Online Teaching System of Sports Training Based on Mobile Multimedia Communication Platform

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ABSTRACT

At present, most of the sports training and teaching systems are not effective because of relatively narrow scope of teaching content, lack of communication between teachers and students, and long response time of the system. Therefore, an online sports training teaching system based on mobile multimedia communication platform is proposed. Demand analysis and overall structure of the online sports training teaching system is carried out and established. On this basis, the corresponding functional modules are designed. Second, SQL server database is used to store, protect, and manage large amounts of data. BP neural network-based student evaluation module is analyzed to ensure real-time feedback of student learning results. Finally, taking the students of a college that select basketball elective course as an empirical research object. The online sports training teaching system realizes networked student learning and teacher-student exchange. Moreover, response time of the system is tested. Experimental results show the proposed method verified effectiveness of the system and achieved the purpose of this article.

KEYWORDS

Communication Platform, Mobile Multimedia, Online Sports, Training Teaching System

1. INTRODUCTION

With the development of computer technology, multimedia technology and communication technology, a new education model represented by education technology has emerged in the education field in China, of which online network education is a rather prominent part (Cao, 2017; Froberg et al., 2017). Physical education is a bilateral activity of teaching and learning that is both practical and participatory. At present, resources on the Internet are less than other disciplines, which lack systematism and integrity (Lander et al., 2017). For sports teaching, action demonstration and imitation are very suitable for presentation in the form of a multimedia content. Under this background, relying on the more mature college campus network, Internet technology, computer, multimedia, modern communication and other technologies, it is the time to design a multimedia communication platform for online sports training and teaching (Macadam, Cronin & Simperingham, 2016).

Compared with other disciplines, physical education teaching has many restrictive factors, including the size of the venue, equipment types, environmental conditions, climate factors, etc. Meanwhile, difficulty of teaching and heavy task of teachers are important reasons for restricting physical education, which leads to the phenomenon that theoretical teaching and practical effects are not uniform in physical education (Mclaren et al., 2018). Because of this particularity of physical education

teaching, the use of multi-media teaching systems for research of physical education assisted teaching becomes more urgent. The network multimedia communication teaching system can fully make up for these deficiencies in physical education teaching (Xi & Dong, 2017). With current application of computer network-assisted teaching methods in physical education teaching, the development and research of network multimedia teaching courseware is far from meeting practical needs of physical education teaching although the network multimedia teaching system has unparalleled superiority (Uter, Gefeller & Mahler, 2016).

In recent years, scholars have proposed some new online teaching systems. For example, researchers proposed a design scheme for remote classroom teaching based on electronic 3D virtual reality (Liu & Guo, 2017). The teaching system was performed in the Multigen Creator software development environment. The remote visual simulation of the flipped classroom teaching scene was performed using 3D virtual reality technology. A 3D teaching scene model was established. Moreover, a visual simulation program for remote teaching of flipping classrooms was established in combination with Vega Prime visual development technology, and multi-threaded program loading and network control design were performed. A sports coaching system based on artificial intelligence was proposed (Liu, 2018). Based on the intention model, credibility and effectiveness analysis, confirmatory factor analysis and structural equation model test, the network sports teaching platform was established (Dai, 2016). The platform used the bootstrap method and the group regression method to test the mediating role of the attitude and regulation of the Big Five personality. The perceived usefulness and perceived ease of use of the online teaching platform have a significant positive impact on the teaching attitude. The teaching attitude has a significant positive impact on the intention of use, and has certain educational and training adjustment effects. On the basis of obtaining sports-related data, functional movement patterns, sports techniques, etc. are evaluated. Meanwhile, multi-target feedback training methods are established, and eventually the athletes are trained to improve their training level. The above-mentioned sports training and teaching systems all exist drawbacks, such as narrow student content range, lacking of communication between teachers and students, and long response time.

In this paper, a design method of online sports training teaching system based on mobile multimedia communication platform is proposed. The main research work is as follows:

1. The demand of the online sports training teaching system is analyzed. The design requirements of system administrators, teachers, and students are summarized.
2. According to design criteria and goals of the platform, functions of the platform are summarized. Starting with architecture of the platform, design framework of the platform and functions of each module are mainly introduced.
3. Database design of the online sports training teaching system and implementation of BP neural network of student evaluation module are analyzed to understand processing of system development.
4. Taking the students who select a basketball elective course in a physical education college as an empirical research object. Differences in teaching effects between mobile multimedia communication network-assisted teaching mode and traditional teaching mode were compared. Feasibility of the online sports training teaching system was confirmed. Moreover, Functional test of the online sports training teaching system was carried out, and response time of the system under load was analyzed to verify effectiveness of it.

2. ANALYSIS OF SYSTEM DESIGN REQUIREMENTS

2.1. Design Requirements of System Administrator

The system administrator is the administrator of the entire system and has the highest authority in the system. In a designed system, the administrator is responsible for managing teachers, students,

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