Cloud computing based big data platform construction of university informatization teaching service in Yunnan Province under the background of community of destiny

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Abstract. This paper summarizes the current situation of the university education informatization, cloud computing and the application of big data in education, and preliminarily constructs the big data platform model of university informatization intelligent teaching service of Yunnan University Teacher Education Alliance Based on cloud computing Part of the content of the model is described to provide reference for regional alliance education related research.

1 Introduction

General secretary Xi Jinping unremittingly pointed out: "persistently promote education informatization, and strive to expand the coverage of high-quality educational resources by means of information technology. Through education informatization, we will gradually narrow the digital gap between regions and urban and rural areas, vigorously promote education equity, and let hundreds of millions of children share high-quality educational resources under the blue sky and change their destiny through knowledge. " "Education equity is an important foundation of social equity. We should continue to promote the achievements of educational development to benefit all the people more fairly, and promote social equity and justice with educational equity." In the same region, compared with the faster developing universities ("cities"), many colleges and universities with slow development belong to "Villages" or "villages in the city"; in the same region or even in different prefectures, compared with primary and secondary schools with higher education, teaching quality and level, many primary and secondary schools in prefectures belong to "Villages". How to shorten the "city" relying on cloud computing, big data and other educational informatization means There is a digital gap (or zero space-time) between the "rural" time and the "rural" time to realize the sharing of high-quality teaching service

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resources. The whole country is "a chess game", the region is a "community of destiny", and "a game of chess" and "community of destiny" are all wisdom. How to apply these wisdom to the realization of educational balance and educational equity through information technology is of great value and significance.

2. Research status

2.1 The current situation of university education informatization of Teacher Education Alliance

Yang Wenzheng[1] believes that the fundamental measure to promote education equity is to allocate educational resources reasonably, and to enrich and utilize high-quality educational information resources efficiently is the key to the in-depth promotion of basic education informatization.Wang Shuo[2] thinks that the resource sharing of Jilin Province teacher education alliance includes hardware resource sharing and software resource sharing. The resources that can be shared include infrastructure, equipment, human resources, services, posts, data, scientific research achievements, teaching and research results, etc. He Yujuan[3] also elaborated on the construction of resource center and learning platform in the operation content of Teacher Education Alliance in Yunnan Province: to build a high-quality resource sharing platform for pre service and post service teacher education with complete functions and advanced facilities, teaching support system, and a number of network course resources, network assisted curriculum resources and high-quality quality, which play an important role in the training of normal students and in-service teachers.

2.2 Cloud computing and big data status of education informatization of Teacher Education Alliance

Zhou YanFang[4] believes that cloud computing can integrate university education information resources most completely and quickly, promote resource exchange between teachers, and promote the flow of teaching experience, so as to maximize the sharing of educational resources. Zhang Xizi[5] thinks that the development of educational information resources in China is unbalanced among different regions, between urban and rural areas in the same region, and between different schools, which leads to social education inequality, which needs to be solved urgently. Cloud computing can integrate, manage and allocate computing resources everywhere, And provide services to users; cloud computing technology provides an effective way for the construction and sharing of educational information resources; research on the construction and sharing of educational information resources under cloud computing plays an important role in optimizing the allocation of educational information resources and realizing educational equity.

2.3 University informatization teaching service based on big data platform and its mining algorithm

Luo Jinwei et al.[6] believe that in the construction of teaching resources sharing system in the aspect of education informatization, we should build a big data platform, and also based on the collaborative filtering algorithm of articles, combined with the correlation between curriculum teaching resource data and the correlation between learner behavior data and curriculum teaching resource data, carry out mining and Analysis on the large data platform Shanghai curriculum teaching resource data.Wu Min[7] Studies and analyzes education big data mining technology, combines with the actual situation to mine a large number of data

generated in online education to obtain useful information and provide services for teaching optimization and education decision-making.

3 Cloud computing based big data platform for university informatization teaching service of Yunnan University Teacher Education Alliance

Security level protection mechanism / information standard / education network security mechanism

Internet Protocol / team building mechanism / high quality teaching resource construction mechanism

user

Students, teachers, researchers and leaders of education departments

- Alliance colleges and Universities
- Secondary and primary schools attached to universities
- Primary and secondary schools in Kunming and prefectures

Comprehensive display layer

Innovation service interface layer

- PC terminal
- Mobile terminal: mobile phone, pad, etc

Teaching service big data mining research support module

- Remote synchronous interactive classroom
- High quality MOOC resource learning platform
- Online / offline examination

application layer

- Automatic generation of MOOC high quality teaching resources
- Remote synchronous interactive teaching management platform
- Personnel management
- Potential applications
- ......
- Supporting platform for teaching and scientific research
- Collaboration, open teaching and research interface

