focuses more on interactive learning and independent thinking. Therefore, before the opening of the course, we should comprehensively sort out and understand the course information and knowledge points to be learned, exchange relevant knowledge points on the network teaching platform through the virtual guidance of knowledge, improve learners' comprehensive ability through mixed micro courses and micro experiments, and feed back to classroom teaching.

6.2. Immersive Interactive Module - Virtual Simulation Technology Presentation Course, Immersive Experience and Interactive Discussion

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The classroom focuses on deep immersion perception and situational interactive experience. Through the presentation of thematic interaction module, a deep immersion teaching situation is created according to the requirements of the course, so that students can truly feel the interaction of knowledge in the three-dimensional space of virtual simulation, and cultivate students' ability of independent exploration. Teachers complete their guiding role through situational interaction, achievement display and communication with students, And actively evaluate the collaborative exploration of virtual simulation interactive system.

6.3. Reflective Interactive Module - Knowledge Development Training, Interactive Reflection

After class, pay more attention to the digestion and accumulation of knowledge, and expand the knowledge system through reflection and interaction module. Learners effectively absorb the knowledge before and during class, and further deepen their reflection on knowledge and make effective teaching evaluation through practical operation after class in the practical application interactive system of curriculum knowledge module.

To sum up, strengthen teaching interaction through virtual scenes and innovate multi-dimensional interactive teaching system. More intuitively show students the theoretical and practical courses of art. Through the perfect connection and experience before, during and after class, build a multi-dimensional interactive teaching system combining guided interaction, immersive interaction and reflective interaction. So that students are no longer passive "feeders" of knowledge. At the same time, it also strengthens the construction of teaching concept and mode exploration of "active classroom". While giving students a strong sense of introduction and deep visual immersion, it can promote students to actively participate in classroom learning, improve students' interest in learning, and construct the teaching concept of "active classroom". Enable students to have different understanding and feelings of "beauty" in the process of their own feeling, experience and appreciation. Through active questioning and discussion with different views, we can experience the vastness of knowledge in the ocean of new media technology + art teaching. With in-depth learning, scene based education based on virtual reality and augmented reality will be implemented steadily, and virtual simulation and artificial intelligence will become the key technologies of Education 3.0 mode in the future.

7. Conclusions

To sum up, first, with the help of virtual simulation technology, innovate the connotation and visual presentation of art curriculum theory and practice curriculum: integrate Chinese traditional art into specific historical and cultural scenes in combination with visual display and rendering of augmented reality environment, and innovate the visual presentation of the curriculum, so that students can feel the glorious edification of history, culture and art with the help of new media technology, Improve aesthetic perception and enhance national pride; Secondly, build the teaching system of knowledge system through the construction of virtual simulation course family library: build the theoretical and practical teaching family library through virtual simulation technology to build a more complete knowledge system for efficient art teaching; Create a virtual simulation teaching interactive system to cultivate students' artistic creativity and independent exploration: through the virtual simulation teaching interactive system, it creates a relaxed and active learning

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atmosphere for students, so that they can speak freely and actively, fully express their own views, cultivate students' cognitive desire and improve students' interest in learning professional courses, Cultivate scientific thinking ability, innovation ability and independent exploration ability; Finally, combined with the virtual simulation curriculum reform, improve the teaching effect and improve the teaching evaluation system: carry out positive teaching feedback and evaluation through virtual simulation teaching modules such as virtual simulation exchange platform, achievement display, exchange and interaction, and establish a teaching evaluation system.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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