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Research on Scene Design for Cultivating Positive Emotions through VR in Higher Vocational Education from the Perspective of "Five-Education Integration"

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Abstract: Aiming at the problems of high anxiety among higher vocational college students in skill learning and the lack of effective implementation carriers for the integrated Five-Education, this paper focuses on the technical architecture design of VR scenes. Based on positive psychology and the integrated Five-Education theory, following the four principles of educational orientation, immersion, professionalism and emotion orientation, this paper constructs a five-layer architecture system including perception layer, interaction layer, content layer, data layer and application layer, so as to realize the unification of technical functions and educational goals. This paper elaborates on the design basis, core functions and collaborative logic of each layer, providing a referable design idea for higher vocational colleges to develop feasible and popularized digital education scenes.

Keywords: Five-Education Integration; Positive Emotion; VR Scene; Higher Vocational Education; Design Research

1. Introduction

Against the background of the digital transformation of vocational education and the comprehensive promotion of "simultaneous emphasis on five types of education", higher vocational college students suffer from a significantly higher incidence of anxiety than ordinary university students due to high pressure from skills training and fierce job competition. How to cultivate their positive psychological qualities and truly implement the integration of the five educations has become a key issue for the high-quality development of vocational education. Virtual reality technology, with its advantages of immersion, interaction and contextualization, provides a new technical path for mental health education and the educational approach of integrating the five educations. From the current domestic research landscape, most work still focuses on the application of VR in skills training, while design on how to stimulate positive emotions and deeply integrate the five educational elements through VR scenes is relatively scarce, leading to a disconnect between theory and practice and a loose coupling between educational goals and technology application.

Based on this, this paper, from the perspective of "Five-Education Integration", attempts to develop an implementable VR educational scene for the integration of the five educations, while clarifying the stimulation mechanism of positive emotions and the integration path of the five educational elements, hoping to provide a theoretical reference for higher vocational colleges to carry out digital mental health education and enhance students' comprehensive literacy.

2. Related Research Status

The core proposition of positive psychology is to enhance positive emotions, explore individual potential and promote subjective well-being, which provides an important theoretical foundation for mental health education in higher vocational colleges.

2.1 Research on Positive Psychology and Positive Emotion Cultivation in Higher Vocational Colleges

Numerous domestic scholars have explored the positive psychological traits, emotional resilience and learning burnout intervention of vocational college students. Xi et al. [1] pointed out that the perspective of positive psychology facilitates the transformation of mental health education in higher vocational colleges from problem correction to developmental cultivation. Yang [2] argued that emotional resilience is a vital psychological quality for vocational students to cope with academic pressure, which can be improved through systematic intervention.

Zhang [3] verified that positive psychological interventions can effectively alleviate learning burnout and enhance learning engagement among vocational college students.

2.2 Application of VR Technology in Educational and Psychological Intervention

Endowed with high immersion, strong interactivity and customizable context, VR technology has been widely applied in vocational skill training and psychological intervention. Foreign scholars have adopted VR in anxiety relief and stress counseling at an early stage, and experimental results prove that VR natural scenarios can reduce individuals' anxiety levels by 15%–20% [4]. Domestic research predominantly concentrates on virtual training in majors such as rail transit, mechanical manufacturing and nursing, which achieves remarkable effects in cost reduction, risk avoidance and proficiency improvement. Xie [5] indicated that VR technology possesses the advantages of visualization, reusability and wide applicability, optimizing knowledge presentation and teaching delivery. Wang [6] proposed that immersive VR experience can significantly enhance students' attention and learning motivation, providing technical support for motivation-oriented teaching.

2.3 Practice and Dilemma of "Five-Education Integratio" in Higher Vocational Education

Five-Education Integration serves as the core path for vocational education to implement Five-Education Implementation and achieve holistic education [7]. Moral education focuses on professional ethics and responsibility; intellectual education emphasizes knowledge mastery and innovative ability; physical education centers on physical health and willpower cultivation; aesthetic education highlights aesthetic literacy and humanistic connotation; labor education strengthens practical labor experience and craftsmanship spirit. Xue and Gao [8] stated that Five-Education Integration in vocational colleges should adhere to practice orientation and reflect the characteristics of integration between industry and education. Sun and Nan [9] pointed out that Five-Education Integration in modern vocational education is characterized by coordination, practicality and professionalism, requiring the construction of an integrated implementation model.

