Construction of network teaching and research course platform based on multimedia and deep learning

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Abstract. Today's online courses are widely used. This is also one of the main ways many people pursue learning. With the rapid advancement of China's education reform, people are no longer satisfied with the traditional classroom teaching. With the emergence of deep learning technology, today's university education and other adult education have begun to change to mixed teaching methods. Building a network teaching and research platform based on multimedia and deep learning is a hot topic today. This paper expounds the current situation of traditional curriculum teaching. Finally, it expounds the construction of multimedia network teaching and research course platform.

1. Introduction
We find that the new educational reform is mainly aimed at curriculum reform. Curriculum reform mainly focuses on the transformation of classroom knowledge structure and students' way of thinking. This undoubtedly puts forward higher requirements for traditional curriculum teaching\cite{1}. The curriculum reform makes the relevant education departments try to change the teaching and research concept and curriculum teaching mode of traditional teaching in many ways. However, the emergence of deep learning has completely changed this situation.

Through a large number of attempts by experts, they found many loopholes in traditional curriculum teaching\cite{2}. Therefore, we must strive to change the way of curriculum teaching. With the gradual development of multimedia technology and the reform of deep learning technology, the theory of network teaching and research course platform has attracted the attention of experts (Figure 1). On this basis, this paper analyzes the functional design of multimedia course platform, and analyzes the key technologies of system framework. Finally, it expounds the relevant problems that should be paid attention to in the system development.

2. Analysis of the current situation of traditional curriculum teaching

2.1 Problems of teaching methods
We find that the teaching methods in many schools are old-fashioned. This will make students always in the state of passive learning. Teachers' full-time speech can not improve students' interest in learning. The way of indoctrination teaching can not make teachers pay attention to each student's learning. As a result, students can only follow the program like robots.
2.2 Confusion of management mode
We can't guarantee that students' learning speed of each subject is very fast. However, the school must ensure the regular operation of the curriculum management mode. Nowadays, the model of curriculum management in many schools is very chaotic. Theory courses occupy most of students' time. Many practical courses are abandoned by schools. This chaotic management method can not make students devote themselves to learning.

Figure 1. Application of network teaching and research course platform based on Multimedia

2.3 Lack of teacher guidance
Many teachers believe that students' learning should rely on their own strength. This statement is one-sided. Students' autonomous learning ability is limited. Sometimes they can't solve some difficult problems. This situation needs the help of teacher guidance. The lack of teacher guidance may lead to the slow progress of students' learning. This will also lead to students' learning effect is not obvious.

2.4 Single curriculum evaluation mode
Examination paper examination seems to have become the only form of examination in all schools. The score of the test paper has become a step of paradise for students. In fact, the investigation form based on written examination can not fully assess students' grasp of knowledge[3]. This will also cause students to plagiarize. A single curriculum evaluation model can not promote students' learning.

3. Design of functional framework of multimedia teaching and research course platform based on College Chinese

3.1 Establishment of client system
The establishment of learning based teaching and research course platform must design the client. The client system mainly provides user registration function and login function. On this basis, it can ensure the normal communication between teachers and students. It can also ensure the integrity of a platform. It is worth noting that the establishment of the client system needs to adopt a more secure security mode.
3.2 Establishment of teaching management system
We all know that the speed of College Chinese teaching is very slow. Chinese mainly emphasizes the accumulation of students’ usual knowledge. It also needs the help of teachers and teaching resources. Therefore, the design of teaching management system is essential. In the teaching system, students can query a variety of teaching resources. They can complete the preparation and review of the course independently.

3.3 Establishment of system configuration function
The system configuration function mainly includes the user management function and data management function of the system. Part of the user management function is contained in the client subsystem. From this point of view, the data management function is the most important[4]. Data management includes system parameter management and database management. The teaching data generated by students and teachers in the process of using the client are contained in the database.

3.4 Establishment of functional service system
The combination of functional service system and client system is very important. The user data of teachers and students in the client is different. Functional service system can provide them with personalized functional requirements. For example, it can provide teachers with personalized teaching courseware query system. It can also provide students with links to various online course resources.

