

The Study of Teaching Methods for the Fundamentals of Composition Course Based on Virtual Reality Project Development

Bingqian Zheng

Zhejiang college of Security Technology , Zhejiang Wenzhou 325000

Abstract: In the context of today's rapidly developing technology, the application fields of virtual reality technology are becoming increasingly wide, making the cultivation of professionals who master the knowledge and skills in this field a common demand of both the educational and industrial sectors. *Fundamentals of Composition* is a core foundational course aimed at serving the development of virtual reality projects and a required course for those engaged in technical art positions. Therefore, in cultivating such professional skill-oriented talents, it is necessary to emphasize not only basic vocational qualities and professional theoretical knowledge but also to integrate the actual needs of virtual reality project development in the teaching process, preparing college students for a smooth transition to society and readiness for their professional roles.

Keywords: virtual reality, fundamentals of composition, talent cultivation, teaching methods

Introduction

The course *Fundamentals of Composition* was established in response to the rapid development of virtual reality (VR) technology and to meet the demand of VR technology enterprises for technical art and project development talents with high aesthetic standards. As a core course serving VR project development, colleges face many limitations in conducting the course teaching, including a mismatch between the teaching content and the actual needs of the industry.^[1] This article analyzes the skill requirements of technical art in current VR development, discusses the actual needs and work processes of VR projects, and addresses problems in previous teaching models to propose teaching methods for the *Fundamentals of Composition* course based on VR project development.

1. Current teaching status of *Fundamentals of Composition*

1.1 Mismatch between course emphasis and industry needs

The *Fundamentals of Composition* is mainly divided into "plane composition," "color composition," and "three-dimensional composition."

In addition to introducing the basic theoretical concepts of composition, the teaching content for plane and color composition also includes the principles and key points of composition. Additionally, it covers the drawing processes for plane and color composition, the use of drawing tools, and the application of drawing techniques. Since this module involves a significant amount of theoretical knowledge, a considerable portion of class time is dedicated to teaching theory. Moreover, the practical training sessions for creating plane and color compositions require a wide range of drawing tools as

teaching materials, and instructing students on the correct use of drawing tools also occupies a substantial amount of practical training time. Therefore, when setting the teaching tasks for this module, a considerable amount of class time is often allocated, making up a high proportion of the course.

With the ongoing development of the VR technology industry, the focus has shifted from showcasing technology to enhancing visual and spatial design requirements, and now to emphasizing high-standard visual presentation and the application of virtual simulation scenarios in space design. As three-dimensional space design becomes a key factor in visual presentation within VR project development, the industry is willing to invest more in spatial visual design. However, current college teaching does not always keep pace with industry dynamics, placing more emphasis on plane and color composition, which does not align with the actual needs of the VR technology industry.

1.2 Limitations in teaching plane and color composition

The limitations of expression techniques. In traditional design disciplines, the core teaching method for modules on plane and color composition is hand drawing.^[2] Students with weak hand-drawing foundations need to spend even more time, which prevents them from dedicating ample time to understanding the principles and connotations of various compositions through practical exercises, hindering a comprehensive understanding of foundational knowledge.

The teaching content lacks continuity with the development of VR projects. Despite plane and color composition being integral to various designs, students are unable to apply this knowledge to computer-based design after traditional hand-drawing training. The connection between the course and VR technology is often neglected, leading to students' misunderstanding of the relevance between the course and their major.

The situation demands that the teaching process for plane and color composition incorporates both hand drawing and computer-aided design, requiring a flexible classroom teaching model to avoid limiting students' creative thinking. While hand drawing techniques and drawing occupy a significant portion of class time, students can complete drawings in just a few minutes or even less time using computer-aided design, allowing for comprehensive practical exercises of theoretical concepts. An overly rigid teaching model can make it difficult for students to grasp the key points of the lesson, reduce the interest in the classroom, and lower students' enthusiasm for attending classes.

1.3 Difficulty integrating three-dimensional composition with VR project development

Students' mastery of three-dimensional composition knowledge needs to be tested through practical operations, and model making is an essential part of three-dimensional composition teaching. Currently, the status of students making models is limited by factors such as the availability of materials and material processing, commonly using materials that are easy to obtain and process, such as paper, fabric, foam boards, and wire. These materials take a long time to process, and in the limited class hours, only a small number of practical exercises can be conducted, resulting in models with uniform shapes and many similarities, which limits students' creativity and imagination. The singular approach to manual model making cannot directly connect with model making in computers, making it even more challenging to apply to virtual reality project development.

At this stage, the aim of three-dimensional composition in virtual reality project development primarily emphasizes the ability to think in terms of constructing three-dimensional spaces.^[3] They fail to emphasize the application principles of three-dimensional composition in virtual reality project development and its various elements, unable to meet the integration of knowledge between three-dimensional composition and virtual reality project development, as well as the market's needs. After mastering the formal rules of three-dimensional composition, students do not know how to use these rules to design three-dimensional spaces, visual presentations, and scene construction in computers, making it difficult to integrate into virtual reality project development. This ultimately leads to teaching outcomes that are hard to align with job market requirements.

2. Exploring teaching methods based on VR project development

2.1 Aligning course emphasis with industry needs

By analyzing the current status of the VR technology industry and integrating actual project development needs into teaching design, more class time should be allocated to three-dimensional composition. This approach would guide students to master computer design composition skills and focus on spatial modeling capabilities, fostering professional knowledge and qualities through teamwork.

2.2 Optimizing teaching models for plane and color composition

Given the extensive theoretical knowledge involved, combining hand-drawing and computer design requires a variety of teaching equipment. Clarifying teaching content, designing appropriate teaching environments, and establishing evaluation standards are crucial for organized learning and mastery of professional skills.

2.3 Core teaching of three-dimensional composition based on VR technology

Practical operation is key, using computer modeling software to observe and modify models in virtual space.^[4] This effectively integrates three-dimensional composition knowledge with VR technology, enhancing learning efficiency for application in VR project development.

3. Conclusion

With the evolving needs of the VR industry, teachers must stay updated and reform teaching methods to focus on VR project development. Clarifying foundational theoretical knowledge, streamlining teaching equipment, and optimizing practical training segments are essential. Integrating composition principles into computer design naturally addresses the core skills needed for technical art positions in VR project development. Through these teaching methods, students not only learn practical skills but also develop creative thinking and enthusiasm, aligning their professional capabilities with industry needs and ensuring practical talent cultivation.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- [1]Yu Xiao. A Discussion on the Significance and Reform of the Three Major Components in Higher Vocational Art Design Teaching. *Education and Teaching Forum*.2013;4(32) 195-197.
- [2]Wang Xin. Practical Research on the Fundamentals of Art Design Composition Course in Colleges and Universities.*Green Technology*. 2019; 21: 264-265.
- [3]Shen Jin. Innovative Practice Research on the Course Construction of 'Fundamentals of Composition' in Art Design Majors. *Neijiang Science and Technology*. 2019; 40(3):156-157.
- [4]Si Qing, Liu Rong. Reform of Art Design Course Education and Teaching and the Application of Virtual Reality Technology in Art Design Courses. *Journal of China Multimedia and Network Teaching (Early Ten-Day Issue)*. 2020; 19(1): 11-12.

Fund project: Achievements of the 2022 Zhejiang college of Security Technology Teaching Reform Research Project (Project Number: JG202206)