In summary, positive psychology provides theoretical support for positive emotion cultivation of vocational students, yet existing intervention methods lack immersion and fail to closely align with the goal of integrating morality and vocational skills. Although VR technology has broad application prospects in higher vocational education, its application is limited to skill training. Despite the recognized importance of Five-Education Integration, its practical implementation is fragmented and formalistic, lacking digital landing carriers. Accordingly, this paper designs VR scenes to address the above dilemmas and realize the coordinated development of positive psychology, VR technology and Five-Education Integration.

3. Design Basis and Construction Logic of VR Scenes from the Perspective of Five-Education Integration

Centering on the core demand of positive emotion cultivation for vocational students under Five-Education Integration, this paper defines the general principles, theoretical support, functional orientation and technical requirements of VR scene design, and clarifies the logical correlation among all links to ensure scientific and rational scene construction.

3.1 General Principles of Scene Design

Combining the educational orientation of higher vocational colleges and the practical demand of students' positive emotion cultivation, four fundamental design principles are established.

First, educational orientation principle. It takes stimulating positive emotions and comprehensively improving students' moral, intellectual, physical, aesthetic and labor literacy as the fundamental goal, adhering to the core guideline of moral guidance and value shaping throughout the design.

Second, immersion principle. Relying on high-precision 3D modeling, panoramic stereo sound and low-latency real-time interaction technology, it enhances the authenticity and sense of substitution of virtual scenes, so as to improve students' participation and learning engagement.

Third, professionalism principle. Closely matching the talent training requirements of various majors in higher vocational colleges, standard skill training procedures, professional operation norms and typical post working scenarios are deeply integrated into scene design

to highlight the characteristics of vocational education.

Fourth, emotion-oriented principle. Targeting three core positive emotions: pleasure, sense of accomplishment and sense of awe, emotional trigger nodes are scientifically set to achieve targeted and effective psychological regulation and emotional empowerment.

3.2 Theoretical Basis: Integration of Flow Theory and Embodied Cognition

VR scene design is not a simple stack of technologies but is supported by mature theories to ensure the scientificity of emotion cultivation and Five-Education Integration. Flow Theory and Embodied Cognition Theory constitute the core theoretical foundation for the architectural design, complementing and coordinating with each other to guide the functional realization of VR scenes.

Flow Theory in positive psychology suggests that individuals are most likely to generate positive emotional experiences such as pleasure and satisfaction in highly immersive activities with clear goals and timely feedback. Such flow state can effectively relieve anxiety and enhance engagement. It requires VR scenes to build a gradient task system with clear experience objectives at each stage and instant feedback, maintaining students in a flow state during task completion and stimulating positive emotions.

Embodied Cognition Theory holds that cognition and emotions are not abstract processes separated from the body, but closely coupled with physical perception, behavioral movements and environmental experience. Individual emotional experience is realized through physical participation. Based on this theory, VR scenes should construct a complete channel from physical perception and behavioral interaction to psychological experience, ensuring effective interaction between students' physical movements, physiological responses and virtual scenarios, which can be transformed into positive emotional experiences.

Guided by the two theories, this paper proposes a five-layer architecture: the perception layer and interaction layer build the channel of physical perception and scene interaction, conforming to the core connotation of Embodied Cognition Theory. The content layer designs task scenarios with instant feedback to sustain students' flow state. The data layer and application layer realize iterative optimization of experience, feedback and improvement, transforming emotional intervention into trackable and adjustable dynamic processes and ensuring the long-term effectiveness of positive emotion cultivation [10].

3.3 Functional Basis: From Technical Availability to Educational Effectiveness

The core value of VR technology lies in serving educational goals; pure technical display cannot be automatically converted into educational effects. Three functional bottlenecks must be solved to realize the transformation from technical availability to educational effectiveness, which also serve as the functional orientation of the five-layer architecture.