4.Key technology analysis of the functional framework of the multimedia teaching and research course platform based on College Chinese

4.1 Cloud computing technology
According to the description of different literature, we find that many teaching platforms will take cloud computing technology as the basic support technology. Cloud computing technology can virtualize various hardware and software resources[5]. It can increase the data processing speed of the platform. This powerful computing power can deal with a variety of teaching data.

\[ U_p(t) = \frac{t_u + t_c + t_e + t_{ex}}{t_t} = 1 - \frac{t_{id}}{t_t} \quad (1) \]

\( t_u \) refers to the application time of the CPU. \( t_c \) refers to the time of central data processing in the system application mode. \( t_e \) refers to the data exchange time. \( t_{ex} \) refers to the system outage time. \( t_t \) refers to the total running time of the system's cloud computing. \( t_{id} \) refers to the idle time of the system. Applying the above formula can help us clarify the speed of data calculation in the learning platform.

4.2 Streaming media technology
Many people think that streaming media technology is multimedia technology. This view is wrong. Streaming media technology is similar to financial media technology. It is good at data transmission and video playback. Different from traditional media, streaming media technology does not need to download complete audio to obtain file information. It can read and write all kinds of video information and audio information online.

4.3 Powerful multimedia teaching technology
Multimedia teaching technology is widely used in the field of education. It mainly includes video media technology and audio media technology. The outstanding advantage of multimedia teaching technology is that it can help users complete the selection process of personalized resource content. It also provides the function of concurrent processing of resource data[6]. Nowadays, multimedia teaching technology is mainly used in network course teaching.
5. Other key development technologies of network teaching and research course platform

5.1 System development environment

We know that the design of teaching platform needs the support of data processing technology. Data processing technology has high requirements for system compatibility. Generally speaking, it is more suitable for stable systems. If the data processing technology is incompatible with the system, the card screen problem of the application will appear in the teaching platform. This also shows the importance of the selection of system development environment.

| Development Authority | Primary coverage                  | System application proportion |
|------------------------|-----------------------------------|-------------------------------|
| Student authority      | Teaching resources                | 46.71%                        |
| Teacher authority      | Auxiliary teaching courseware     | 31.46%                        |
| Administrator permissions | Data management function       | 21.83%                        |

5.2 Setting of system permission

The development process of teaching and research curriculum system must pay attention to the setting of authority. The functions of the platform used by teachers and students should be different. This indicates that the system should set different permissions[7]. According to different user login settings, different accounts should have different system permissions. This is a problem worthy of designer's attention (see Table 1 and Figure 2).

5.3 Cost of system development

In fact, the cost of system development should be the most worthy of consideration. We found that many schools in remote areas are underfunded. This situation may delay the development of university research curriculum system. The author suggests that some regional governments can provide some funds for system development for schools. This will greatly ease the financial pressure of the school.
6. Problems in today's network course platform supported by multimedia technology

6.1 Lack of multimedia teaching theory
Many people think that multimedia teaching is very simple. They ignore the application theory of multimedia technology. In fact, multimedia technology involves the comprehensive application of hardware and software[8]. Through social research, we find that many teachers can't use all the functions of multimedia teaching. This shows the lack of relevant theoretical knowledge of multimedia teaching.

6.2 Differential treatment of traditional teaching
Although this paper explains the problems of traditional teaching, we still can't ignore the advantages of traditional curriculum teaching. And many schools have found the application advantages of the network platform. They will place many professional subjects in the network teaching module. This leads to the problem of differential treatment of traditional teaching[9]. In fact, the application of a single network course teaching and research platform can not successfully improve students' learning level.

6.3 Lack of interactive multimedia classroom
Many students believe that multimedia classroom has many disadvantages. For example, multimedia classroom leads to the lack of interaction between teachers and students. This completely violates the traditional curriculum teaching policy[10]. This shows that the teacher is a mechanical explanation. Students are still passive receivers. This practice violates the significance of multimedia technology application platform.

7. Conclusion
Through the description of this paper, we understand the advantages of the application of the new network teaching and research course platform. We also know the disadvantages of traditional curriculum teaching. Using the method of theoretical analysis, this paper introduces the teaching status of traditional courses, the functional framework design of teaching and research platform, the analysis and development of key technologies of deep learning. The main work points are the development framework technology of deep learning of teaching and research platform. The result made us realize that we can't give up any teaching means. We need to find a way to integrate the two into the mixed teaching model. This will help students improve their comprehensive learning ability in the future teaching research and teaching.

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