Thoughts on the Reform of Higher Vocational Dance Teaching Based on Big Data

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Abstract. In the fast-developing information age, the current teaching level can no longer meet the current students' demand for knowledge. Based on the current teaching system and platform, this paper uses modern programming and big data information database as the basis, and combines some shortcomings of current college education methods and levels to design a set of remote dance information teaching system. On the basis of the B/S network structure, a new online and offline interactive teaching model for the three roles of teachers, students and administrators established by using big data has successfully enriched the diversity of higher vocational education methods.

Keywords: big data; information teaching; B/S network structure

1. Introduction
With the development of our country's economic level, everyone is paying more and more attention to children's education. Education is booming. Not only is it a must-learn subject in the classroom, but many extracurricular subjects have also attracted the attention of many parents. Dance is currently a more popular extracurricular project. With the rise of dance education, the number of students is also increasing. But now the requirements for education are getting higher and higher, and now students have higher and higher requirements for teaching. After all, the quality of classroom teaching will directly affect the efficiency of students' listening, which is very important to parents and schools. [1-3] But influenced by traditional education methods, classroom teaching always has many limitations. [4] The education model of one teacher with multiple students can no longer meet the needs of the current era and cannot guarantee the progress of each student. Therefore, this article has some thoughts on the reform of dance information teaching in higher vocational education based on big data analysis. With the help of the current advanced Internet technology, the traditional classroom teaching will be migrated to the Internet to realize a true one-to-one remote dance teaching model. [5-6]

2. Basic algorithm of Proposed Method

2.1. System architecture design
At present, the mainstream architecture of system technology design is mainly C/S and B/S. The C/S (Client/Server) architecture is the client/server architecture, which is a software-level technical
architecture that is widely used in the network. The B/S (Browser/Server) architecture is the current popular browser/server architecture, and is currently the most popular and commonly used software system architecture. The biggest feature of B/S is to realize innovation on the basis of traditional C/S, provide people with a new way of thinking, and truly realize the mode of one-to-one online teaching. To meet the trend of information globalization, Figure 1 is the architecture diagram of the distance dance teaching system.[7-8]

![Architecture diagram of the remote dance teaching system](image)

**Figure 1. Architecture diagram of the remote dance teaching system**

From the above figure, it is found that the remote dance teaching system is divided into three modules: client, network server and database server. Among them, the client is used to browse information, contact the back-end database server, and then complete the upload of courseware video resources, student-side information query, student course query and other functions.

2.2. System function module design

The function module of this system is shown as in Fig.
2.3. Video compression algorithm design

Video compression uses the H.26 series, which includes two visual compression algorithms: H.264 and H.265 series. H.264 is a professional high-quality video compression technology for video compression. Its main function is to convert the video into a file format waiting to be decoded through a certain encoding mode. H.265 is an upgraded version of H.264, which has the advantages of low complexity and convenience. The performance is more excellent than H.264, which enhances the decoding speed, increases the maximum video coding layer bit rate and the highest frame rate under high resolution. Therefore, H.265 is used to compress the video in this compression.

3. Development configuration

3.1. Software development environment

The development of software plays a very important role in the establishment of the system. In order to provide the system with a more powerful software level, the design of this system adopts the .NET framework provided by Microsoft. The biggest highlight of the .NET architecture is the ability to combine the office technology of the website with it to build a unified remote teaching system. As for the software development environment, this system uses Visual studio 2015 provided by Microsoft Corporation, combined with the HTML page and aspx page built on the IIS server in the Web system, and then uses the ADO.NET technology provided by Microsoft Corporation combined with the dynamic link database system SQL Server 2014. Able to obtain and process data in time to achieve good results.

The main function of the front stage of this remote dance teaching system is to process all the materials uploaded by the teacher on the teacher's end. Not only video, but also images and audio, courseware, etc. It can also judge the uploaded resources, whether there is any illegal content, and
perform certain verification. Only after the verification is passed, the uploaded courseware materials can be included in the database, and then can be pushed to the student login interface. Students can log in to their account and password to view the courseware materials uploaded by the teacher to fulfill some of their needs. And another feature of this software is the ability to set various levels of operation and various levels of operation authority to help better maintain and manage the entire system.