First, transforming abstract five-education goals into interactive and experiential scene content. Goals such as moral education and aesthetic education are abstract and difficult to implement directly. The content layer converts the five elements of morality, intelligence, physical fitness, aesthetics and labor into modular units, presented in the form of virtual professional moral museums, skill training tasks, virtual sports venues, digital art workshops and virtual labor practice bases, enabling students to complete five-literacy cultivation through immersive participation.

Second, avoiding interruption of emotional experience caused by technical operation. Complex operation and high latency will damage immersion and hinder the generation of positive emotions. Therefore, the interaction layer simplifies operation procedures and lowers usage thresholds; the perception layer adopts non-intrusive collection to obtain physiological and motion signals, making technology a "transparent medium" and maintaining the continuity and integrity of emotional experience.

Third, providing practical tools of accessibility, evaluability and optimizability for educators. The scenes can be embedded into daily teaching via reserved interfaces in the application layer, including mental health counseling, pre-training preparation and Five-Education integrated courses. The data layer collects, cleans and analyzes behavioral data, task completion data and psychological scale data to form standardized evaluation reports, supporting teachers to assess teaching effects and optimize scene content.

Essentially, the five-layer architecture converts the logic of "input-processing-output" of

technical systems into the logic of "experience-learning-growth" of educational systems, achieving deep integration of technical functions and educational goals.

3.4 Technical Basis: Modular and Scalable Engineering Requirements

Higher vocational colleges feature diverse majors and differentiated student demands, making a single scene unable to meet all application scenarios. The proposed five-layer architecture adopts modular design: hardware interfaces of the perception layer and interaction layer are standardized to adapt to VR devices of various brands. Five-education resources in the content layer are organized in the mode of "basic scene + professional module" for rapid customization. The storage and analysis framework of the data layer is independent of specific scene content and reusable for different research. Functional modules of the application layer can be flexibly combined according to school demands. The architecture ensures technical feasibility, engineering maintainability and educational popularization of the VR system, see Table 1.

able 1. Five-Layer Architecture of VR Scenes

Layer	Composition	Core Function
Perception Layer	VR all-in-one device, interactive controller, heart rate sensor	Collect physiological signals and motion instructions
Interaction Layer	Grabbing, moving, answering, imitating, skill simulation, scene roaming	Realize low-latency interaction and enhance sense of participation and authenticity
Content Layer	Digital art workshop, morality-skill challenge factory, virtual professional moral education museum	Integrate modular resources of moral, intellectual, physical, aesthetic and labor education
Data Layer	Behavioral data, task data, scale data	Collect, clean, store and analyze data to build standardized data warehouse
Application Layer	Mental health counseling, pre-skill training, Five-Education integrated courses, professional literacy training	Embed into the daily teaching system of higher vocational colleges and provide direct educational services

4. Modular Content Design of Five-Education Integrated VR Scenes for Positive Emotion Cultivation

Based on the five-layer architecture, modular VR scenes adapted to higher vocational education are designed around moral, intellectual, physical, aesthetic and labor education, to precisely trigger three core positive emotions: pleasure, sense of accomplishment and sense of awe.

4.1 Moral Education Module: Virtual Professional Moral Education Museum

Moral education occupies a leading position in Five-Education Integration. Vocational moral education takes professionalism, professional ethics, responsibility awareness and safety norms as the core, highlighting professionalism and practicality.

The scene adopts the layout of "one museum with three halls": Professional Spirit Hall, Professional Norm Hall and Responsibility Decision Hall. The Professional Spirit Hall takes iconic industrial elements as visual cores, with holographic displays of industrial development history and craftsman deeds. Students can trigger voice explanation via controller interaction to establish professional identity recognition rapidly. The Professional Norm Hall transforms post operation specifications, safety red lines and professional ethics into lightweight tasks such as interactive quizzes and standard simulation to strengthen rule cognition. The Responsibility Decision Hall sets typical moral decision-making scenarios; students make choices in the virtual environment with non-judgmental guidance and positive incentives provided by the system.

