



The Application of Computer Virtual Network Technology in Modern Distance Education System

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Abstract. Under the background of the continuous development of education informatization, the modern distance education system began to gradually integrate into the education and teaching of each subject, thus making the education reform into a new pattern. In recent years, in the process of optimization and upgrading, some distance education systems will often integrate the computer virtual network technology into it, hoping that in this way, the comprehensive benefits of the distance education system can be continuously played. The article starts from this Angle, first Thinking about the demands of the distance education design and development of the curriculum, then introduced the virtual laboratory design scheme and the core technology on the basis of the distance teaching system section optimization, and put forward the corresponding distance teaching system test scheme.

Keywords: computer virtual network technology · modern distance education system · education system

1 Introduction

Computer technology makes human development process into the new revolution pattern, the Internet depends on its technological advantage, quickly change for people's work and life style, education environment has produced multidimensional change, the integration between modern information technology and education project more and more, modern information technology in the role of education benefit promotion more obvious, and the network distance education system also in this background in the direction of more sustainable development. Therefore, it is necessary to discuss the application of computer virtual network technology in the modern distance education system.

2 An Analysis on the Design and Development of Distance Education Curriculum

Distance education curriculum needs to solve the contradiction of the separation of space, time and space of education, so it needs to design and develop the curriculum reasonably on the basis of following the particularity of distance education, so as to ensure that the

actual distance education curriculum goals can be better realized. In this process, it is important to note that: distance education curriculum design and development has its own program, at the beginning need to set plans, select development team members, then analyze the learning needs, into the state of curriculum resources, and for course summary design, set more detailed design, and according to the curriculum data development, construct actively interactive learning space, make learning guidance can progress in an orderly direction, and finally can reasonable teacher training mechanism and trial mechanism into it, the last link is the evaluation and modification.

3 The Development of the Distance Teaching System Section

Appeal in the distance teaching system architecture to be satisfied, also need to according to the actual system function requirements, for the system module optimization, of course, the development of the teaching system is to meet different requirements as the goal, as a single subsystem, each section is related, but can guarantee an independent function, section in development, also need to be in an independent environment, also need to be in accordance with the above programs. In detail, the main sections involved are:

3.1 The Development of the Network Classroom Section

In order to the distance education system, to carry the corresponding teaching content presentation task, it is also necessary to ensure that the transmission of the information in the process of education and teaching can be more efficient, so as to ensure that its efficiency in education can be fully played, and to combine the demands of this aspect, to achieve the depth optimization of each section. Teaching section, for example, to ensure that can run through the whole education teaching process, whether the early teaching preparation behavior, or teaching process, moreover is teaching resources after class, all need to be integrated, so both script design, or material integration, will better interaction, thus makes the network classroom section show the characteristics of the perfect. In this link, we need to pay attention to the details: first, the network classroom teaching mode. On the basis of demand analysis, exert the effectiveness of network classroom in individual tutoring, and show the new knowledge of the classroom. Considering the basic knowledge, basic concepts and related principles involving some charts, students can find corresponding resources on such a knowledge platform to ensure a perfect knowledge system; second, select appropriate development tools for network classroom. In order to ensure that the ideal learning effect reaches state, it must be presented in a reasonable way, and the relationship between picture resources and text resources should be handled in a dynamic way, so that the richness of individual learning files is constantly improved, so that the coupling of documents can be controlled in the ideal range; third, the development of network classroom. When entering the network classroom, the system can have a good interaction with students, because before this, set a relatively unified operation benchmark, which laid a good foundation for subsequent interaction quality improvement, moreover to define the content of this section, after the keyboard and mouse operation, you can find the corresponding learning content, animation can well

assist teaching, plus play operation button, can let the students better see the changes. In order to ensure the consistency of design, improve the speed of actual development, will set the page template, on the basis of the template generated the same style, teaching content can be designed according to the characteristics and size of the elements, thus ensure the independent elements can call and teaching unit can be better, can also be output separately, so that nature can make the efficiency of classroom design is improved.

3.2 Application of the ASP Online Exam

For the ASP online examination system, it is also one of the important sections in the distance education system. The nodes to note during this process are:

First, the design of the system. From the function point of view, it can be summed up as the student end system, the teacher end system, system management system and performance query system. The efficiency of different systems is different. For the student system, students rely on the account and can choose the corresponding subjects according to their own learning demands. At this time, they can see a kinds of test questions sorted according to the learning progress, choose one of them, and submit the results. For the teacher side, the teacher can enter the state of the examination paper correction, and can input the results [1]. After logging in to the corresponding system, you can quickly make a choice according to your own subject information. The system can present the test paper materials required by teachers, and click on the selection to enter the state of correction. After the correction, the class score information can be input according to the student number. For the system management system, combined with the actual situation, the dynamic setting of the examination scope, determine the examination object, with the system use in the machine room, can ensure that the clearance function can be played. For the score query system, you can query the scores. There is no authentication program for this project. After selecting the subject and the class, you can get the whole score of the corresponding class in the project.