Application support layer

- Unified identity authentication of Teacher Education Alliance
- Teaching and learning big data mining recommendation algorithm
- Personalized learning
- MOOC blended teaching
- Other supports

Basic platform

Cloud computing platform for university informatization teaching service of Teacher Education Alliance (mobile Internet center and its access port / remote disaster recovery and recovery center)

YNNU\Honghe University cloud / alliance brother University cloud

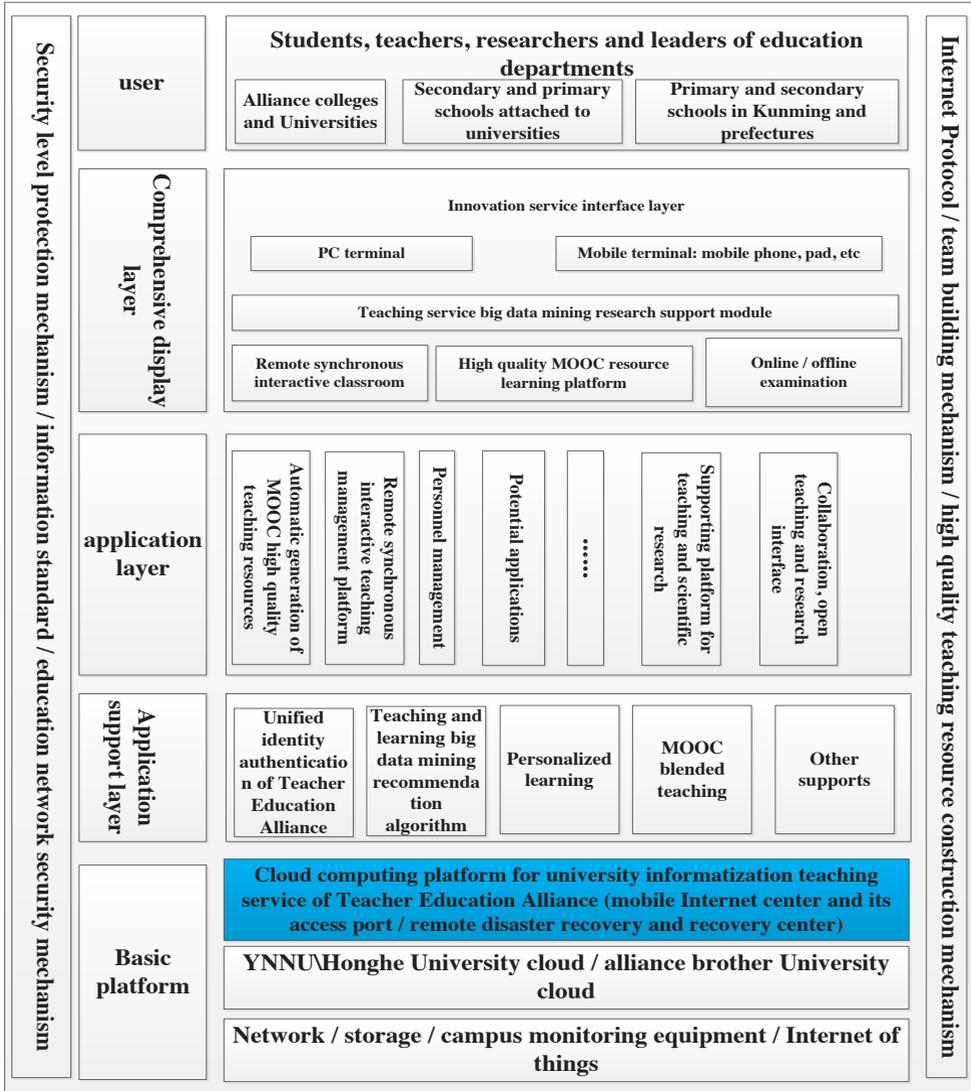Network / storage / campus monitoring equipment / Internet of things

Fig. 1. Big data platform model of university informatization teaching service based on cloud computing in Yunnan University Teacher Education Alliance.

A. This paper introduces classroom network live broadcast as the source of teaching resources, and takes MOOC innovation and sharing mode as the carrier to study the automatic generation system of MOOC courses to realize co construction and sharing: in the process of teaching video recording, the system automatically detects and captures the teaching and questioning links of teachers, automatically generates the essential elements of

MOOC course, and breaks through the bottleneck problem of MOOC course resource construction.

B. Provide one cloud and multiple terminals for learning everywhere: develop platform teaching mobile terminal, desktop terminal, and multi terminal coexistence to promote learning within reach.

