Research and Analysis of Mobile Internet and Virtual Reality Technology in the Course of Network Integrated Cabling

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Abstract. Virtual Reality (VR) is referred to as VR. With the development of computer hardware devices, software development is more flexible, and virtual reality technology provides a broad platform for teaching. This paper combines the traditional "network integrated wiring" teaching mode with "mobile internet + virtual reality technology (VR)" to enable students to get a better experience in classroom teaching and mobile internet learning process, and promote the diversified development of mobile information teaching.

Introduction

The "Network Integrated Cabling" course is an important professional course for computer application, intelligent architecture, network engineering, and Internet of Things[1]. Through the real-time learning environment of “Mobile Internet + Virtual Reality Technology (VR)”, students can use the mobile internet platform to learn more about the network system structure and the integrated wiring system structure, and familiar with the integrated wiring products. Familiar with the relevant standards of integrated wiring, familiar with design methods and specifications, master the installation specifications and technology, familiar with the integrated wiring from design to construction and installation to test and acceptance of the work flow, with project management capabilities, can undertake integrated wiring system design, on-site installation and construction Work tasks such as on-site project management, test and acceptance[2].

Positioning of the Course

Our school offers this course in accordance with the overall design requirements of “capability-based, professional practice-based, modular curriculum-based modular professional curriculum system”[3]. The course is designed to form network design and network engineering construction and acceptance. The basic goal is to completely break the design of the subject curriculum, closely select and organize the course content around the engineering progress requirements of the network project, highlight the whole process of design, construction and acceptance of the project, and let the learners design the overall project in the network project. On the basis of mastering the necessary knowledge, enhance the relevance of the course content and professional position ability requirements, and improve the employability of students.

Based on the "Mobile Internet + Virtual Reality Technology (VR)" "Network Integrated Cabling" course with professional practice as the main line, the overall design requirements of the modular professional curriculum system based on the project curriculum, the curriculum resources are in 2D, 3D technology. The combination of virtual reality technology forms a mobile teaching environment for network solution design, network engineering construction, site inspection and acceptance, completely breaking the design ideas of the subject curriculum, giving students a more intuitive image and enhancing the immersion and interactivity of mobile course learning[4]. The project “Mobile Internet + Virtual Reality Technology (VR)” also has a certain guiding role for professional courses with higher requirements for “operability” and “practicality” in other disciplines.
Curriculum Design Concept

This course is aimed at the network cabling design, construction, testing, and acceptance of professional job capability requirements, and formulates the curriculum training objectives, that is, through the four-in-one teaching method of “teaching, learning, doing, and testing”, students can understand the network cabling design standards and norms. Familiar with the various construction techniques of network integrated wiring, accumulate the experience of engineering organization management, cultivate the necessary professional qualities of students, and enable students to achieve zero distance from professional positions. The course is based on a “University Campus Network Integrated Cabling Design and Construction” project[5]. Based on the overall network cabling project of Chengde Petroleum College, the design and construction of a campus network integrated wiring scheme is completed.

Theoretical teaching is divided into three parts:

1. Physical part
   - Common tools, devices (information modules, distribution frames, crystal heads, switching devices, etc.), transmission media (wired transmission media, wireless transmission media), explain the actual case.
2. Design
   - Work area, wiring (horizontal) subsystem, trunk (vertical) subsystem, building group subsystem, equipment room, incoming line, management subsystem, central computer room.
3. Site investigation
   - Construction, safety, budget, and the position of each subsystem in reality.

Teaching Equipment and Teaching Environment

1. Multimedia classroom, computer room, network integrated wiring training room, school network center.
2. Using multimedia teaching, the corresponding network wiring task is given in the teaching process, so that students can complete the corresponding subsystem wiring design according to the corresponding building of the school, then learn relevant theoretical knowledge, and revise their own design scheme, and It is realized in the network integrated wiring training room.

Teaching Organization Implementation

1. Theoretical teaching content:
   - Use multimedia to explain common subsystems, devices (information modules, distribution frames, crystal heads, switching devices, etc.), transmission media (wired transmission media, wireless transmission media), industry standards, and integrated wiring.
2. Practical teaching content:
   - Phase 1: Basic unit training
     - Objective: Familiar with various transmission media, wiring tools, and termination technologies.
     - Content: Design 5 unit experiments according to the basic content of the textbook, aiming to consolidate the basic knowledge of construction. The production and testing of jumpers, the production of crystal heads, the production of information modules and the installation of information sockets, the query and retrieval of integrated wiring standards, and the site survey of the central computer room.
   - The second stage: integrated wiring design project:
     - Content: For the integrated wiring work area subsystem, horizontal trunk subsystem, management subsystem, vertical trunk subsystem, building subsystem, equipment subsystem (central computer room)
     - Objective: To train students in the overall design and construction of multiple subsystems by comprehensively training the modular knowledge of the units they have learned.
Mobile Internet and Virtual Reality Technology (VR) to Solve Problems in Teaching

At present, China's socialist economy has achieved initial development, requiring a large number of technical talents to contribute to the development of the economy and society. The "mobile internet + virtual reality technology (VR)" technology is applied in practical teaching, which can greatly improve students' practical operations. Competence is an important way to train students' practical ability. Through the combination of “Mobile Internet + Virtual Reality Technology (VR)” technology and curriculum learning, students' mastery of skills is improved and the overall level of education is improved.

1. Solve the problem of resource sharing through “Mobile Internet + Virtual Reality Technology (VR)” technology.
2. Solve the problem of inaccessible or difficult learning in poor areas of remote mountainous areas through “Mobile Internet + Virtual Reality Technology (VR)” technology.

Conclusion

Through the simulation of mobile internet and virtual reality technology in the "integrated wiring" course simulation, students can better understand the course learning content, increase students' engineering concepts, strengthen hands-on ability, and cultivate team awareness to better serve the society.

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References


