Design and Application of Online Teaching System for Higher Vocational Mental Health Education Based on Web

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Abstract. Mental health education course is an important measure for higher vocational colleges to carry out quality education and practice the concept of "three-round education". The traditional teaching mode has some shortcomings, such as low attention, fixed teaching form, lagging teaching content and lack of targeted guidance, which seriously restricts the effectiveness of mental health education courses. In this regard, this paper designs a set of online teaching system of mental health education courses based on Web, which promotes the network and digital transformation and upgrading of mental health education mode in higher vocational colleges. The system consists of a client and a server. The client can support multi-user remote login, and the server is responsible for providing various functions and services. Through the functional simulation test, the system meets the actual needs, and can enhance the practical significance of mental health education from theoretical teaching, simulation training, test guidance and other dimensions, which provides a new direction for the reform of teaching mode of mental health education courses in higher vocational colleges.

Keywords: educational informatization · mental health education in higher vocational colleges · network online teaching · Web technology · computer software application

1 Introduction

At present, the mental health status of students in higher vocational colleges can not be ignored. The average age of students is between 17 and 22, and they are in a stage of intense psychological changes. Under the joint influence of academic pressure, surrounding environment, personality characteristics, career prospects and other factors, students are prone to ideological and cognitive deviation, which leads to psychological conflicts and contradictions, and induces corresponding psychological obstacles and mental health problems [1]. Faced with this situation, more and more vocational colleges realize the importance and necessity of mental health education, and promote the healthy development of students' psychology by offering mental health education courses. However, in the teaching system of higher vocational colleges, the course of mental health education belongs to public basic courses, and the teaching mode is mostly large class

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teaching. The problems such as fixed teaching form, lagging teaching content, weak teachers and lack of targeted guidance have greatly weakened the teaching effect, which has seriously affected the development of psychological education courses in colleges and universities and the construction of college students' mental health [2]. In view of this, this paper believes that higher vocational colleges should earnestly practice the educational concept of "three-round education", adhere to the drive of innovation, actively build an online teaching system of mental health education courses based on Web with the help of the application advantages of digital information technology, enrich the forms of mental health education with brand-new networking and information means, increase the channels of mental health services, and promote the high-quality development of mental health education in colleges and universities [3]. The function setting of the system will highly meet the actual needs of students and teachers, focusing on improving the effectiveness of mental health courses from theoretical knowledge teaching, simulated scenario analysis, psychological testing and counseling, and providing a new way for the construction of college students' mental health education system.

2 Development Process

First of all, the front-end interactive page, as the core of the visual presentation and functional connection of the system, is the key channel to establish communication with users, and also the centralized presentation of the external forms of the online teaching system of mental health education courses [4]. In the development process, the development environment configuration of VUE can be completed by installing Visual Studio Code, installing Node.js, configuring CNPM, building express environment, and installing the scaffolding of VUE-cli [5]. Secondly, for the construction of the back-end server, it is necessary to standardize the relationship between various data interfaces and functional levels with the help of various Web application templates under ASP.NET, and form a clear functional structure [6]. The development environment of the system server consists of Windows10.0 operating system, ASP.NET supporting. Net framework 4.4, development language C#, integrated development tool Visual Studio 2019, Windows IIS 10.0 server and SQL Server 2019 database. Under the integration tool VS2019, ASP.NET MVC application template is selected to complete the design and development of the Web application project. The designed. Html file is deployed on the server side, and it is packaged and distributed to the IIS server side. After the corresponding ports are configured, users can complete the use of the system from the client browser. Through the introduction of the above key technical theories, the overall environment of system development, the running process of related software and tools are determined, and the technical feasibility of the overall project of online teaching system for mental health education courses is also clarified.

