

Research on the Reform of Professional Mixed Teaching Mode in Vocational Colleges Based on VR Simulation Technology

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Abstract: Based on the development of VR virtual simulation technology, the online and offline teaching resources are developed, the traditional teaching mode is reformed, the mixed teaching mode implementation scheme is formulated, and the mixed teaching mode that meets the requirements of vocational college students' vocational ability training and the needs of graduates for employment posts is established in stages to improve the teaching quality of vocational talent training. Take big data and accounting students as specific implementation objects, strengthen the reform and practice based on the hybrid teaching mode, formulate the implementation plan of the hybrid teaching mode department, integrate VR virtual simulation technology into the curriculum system, reasonably position the development content of the three-dimensional model resource library, and build a website APP, two-dimensional code of teaching materials as the carrier to implement online learning and testing; The Internet virtual simulation training teaching platform, which uses virtual simulation teaching software and computer simulation training as the means, constructs a hybrid teaching mode based on work process oriented, which is student-centered and teacher led. Through website construction, teaching video production, APP client development, two-dimensional code and online resource development, online examination platform development, online 3D model resource library and other online resource development; Focus on the development of offline vocational education resources such as VR virtual simulation teaching software, 3D model resource library production, simulation training content, etc.

1 INTRODUCTION

With the continuous advancement of the process of education informatization, hybrid teaching, which can balance the advantages of online and offline learning, has attracted more and more attention (Xu, Dong, Wang, 2017). Through the combination of online interactive learning and online inquiry learning, online and offline learning, formative evaluation and summative evaluation, this research analyzes and studies the mixed teaching mode of vocational colleges and professional courses according to the basic research of mixed learning, the construction of mixed learning resources, the development and design of mixed learning systems, the research of mixed

learning application fields, and the practical results of mixed learning (Sun, Li, Zhang et al., 2019).

2 RESEARCH SUMMARY

Since entering the 21st century, information technology has brought profound changes to education informatization. The hegemony of traditional teaching mode has gradually declined, and a new teaching mode, Blended Learning, has emerged as the times require. After years of research and practice, the theory, methods and strategies of blended learning are becoming more and more perfect. More and more schools and enterprises have adopted the mixed mode to carry out teaching activities or staff

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training. The American survey report and the empirical research on classroom teaching, network teaching and mixed teaching carried out in the training field, basic education, higher education and public institution training show that mixed teaching has great advantages. The president of the University of Pennsylvania also pointed out that blended learning is the most important development trend of higher education. Neither classroom teaching nor online self-study can achieve the desired results.

Mixed teaching refers to a strategy that combines face-to-face teaching, online learning and practice under the guidance of various learning theories and under the guidance of teaching objectives, according to the learning content, learning environment, teaching methods, learners and teachers' own conditions. It effectively integrates face-to-face teaching and online learning, and comprehensively uses online learning to reduce costs and improve efficiency.

Mixed teaching is a new trend in the development of international educational technology. That is, combine the advantages of traditional face-to-face teaching and online E-learning, and build a large number of online learning videos for students to learn independently with the help of a highly interactive online learning platform; At the same time, through face-to-face classroom interactive discussion, students can answer questions and solve doubts, and cultivate students' comprehensive ability (Lu 2010)

2.1 Research Status of Hybrid Teaching Mode Based on VR Simulation Technology Abroad

Since the first e-learning paper published in the American Training Journal in 1996, educational technicians and training workers have begun to study online learning and training, and gradually established a theoretical system on e-learning. However, according to the report of the American Society for Training & Development in 2001, 80% of enterprise training is still in the form of traditional classroom teaching, and the development of e-learning is not ideal. With this report as a sign, e-learning has gradually entered a low tide. People begin to reflect on learning in the technological environment. Blended learning, which combines online and offline learning, has gradually entered people's vision. With the deepening of research in the past ten years, mixed teaching abroad has now been widely recognized and on the right track. The theoretical research on mixed learning has become more mature and has been widely used in foreign universities and enterprises.

Many professors in American colleges and universities have started to use blended learning. They use blended learning mode for one or two classes in the weekly course. They let learners go online for self-study in dormitories or libraries, and cultivate learners' ability to acquire knowledge, analyze and solve problems, and innovate. Through the mixed learning practice, it is found that the participation of learners has increased, the team cooperation has become more harmonious, and the form of traditional classroom teaching has changed. It is no longer just a teacher's lecture, but more a place for dialogue and interaction between teachers and students. In addition, it has also promoted teachers' cross campus cooperation. By referencing learning resources with teachers from other schools, the curriculum content has become more professional and diversified (S. S. Fisher, M. McGreevy, J. Humphries, W. Robinett, 1987).