3.2. Hardware development environment
If software development has a vital role in the implementation of the system, then hardware development is the core of the system. Whether it's the teacher-end function or the student-end function, or the compression and decompression of video uploads, there are a series of functions that require adequate hardware facilities. This hardware facility must not only meet the huge amount of data such as storing video, compressing video, decompressing video, collecting video, recording video, processing video online, displaying video in real time, etc., it also needs to discover and search for a keyword with a series of audio and video courseware from a large amount of data. If the hardware facilities are not professional enough, the computer will suffer from lag, and may even cause memory leaks or even crashes. Next, I will give you a specific example of the hardware configuration used by the two client terminals.

Table 1. Configuration table of hardware facilities used on the client side

| Detailed parameter description of the client hardware system |
|-------------------------------------------------------------|
| Computer model | Dell XPS 15 9650 laptop |
| Operating system | Windows10 64 位（DirectX12） |
| Processor | Intel Corei7-7700 @2.8GHz quad-core |
| Motherboard | Intel XeonE3-1200v6/7th Genintel Core |
| RAM | 12GB |
| Main hard disk | 256G |
| Graphics card | Nvidia GeForce GTX1050Ti |

3.3. Compression and decompression of audio and video
The audio and video compression and decompression algorithm of this system is based on MPEG video compression algorithm. The characteristic of this compression algorithm is a method of using information and pixel displacement vectors to efficiently encode images in real-time encoding of dynamic sequence images. The specific interface is shown in the figure below:
Figure 3. MPEG video compression algorithm development interface

It can be seen from the above figure that the upload video can be compressed or decompressed through the compression algorithm, and you can also choose whether to remove time redundancy, spatial redundancy, and visual redundancy. It can also compress the video according to the hardware of the computer. At the same time, calculate the size of the computer hard disk occupied by the compressed video.

4. Experiment data

4.1. Research object

This research is mainly based on the information reform of vocational dances based on big data, so this article has also done some experiments, and the data analysis is now published as follows: Six classes of students in the second-year marketing major of vocational schools are taken as the research objects. Randomly select students from two classes (total: 76 students) as the experimental group. Students from two classes (total: 72) were randomly selected as the reference group, and then a series of surveys were conducted.

4.2. Investigation method

(1) Questionnaire survey: gather the students from 4 classes, hand out the questionnaire before class and then take it back, and then carry out the system video teaching at the same time, and give some guidance to the students. After the teaching is over, the questionnaire and survey will be issued again Student's learning situation.

(2) Teaching experiment: The questionnaire survey still has a certain locality. So while doing the questionnaire survey, certain teaching experiments are also needed. The specific method is to choose an excellent teacher, use the same textbook and different teaching methods, and use the traditional one-to-many method to teach the students in the reference group. (The students in the reference group only receive traditional education and do not use the system platform for teaching. All knowledge points are realized through the teacher's explanation) and the students in the experimental group need to be on the system development platform in addition to the necessary courses Study and understand, then compare after a few lessons, and finally draw conclusions.

After comparing the above two methods, some experimental data can be obtained. One point that needs to be specifically explained here is that for the accuracy of the results, it is necessary to conduct
statistics once every two classes. Finally, experts will evaluate the two groups of students and draw conclusions.

4.3 Experimental discussion

Through the above experiments, we can conclude that the number of students in the experimental class who are interested in dancing has increased by 13.7%, and the number of students who are not interested and generally interested in dance has decreased by 5.4% and 7.2%, which is an increase of 9.8% compared with the interested students in the reference class. Relatively insensitivity and general interest are reduced by 18.8%, the results are shown in the following figure:

![Figure 4](image_url)

**Figure 4.** The influence of dance big data teaching on students’ interest

From the above figure, we can find that the reform of dance information teaching in higher vocational education based on big data is very effective. Students can use the cultural teaching resource sharing platform to conveniently and intuitively learn the knowledge points they are interested in anytime, anywhere. Students can also transform the otherwise boring teaching knowledge into practical applications on the platform. Most importantly, the platform can also recommend teaching videos that are more suitable for students based on their conditions and hobbies, arousing students’ interest in course learning, and learning can also play a multiplier role.

5. Conclusion

In the current rapidly developing information age, in order to meet the teaching needs of contemporary students, we need to continuously improve on traditional teaching methods. Teachers also proposed a variety of information-based education methods. For example, the application of multimedia and online teaching is the beginning of information-based teaching reform, and the introduction of big data is the climax of information-based teaching reform. Therefore, it is very necessary to strengthen the reform of information teaching. This article compares the higher vocational dance as an example. The effect of big data infiltration teaching is obviously better than the traditional one-to-many teaching. It is a way that can be used in higher vocational teaching.

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