Practical Exploration of Virtual Simulation Experiment Teaching of Ceramic Art Design

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Abstract: With the continuous development of network technology in China, the teaching of ceramic art design needs the application of new technology and equipment. The application effect of virtual simulation technology in ceramic art design teaching is remarkable. It is a new trend of experimental teaching reform to introduce virtual simulation technology into experimental teaching of higher education. This paper expounds the reform ideas and concrete methods of virtual simulation experiment teaching of ceramic art design from the aspects of characteristic virtual simulation experiment resources construction, virtual simulation experiment teaching methods and evaluation system construction, and provides a new idea for the development of ceramic experiment teaching informatization.

1. Introduction
Ceramic art design is to learn the basic knowledge of ceramic art, cultivate the technology and skills of making ceramics independently, combine the concept of modern fashion performance, the ability to use ceramic materials, fully grasp the professional knowledge of the subject, with strong professional skills and higher professional accomplishment. Ceramic art design pays attention to the cultivation of innovative spirit and practical ability. In the course of teaching, it is more important to improve students' creative ability and practical ability. There are some problems in traditional ceramic art design teaching, such as low quality of practical teaching, difficult in-depth cooperation between schools and enterprises, small scale of training base and slow updating of equipment, which seriously affect the teaching quality of ceramic art design. Virtual simulation teaching can solve these problems well. Virtual simulation teaching refers to creating virtual simulation learning environment by virtue of virtual simulation technology, presenting the objective reality of knowledge generation to learners, then explaining and summarizing knowledge, promoting students' sense organs to acquire knowledge and information, enhancing students' innovative consciousness and ability, and then improving students' thinking and innovation ability.

2. Application of virtual simulation technology in the teaching of ceramic art design
As a modern and innovative teaching mode, virtual simulation teaching can bring students into the virtual simulation space and environment, and then acquire the target knowledge to achieve the teaching purpose. Virtual simulation teaching elements include virtual teachers, virtual classroom, simulation laboratory, etc. By creating virtual simulation situation, the mode of teaching activities belongs to virtual simulation teaching mode. In addition, virtual simulation teaching can create a virtual simulation learning environment, show the objective reality of knowledge generation to learners, then explain and summarize knowledge, promote students' sense organs to acquire knowledge and information, enhance students' innovative consciousness and ability, and then enhance the teaching mode of students' thinking and innovation ability. Generally speaking, virtual simulation
technology is applied in ceramic art design teaching in the following aspects, as shown in Figure 1.

Figure 1. Application of virtual simulation technology in ceramic art design

2.1 Construction of teaching system of ceramic art design
Ceramic art design discipline has the characteristics of professional cross-integration. Therefore, using virtual simulation technology to carry out ceramic art design teaching, we must effectively build a virtual simulation teaching system. The system must be constructed according to the needs of future development, reasonably use virtual simulation technology, and build a systematic virtual simulation teaching platform. The content of the system platform includes not only students' training and investigation, but also conceptual design, appearance design and structure design. In addition, it also includes user research and design evaluation. It is necessary to ensure that the teaching system is open enough to facilitate later visits.

2.2 Conceptual design of ceramic products using virtual simulation technology
The virtual simulation technology is effectively introduced and applied to the teaching system of ceramic art design. The effective combination of virtual simulation technology and ceramic product design is realized. The diversified and intuitive interactive methods and means are reasonably used to integrate into the virtual simulation environment and strengthen the training of conceptual design of ceramic products. Using virtual simulation technology to conceptual design of ceramic products is the creative conception of the role of ceramic art. In the virtual simulation environment, the purpose of teachers guiding students to strengthen conceptual design is to cultivate students' design innovation ability and creativity. Because the students are in the virtual simulation environment, the corresponding constraints are relatively small, and the degree of freedom expansion ability is relatively strong. From the point of view of design, it is essential to cultivate students' thinking imagination and innovative ability, ultimately enhance their comprehensive quality, promote students' reasonable grasp of the aesthetic appreciation of ceramic art, rational use of experience in ceramic art design, and skilled control of creative thinking in ceramic art design.