3 Functional Implementation

3.1 Student Side

a. Autonomic Learning
Under this function module, the system supports student users to choose different teaching contents for learning according to their own preferences and interests. The teaching resources provided by the system are not limited to traditional teaching materials, but can fully combine the teaching practice, split and refine the teaching focus and improve the pertinence of teaching. At the same time, teaching resources can also be presented in various forms such as video courses, ppt courseware materials, micro-courses, electronic graphics and texts, which is conducive to stimulating students' interest in learning and promoting their personalized development [7].

b. Scenario Simulation
The course of mental health education not only emphasizes students' learning and mastering theoretical knowledge, but also analyzes and handles psychological problems with practical skills. Facing the weak links in the traditional teaching mode, the system can give full play to the advantages of network virtualization and information interaction, organically integrate multimedia technologies, and construct a large number of simulation scenarios, which is convenient for students and users to complete the analysis of psychological cases and is conducive to enhancing the effectiveness and operability of the course [8].

c. Psychological Testing and Counseling
Under this functional module, students can simulate their own psychological status, find their own psychological abnormalities or risks early, and receive psychological counseling and psychological counseling in time to avoid serious psychological problems. In addition, the system opens up online consultation channels to facilitate students to seek help online and cultivate their awareness of active help.

3.2 Teacher Side

The positioning of teacher users in the system focuses on the organizers and managers of online teaching practice. Functional authority includes three aspects: student management, resource management and assessment evaluation. Among them, the system can combine students' learning behavior data with daily classroom performance and final exam results to build a comprehensive evaluation system of learning effect, and determine the weight of each index with the help of AHP analytic hierarchy process algorithm to complete automatic scoring, as shown in Table 1 for the teaching effect evaluation system [9].

Table 1. Teaching effect evaluation system

Type	Evaluating indicator	Observation point
Learning process	Learning attitude C1	Login frequency C_{11}, cumulative duration C_{12}, etc.
	Learning ability C2	Course completion degree C_{21}, scenario simulation quantity C_{22}, etc.
	Master of knowledge and skills C3	Learning target compliance rate C_{31}, course satisfaction C_{32}, etc.
Learning effect	Classroom performance C4	Usually grades C_{41}, mental state C_{42}, etc.
	Multiple evaluation C5	Classmate evaluation C_{51}, teacher evaluation C_{52}, etc.

The platform compares each index value to determine its importance, and then completes the construction of judgment matrix by 9-level scale method, as shown in Formula 1. According to the judgment matrix, each row is averaged to get $\overline{C}$, and after standardization, the index value is converted into the ranking of importance in the criterion layer to get the corresponding weight, as shown in Formula 2 [10]. After the weight of each index value is determined, in order to verify the running status of the evaluation function of the platform, the platform uses the actual data of 50 students to conduct simulation tests. The final test results are shown in Table 2. The simulation test results show that the platform can obtain the online learning behavior data of student users, and quickly complete the evaluation by relying on the data algorithm model, which corrects the one-sidedness of the traditional test score evaluation method.

$$C = \begin{bmatrix} C_{11} & C_{12} & C_{13} \\ C_{21} & C_{22} & C_{23} \\ C_{31} & C_{32} & C_{33} \\ C_{41} & C_{42} & C_{43} \\ C_{51} & C_{52} & C_{53} \end{bmatrix} \tag{1}$$

$$\tilde{C}_i = \frac{\overline{c}_i}{\sum_{j=1}^{n} \overline{C}_j} \tag{2}$$

Table 2. Final test results

Target layer	Standard layer	Weighted value	Score	Final score
Assessment and evaluation	C1	$C_{11} = 0.061$	0.925	6.374
		$C_{12} = 0.135$	0.981	
	C2	$C_{21} = 0.193$	1.031	
		$C_{23} = 0.097$	1.028	
	C3	$C_{31} = 0.190$	0.974	
		$C_{32} = 0.098$	0.886	
	…	…	…	

4 Conclusions

In order to improve the effectiveness of mental health education courses in higher vocational colleges, this paper designs a set of online teaching system of mental health education courses based on Web, aiming at many shortcomings in the current teaching mode, and promotes the network and digital transformation and upgrading of mental health education modes in higher vocational colleges. In the follow-up research, the system will further enrich the types of teaching resources, improve the authenticity and immersion of scenario simulation, and give students a better learning experience.

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