It is verified that there are many theoretical and practical researches on the research of mixed teaching mode based on information technology abroad. However, although VR technology appeared earlier, the VR technology and supporting equipment really matured later. The application accumulation period of VR technology and equipment came in 2016, and various technical equipment made sudden advances. This year's application technology burst, which is called the first year of VR application. Separate VR simulation technology and hybrid teaching mode have been studied more abroad, but the research on the integration of VR simulation technology and hybrid teaching practice mode is less.

2.2 Research Status of Hybrid Teaching Mode Based on VR Simulation Technology in China

In 2003, Professor Zhu Zhiting's paper "Hybrid Learning in Distance Education" systematically introduced hybrid learning for the first time in China. Over the past ten years, blended learning has gained increasing popularity in China, and its research has spread throughout school education, in-service training, adult education and other levels and fields.

From the source of researchers, because mixed learning research requires a large amount of capital injection and advanced technical support, as well as the operation of academic groups with rich academic background, most researchers come from the central and eastern regions with developed economy and higher education, especially in the Yangtze River Delta, Pearl River Delta, Beijing Tianjin, Wuhan and other surrounding areas where universities gather.

From the perspective of discipline distribution and literature sources, the research focuses on nine major disciplines, namely, educational theory and management, computer software and educational application, foreign languages and characters, secondary education, higher education, computer hardware technology, adult education and special education, vocational education, medical education and medicine, which are divided into two categories: ontology research and discipline application research. Among them, the ontology research of hybrid learning accounts for a large proportion. Literature source journals are mainly educational technology and distance education journals, and computer science and adult education journals also have a high number of papers.

From the perspective of research content and practical research, the basic research on blended learning is generally weak, focusing on the definition, characteristics and significance value. Except for a few articles with high academic quality and influence, the impact and significance of other studies are relatively limited. Only positioning research in the field of education limits researchers' research vision; The construction of resource platform and environment shows the trend of informal evolution, but there is no standardized research in relevant research, which may affect the universality of learning resources; The development of hybrid learning system design is diversified and professional; School education still accounts for a large proportion in the application research of blended learning. In recent years, teacher professional development, enterprise training, adult learning and other fields have also made great progress, and the proportion of each application field is becoming balanced; There are many studies on the construction of learning models and curriculum design, and few empirical studies on effectiveness. The application of blended learning to curriculum reform has also gradually attracted attention (Virtual reality technology, 1995).

The author searched and found that there were many sub item studies and published papers on the application of VR virtual simulation technology and hybrid teaching mode. In the past 10 years, VR virtual simulation technology, as a new thing in the information age, although the concept of VR virtual simulation appeared earlier, due to the immaturity of research and development of VR virtual simulation technology equipment at home and abroad, only one paper on the combination of VR virtual simulation technology and hybrid learning and specific research and application of system analysis was found in China

(Jorge Martín-Gutiérrez a, José Luís Saorín a, B M C , et al., 2010), and it was published in 2006.

As the accounting and big data majors in vocational colleges started late, on the one hand, the lack of investment in practical teaching conditions in various schools led to the low quality of talent training. In recent years, the enrollment scale of accounting and big data majors in various colleges and universities has been expanding, but the construction of school running conditions, teachers and other hardware facilities has lagged behind. However, the prerequisite for good teaching effect is good practice conditions, the use of hybrid teaching information means and strong teachers. Therefore, the lack of teaching conditions and the backwardness of teaching methods have caused poor teaching effect and the decline of talent training quality. Employers have higher and higher requirements for the quality and ability of talents, which will inevitably require us to further change the existing teaching mode. Therefore, the key to solving the problem is how to use information conditions, combine virtual simulation technology and hybrid teaching mode to change the existing traditional classroom teaching form, improve teaching efficiency, and cultivate talents through various ways (Kartiko, Kavakli, Cheng, 2010).