2.3 Developing virtual simulation teaching experiments
Reasonable use of virtual simulation technology to create a variety of virtual simulation laboratories, including billet forming laboratory, die design and production laboratory, ceramic decoration laboratory and so on. In the virtual simulation laboratory, students can carry out various teaching experiments of ceramic art design, and experience the fun of ceramic art design in the virtual simulation laboratory environment. By using virtual simulation technology to create demonstration objects for teaching, could reduce or avoid various expensive equipment costs, reduce the cost of experimental teaching equipment, and achieve better teaching results.
3. Research on the reform of virtual simulation teaching model of ceramic art design

In the course of the construction of virtual simulation teaching resources for ceramic art design and the implementation of virtual simulation teaching, the traditional teaching mode cannot adapt to the virtual simulation teaching well. There are some shortcomings in the teaching methods, the expansion of teaching contents, the evaluation of students' learning process and the experimental links of virtual simulation teaching. Therefore, it is necessary to reform the virtual simulation teaching mode of ceramic art design.

3.1 Constructing characteristic virtual simulation laboratory resources

The platform of virtual simulation experimental teaching center for ceramic art design effectively integrates the resources of schools, relevant research institutes and cooperative enterprises to provide students with a real virtual experimental teaching environment; integrates experimental teaching video, product production video, virtual simulation software and other multi-level experimental teaching resources; breaks the limitation of hours for experimenters, and allows students to repeat experimental operations, to achieving familiarity with process flow. Providing abundant simulation experiment teaching resources is conducive to cultivating students' autonomous learning ability and improving students' comprehensive professional design ability and innovation ability.

3.2 Reform of simulation experiment teaching system

According to the requirements of ceramic industry and the characteristics of ceramic product design, a virtual simulation experiment teaching center is designed. It is guided by cultivating students' comprehensive professional qualities, streamlining and highlighting core courses, strengthening applied courses, expanding thematic courses, adding practical courses, highlighting professionalism and practicality, and constructing a virtual simulation experiment teaching system based on the production and operation of ceramic enterprises. The content system of virtual simulation experiment teaching of ceramic art design mainly includes basic experiment, professional experiment and innovative comprehensive experiment. Starting from the processing of ceramic raw materials, students carry out the whole process of mud preparation, shaping operation, decoration operation, firing operation and grinding operation according to their production process, so as to cultivate students' various professional abilities in an all-round way. At the same time, the virtual simulation experiment project construction and the real experiment project construction are organically combined to make the two truly integrate, so that students can get more high-quality teaching resources, which is conducive to students' active experiment and self-learning.

3.3 Constructing evaluation system of virtual simulation experiment teaching

The evaluation of virtual simulation experiment teaching of ceramic art design is based on the cultivation of students' practical and innovative abilities. It runs through the stages of experiment preparation, experiment design, experiment implementation and experiment summary. Better comprehensive evaluation of students, considering the virtual simulation link and real practice performance, more objective. At the same time, students can also use the central platform to evaluate the experimental teachers from the experimental teaching effect, virtual experimental teaching content, teaching progress, teaching methods and other aspects, so as to promote teachers to continuously improve the level of experimental teaching.

4. Conclusions

At present, there are still many shortcomings in the teaching process of ceramic art design. As an interdisciplinary subject combining technology with art, ceramic art design should embody distinct characteristics of experimental practice in teaching. Through rational use of virtual simulation technology, a virtual simulation teaching platform should be constructed, which is helpful to improve the students' ceramic art design skills, so that they can grasp the experimental skills more
systematically and comprehensively, broaden their horizons of disciplines, and improve their comprehensive practical ability, information literacy and innovation ability.

References
[1] Chen Qiuyang. Exploration of virtual simulation experimental teaching mode of chemical process[J]. Experimental technology and management, 2017, 34(3): 134-137.
[2] Wu Yuanxi. Principles and standards for the construction of virtual simulation teaching resources[J]. Experimental Technology and Management, 2017, 34 (5): 8-10.
[3] Huang Tao. Exploration on the construction of virtual simulation experiment teaching project[J]. Experimental technology and management, 2018, 35(2): 108-111+116.
[4] Dong Lina. Reflections on the teaching of applied ceramic technology for ceramic design specialty[J]. Industrial Design, 2015 (11): 94,118.
[5] Zhou Cheng. Teaching thoughts on ceramic design in the context of ceramic industry[J]. Popular Literature and Art, 2016 (15): 239-240.
[6] Tan Haibing. Exploration on the reform of virtual simulation experimental teaching model of economic management [J]. Times Finance, 2016 (32): 296-297.