This module takes the sense of awe as the core emotion, supplemented by a sense of accomplishment and belonging. Deeds of industrial models, interpretation of professional missions and safety norm warnings trigger the sense of awe; virtual incentives such as challenge medals and model student honors strengthen the sense of accomplishment; integration of campus and industrial cultural elements enhances students' sense of belonging. The moral education module provides value guidance for the other four educations, ensuring that skill learning, physical exercise, aesthetic experience and labor practice always adhere to positive value orientation and realize the

penetration of moral education into the whole process of Five-Education Integration.

4.2 Intellectual Education Module: Morality-Skill Challenge Factory

As the core of higher vocational education, intellectual education focuses on knowledge mastery, skill operation, problem-solving and innovative thinking, directly matching post competency requirements. Traditional skill training is restricted by limited equipment, high operational risks, high repeated practice costs and students' learning anxiety.

The scene adopts a three-stage task mode: basic operation, advanced challenge and comprehensive innovation, applicable to mainstream majors such as rail transit and information technology. The basic operation stage focuses on entry-level core skills with clear procedures and timely feedback to build students' learning confidence. The advanced challenge stage sets up common fault diagnosis and complex operational tasks to improve professional application ability. The comprehensive innovation stage designs open-ended tasks to support creative optimization and design, with achievements displayed and evaluated in virtual exhibition halls.

The system provides real-time operation guidance, accuracy scoring and revision suggestions throughout the process, presenting skill improvement effects via visualized growth curves. The scene adopts bright and soft visual design with relaxing background music, and low-threshold operations ensure pleasant learning experience. The immersive environment isolates external interference and helps students quickly enter a state of concentration. While strengthening skill training, the intellectual education module integrates professional norms, technological aesthetics and practical operational requirements, realizing organic integration with moral, aesthetic and labor education and fulfilling the goal of integrating moral literacy and vocational skills.

4.3 Physical Education Module: Virtual Sports and Health Hall

Physical education lays the physical and mental foundation for Five-Education Integration, undertaking the functions of physical and mental health maintenance, willpower tempering, teamwork cultivation and rule awareness establishment. Vocational college students generally face problems such as heavy training pressure, sedentary lifestyle, emotional anxiety and poor physical fitness. Restricted by venue, weather and equipment, traditional physical education cannot meet the demand of personalized emotional regulation and exercise guidance.

The scene is divided into three categories: relaxation training, physical fitness challenge and team collaboration. The relaxation scenarios adopt natural backgrounds such as forests and coasts, providing low-intensity courses including yoga, breathing training and Tai Chi to help anxious students calm down and generate pleasure. The physical fitness challenge adopts gradient task design with dynamic intensity adjustment based on heart rate monitoring, tempering willpower and harvesting a sense of accomplishment through self-breakthrough. The team collaboration scenarios set up virtual ball games, relay races and other group activities to strengthen rule awareness and cooperative ability and enhance social belonging.

This module takes pleasure as the core emotion, accompanied by a sense of accomplishment and perseverance. Immersive natural environment and lightweight sports release pressure and bring pleasant experience; gradient tasks and grade certification stimulate the sense of accomplishment of self-transcendence; continuous challenges cultivate perseverance. Free from temporal and spatial constraints, virtual sports scenes feature flexible application and high safety. They can not only improve students' physical fitness, but also provide stable physical and mental guarantee for the development of moral, intellectual, aesthetic and labor education, realizing coordinated empowerment between physical education and the other four educations.

4.4 Aesthetic Education Module: Digital Art Workshop

Aesthetic education is an important way to enhance humanistic literacy and cultivate noble sentiments. Higher vocational aesthetic education has long been plagued by the shortcomings of valuing skills over aesthetics and practicality over humanistic connotation.