Second, the development of the online examination section. The development of this section needs to be optimized on the basis of the B/S architecture to ensure that the online test function and the discussion and q & A function can be played. Based on the reappearance test of the Internet, the ASP program can be used to develop databases and software. In this process, relying on SQL statements, to ensure that the operation functions of all aspects of the database can be realized, and then maintain its connection state, enter the database, you can drive according to the execution instructions, and in the test, the ASP can present the extracted information in the way of a web page according to the user's interactive operation habits. Web page in the design link, will consider its interactivity, set the visible topic, facilitate students to fill in the corresponding form, the corresponding topic type and corresponding between answer page, can ensure the subsequent process of orderly development, after click the answer, can enter the answer, if it is an objective question, can be in this module to determine error or correct, standardized test, to focus on marking scoring efficiency, also need to quickly associated with the database, between subjective question and the answer is corresponding, to ensure that students can enter the reading. In this process, both teachers and students can check the results of the exam. Moreover, for the question bank maintenance, the functions that need to be realized are: the question bank added function [2], The function of question

bank modification, the function of question bank deletion, that is to say, for the database operation, if the question bank is different, then there will be a different presentation in the actual basic operation interface. The maintainer can input the learning demands of the corresponding subject chapter, and reasonably integrate the topic in it. The system can ensure the unity of the input information and the topic type, and automatically number the input topic, thus integrating it into the last line.

Third, to discuss the design and development of the q & A system. In essence, the discussion and q & A system is equivalent to an online chat room, where teachers and students can interact synchronously. The basic function is to ensure that everyone can speak in such a space, see what others say, and then realize the interaction with each other. In this process, the need to be clear to discuss the design of the system, choose to BBS mode, that is, BBS content will be integrated into the database, the content of the front-end browser, will present in the form of abstract title, for different permissions of users, can quickly get the corresponding information in this link, and ensure the consistency between the database, the subsequent information retrieval function can also be quickly realized. Then, according to the above setting, when the actual system is set, it is necessary to establish the background database at the beginning, and then write the program framework, on this basis, to realize the setting of the page forum summary submodule, and optimize the page forum user interaction sub-module [3].

Fourth, the design of virtual laboratory modules. Relying on virtual reality technology, realize the construction of virtual experiment system, during this period need to ensure reasonable laboratory environment, laboratory instruments, equipment, experimental object, experimental information resources, thus guarantee can better effective in the subsequent distance education system, for learners after entering such a virtual laboratory, can have a realistic feeling, which can better follow-up learning. Relying on the virtual reality modeling language, the shape of each component is set, and then Java combined with VRM is used to realize the control of 3D space entities. On this basis, the actual virtual laboratory module can play its effectiveness in the system.

4 Virtual Laboratory Design Scheme and Core Technology Overview

As a model language, can be used to describe how a target object is presented on the web page, similar to other languages, can be interpreted from the browser, is a descriptive language, it can be described as a 3D environment and target layout, so it can be widely used in 3D space, so the resulting building elements, urban elements, mountain elements, ship elements, planet elements can well play their own efficiency, can quickly integrate the corresponding sound resources, animation resources, to ensure that the course can be better integrated with the virtual space. The C/S mode-based access method works well in the corresponding platform; the low-bandwidth method based on ASCII code can describe the world and the links [4]. It can run on different platforms, reducing the amount of data and enabling low-bandwidth networks; the 3D coloring engine enables continuous integration between modeling and real-time access; and extends itself in a more complex virtual world. From the perspective of construction, it mainly consists of file header, shape, prototype, and event routing. The content of the file mainly includes the definition of node, domain, node, reference, file annotation, etc.

5 Test of the Distance Teaching System

For the above distance education system based on the virtual laboratory, the main nodes to be tested are: link test, navigation test, content test, and overall interface test, so that the generation of the corresponding evaluation report can be realized after the test is completed [5]. And do a good job of corresponding analysis, at this time the object of teaching content, teaching quality, software technology, etc. After completing the actual test work, the corresponding distance education system based on virtual experiment technology can be published in the network environment to ensure that it can play its own effectiveness in the corresponding professional distance education.

6 Epilogue

To sum up, the computer virtual network technology can indeed play an irreplaceable role in the actual distance education system, the generated virtual environment, can make better interaction between teachers and students, get good education teaching experience, so as to ensure the actual comprehensive benefits of the distance education system to play, the quality of actual learning will therefore improve.

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References

1. Li ian. Design of a network distance education system based on ASP in the context of MOOCs [J]. *Modern Electronics*, 2021,44 (06): 72–76.
2. Zhao Xiaofeng. The Construction of education informatization and Solving the Problems of Education at all levels in China [J]. *China Economic and Trade Guide (China)*, 2021, (02): 138–141.
3. Li Xiang. Design of University Distance Education System Based on ASP Technology under Internet Background [J]. *Modern Electronics Technology*, 2020,43 (23): 178–181 + 186.
4. Zhu Mingjun. Development and Application Analysis of a New Distance Education System under Cloud Computing Technology [J]. *Aise*, 2019, (20): 157.
5. Hao Weijie, Wang Yanfei, Fan Ju, Zhang Gongjing. Research and Implementation of Distance Education System [J]. *Information and communication*, 2017, (11): 27–28.

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