C. Set up remote synchronous interactive classroom, MOOC resources automatic production module: remote synchronous interactive classroom, mainly rely on the network to let the two schools far away, through real-time transmission of video and audio, truly realize two-way interaction of teaching; teachers in the main classroom give lectures, and students from foreign schools can not only see and hear the classroom situation, but also can ask and answer questions (it is suggested to choose two The other classes will observe and observe. Different from the traditional one-way transmission of video and audio in distance teaching, the new intelligent recording and broadcasting system can realize the synchronous interaction of two-way sound, video and teaching media (electronic whiteboard). With the help of the Internet, classes in different regions can be merged into a large online class. In the whole class, MOOC teaching resources are automatically produced while recording, which can not only broadcast outstanding teachers in real time We can also release the recorded and broadcast class of famous teachers through the network for other teachers to observe, discuss and learn offline.
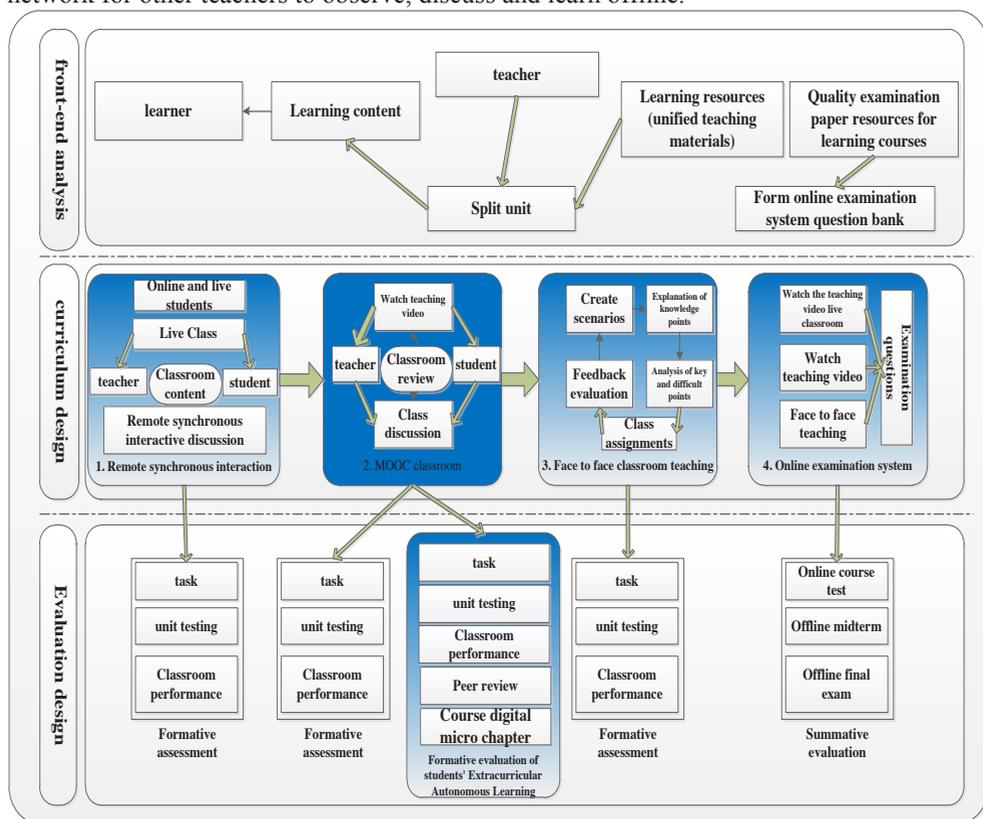

Fig. 2. MOOC hybrid teaching innovation sharing mode.

D. The integration of blended learning mode and high-quality teaching resources MOOC sharing mode can be used for students' learning after class. As a supplement to students' classroom, some studies have shown that, based on coursera teaching platform,

students can learn after class, Combining face-to-face classroom teaching with MOOC based online learning, a hybrid learning mode based on MOOC is designed to improve students' performance and enhance their interest in learning. The following MOOC sharing mode can be used to explain the relationship between remote synchronous interactive classroom, MOOC classroom mode, traditional teacher-student face-to-face classroom, examination and evaluation, etc. Students and teachers can effectively carry out teaching and learning activities, as shown in Figure 2.

4 Summary

General secretary Xi Jinping pointed out: "the world, the degree of interdependence and interdependence of all countries is unprecedentedly deepened. Human beings live in the same global village and live in the same time and space in the intersection of history and reality, and become more and more a destiny community with you and me." After the global efforts to resist the epidemic in 2020, people all over the world understand the wisdom contained in this sentence. Similarly, through the unprecedented demand for online learning resources such as computing resources, storage resources and curriculum resources in 2020, we can see that the new computing mode of educational informatization has to take the road of "community of destiny". In view of this situation, this paper summarizes some research situations, and For these studies, this paper puts forward the big data platform model of university informatization teaching service based on cloud computing in Yunnan University Teacher Education Alliance, which can provide reference for relevant research.

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