The scene consists of three functional areas: professional aesthetic appreciation area, humanistic aesthetic interaction area and creative practice area. The professional aesthetic appreciation area displays major-related

aesthetic contents such as high-speed rail modeling, precision parts, UI design and medical etiquette to strengthen professional aesthetic cognition. The humanistic aesthetic interaction area provides virtual painting, calligraphy and musical instrument experience to relax mind and body through artistic interaction. The creative practice area opens design tools for students to optimize product appearance, design professional work clothes and create digital artworks, which can be saved, displayed and evaluated online.

This module takes pleasure as the core emotion, supplemented by aesthetic perception and creative accomplishment. Elegant visual environment and relaxed interactive atmosphere bring comfortable experience; immersive appreciation enhances the ability to perceive and understand beauty; independent creation and achievement display stimulate the sense of self-actualization. Aesthetic education injects humanistic connotation into Five-Education Integration, endowing professionalism with warmth, skill operation with aesthetic feeling, labor practice with creativity and physical and mental health with harmony, making up for the weakness of aesthetic education in higher vocational colleges [11].

4.5 Labor Education Module: Virtual Labor Practice Base

Labor education is the practical foundation of Five-Education Integration, focusing on labor practice, labor value, craftsman spirit and respect for labor, serving as an important carrier for integrating moral literacy and vocational skills. Traditional labor education is limited to campus cleaning and simple practical training. This module builds a virtual labor practice base to restore real labor procedures.

The scene covers three types of labor: professional training labor, campus public welfare labor and professional post labor. Professional training labor connects with core practical operations of various majors, such as equipment maintenance, parts processing and instrument management, strictly following industrial standards. Campus public welfare labor provides virtual cleaning, plant maintenance and book sorting tasks to cultivate service awareness. Post labor restores front-line enterprise working scenarios to help students adapt to professional labor rhythm and understand labor value in advance.

Supported by incentive and guidance mechanisms such as labor medals, achievement exhibitions and craftsman spirit lectures, this module takes the sense of accomplishment as the core emotion to strengthen labor value perception and professional identity. By completing labor tasks, students intuitively perceive the relationship between effort and gain and understand the connotation of "glorious labor and valuable skills". As a practical carrier, labor education implements the sense of responsibility from moral education, professional knowledge and skills from intellectual education, physical quality from physical education and creative ability from aesthetic education, promoting Five-Education Integration from theoretical concept to practical implementation.

4.6 Module Integration and Emotional Trigger Mechanism

The five modules are relatively independent yet highly collaborative, realizing in-depth Five-Education Integration through task linkage, data interconnection and emotional connection. Cross-module comprehensive tasks integrate moral decision-making, intellectual operation, physical exercise, aesthetic creation and labor practice. The data layer uniformly collects behavioral and emotional data to establish personalized growth files.

Emotional trigger points are arranged progressively in the scenes: pleasure ensures smooth experience, a sense of accomplishment drives continuous participation, and a sense of awe realizes value guidance. All modules support and infiltrate each other, forming a closed loop of "experience – emotion – education". Virtual positive emotions are transformed into stable psychological qualities and behavioral habits, providing a replicable and popularized digital solution for Five-Education Integration and positive psychological cultivation in higher vocational colleges.

5. Conclusion

This paper constructs a VR scene system for positive emotion cultivation of higher vocational college students from the perspective of Five-Education Integration, and clarifies the integration mechanism and trigger path of five educational elements and positive emotions. The research innovation lies in establishing a three-dimensional educational system of "VR + Five-

Education Integration + Positive Emotion", breaking the single-function limitation of traditional VR applications. It realizes deep integration of emotion cultivation, five-education goals and professional training, forming a quantifiable, interactive and promotable immersive educational scheme.

The research findings provide a design paradigm for higher vocational colleges to solve the difficulties in implementing Five-Education Integration and formalistic psychological education, boosting the digital transformation of vocational education and the cultivation goal of talents with integrated morality and vocational skills. Subsequent empirical research will verify the effectiveness of the scenes, collect feedback from teachers and students, and continuously optimize scene content and architecture. This study will promote the transformation and promotion of research achievements and provide strong support for the reform of digital education in higher vocational colleges.

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