Figure 1. Technavio Releases 2018-2022 Global VR Education Market Research Report

3 ANALYSIS OF IMPLEMENTATION PROCESS

3.1 Build an Innovative Teaching Mode Based on VR Virtual Reality Simulation Technology and Hybrid Teaching

The virtual 3D simulation technology is integrated into the teaching to assist the teaching, so that students can learn at any time and anywhere. Teachers in the classroom explain and answer questions, and conduct simulation training, so as to improve the efficiency of classroom teaching, cultivate students' interest in learning, and lay a foundation for the study of

subsequent core professional courses. The VR virtual reality simulation technology is combined with the hybrid teaching mode to greatly mobilize the enthusiasm of students.

3.2 Build Highly Simulated Virtual Environment and VR Operation Scene for Simulated Training

In the field of accounting and big data, for a long time, people have had to use abstract concepts to express very rich content, and use relatively abstract graphics and concise language to describe complex scenes, so as to transfer a lot of information. However, this way of information processing and transmission is very difficult to communicate because it is affected by the occupation, knowledge structure and understanding ability of the information receiver.

Cultivate the professional skills of students majoring in accounting and big data by promoting reality and coupling reality with fiction. The development of VR virtual simulation technology provides us with an extremely effective means to overcome this difficulty. Virtual reality is used to achieve an immersive feeling, such as bank tax settlement training, and finally forms a three-dimensional information space where people can immerse themselves, go beyond it, enter and exit freely, and interact. VR technology provides users with a new type of human-computer interface, which not only enables participants to feel the realistic existence of site scenes or model entities, but also makes real-time and accurate responses to participants' movements and operations, replacing actual construction training, which is very safe and highly efficient.

3.3 Innovate the Resource Sharing Mode and Form a Flexible Application Feature of "Instant Teaching, Learning, Practice and Examination", Which Can Fully Meet the Needs of Students build a High-Quality Education and Teaching Resource Platform Based on VR Virtual Reality Technology

With the help of desktop computers, laptops, PADs, smartphones and other forms of terminal equipment, students can make full use of advanced information technology means such as scanning two-dimensional code, voice recognition, body recognition technology to carry out online "teaching learning practice

examination" without the number of people, time and space constraints, to meet the experimental training teaching requirements of multi disciplines, multi majors and different levels. Develop APP site resources (text, pictures, teaching videos) and Internet+teaching materials. Students can register online, or scan the QR code of teaching materials to access the Internet anytime and anywhere for online learning, chapter testing, and mid-term and final exams.

3.4 Build a High-Quality Education and Teaching Resource Platform Based on VR Virtual Reality Technology

It breaks the traditional graphic teaching method, uses the online and offline three-dimensional interactive teaching method, intuitively displays the teaching content, and provides a teaching platform for VR simulation teaching and training. Synchronize learning and practice, master the content learned in a short time, and improve the classroom efficiency through real-time interactive pictures. Use Sketchup, 3dsMAX and other software to develop and make 3D model resource library for online and offline use to assist teaching and improve classroom teaching effect. Focus on the development of rural industries, promote the deep coupling of talent chain, ecological chain, governance chain and industrial chain, accelerate the flow and aggregation of resource elements to rural areas, help consolidate and expand the achievements of poverty alleviation, and promote the overall revitalization of rural areas. Focus on the development of rural industries, promote the deep coupling of talent chain, ecological chain, governance chain and industrial chain, accelerate the flow and aggregation of resource elements to rural areas, help consolidate and expand the achievements of poverty alleviation, and promote the overall revitalization of rural areas.

4 CONCLUSIONS

For the major of big data and accounting in vocational colleges, this research has defined the professional teaching system, built a hybrid teaching mode based on VR simulation technology, developed a suitable teaching platform for theoretical and practical teaching and established a teaching resource library, which can be expanded, and will play a very important role in promoting the sustainable development of students. For each vocational school, it has determined

the training objectives of professional teaching and constructed a reasonable education and teaching model, which plays an important role in guiding and promoting the educational reform of each vocational college and can promote the improvement of the level of running a school of its own specialty. The students majoring in big data and accounting in vocational colleges are the biggest beneficiaries of the research results of this topic. As a scientific and reasonable training sequence of hybrid teaching mode based on VR simulation technology has been established, it helps them understand the content that is difficult to read in the learning process, conduct comprehensive simulation training operation and cognition, and improve teaching efficiency and interest. Compared with the past, they can learn more knowledge and skills in the same time, learn more useful vocational skills and knowledge, strengthen professional ability, and have stronger competitiveness in employment. Enterprises are also the direct beneficiaries of the research results of this topic, because more high-quality skilled talents will promote enterprises and promote the development of enterprises and local economy.

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