



Design and Implementation of Music Appreciation Teaching System Based on Server Mode

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Abstract. With the rapid development of computer technology and network technology, digital music has also undergone great changes, and all kinds of music assistance education software has begun to come into people's attention. Based on B/S technology, music appreciation education system and education environment combine the resources of teachers and education environment, making the use of these resources more efficient and convenient. In this paper, under the B/S mode, through the design and implementation of the music appreciation teaching system, to discuss the current music education, and combined with its own characteristics, finally completed a set of digital music classroom teaching system of the overall architecture design, in order to provide a good foundation for future research, promote the development of music appreciation teaching system.

Keywords: B/S structure · web teaching · music appreciation

1 Introduction

In recent years, with the rapid development of computer and software technology, human's working and living mode is constantly changing, and in music education, human's learning and learning also has a huge impact. With the continuous development of mobile network technology, it has brought profound changes to students' learning methods, and the education system has also brought more convenience for students' learning and education. In recent years, with the progress of science and technology, the online teaching method originally based on B/S has undergone more and more changes, and more and more people begin to use the online teaching method for various teaching activities.

2 The Concept of a Music Appreciation Teaching System

As a subsystem in the whole system of basic education, music appreciation education takes aesthetics and sensation as its main target. Different from other disciplines, music appreciation education has higher requirements for emotion and has more special methods of expression. However, compared with other courses, music education system has

the same basic characteristics. Just like the teaching of other disciplines, it has the basic idea of teaching system, such as teaching methods, teaching conditions, teaching results, etc. In the conceptual development of educational system design theory, one is to vertically analyze the process of educational activities. For example, learning is divided into four periods of understanding, consolidation, perception and application. Then, based on this theory, six periods of educational processes are put forward, namely, new lessons, examination and review, class organization, examination and consolidation of new knowledge, new subject requirements, and assignment of extracurricular homework.

3 The Server Structure Summary

Server system, also called B/S system, is a network system after the emergence of the WEB, and the WEB browser is the most important application program of the client. In this way, in the development of music appreciation teaching system, the client can be integrated, the main functions of the system are concentrated on the same server, convenient system development, maintenance and use. On the plane, as long as they have a web browser, they can directly access the Internet, which makes their teaching easier. As long as a MYSQL database is set up in the server, users can exchange data with the database through the network server. In addition, the server architecture has the following characteristics (Fig. 1).

The first is its accessibility. The biggest advantage of B/S is that it can run anywhere without installing a special program. A computer with an Internet connection can be used, and no maintenance is done on the client. The software is as simple as connecting

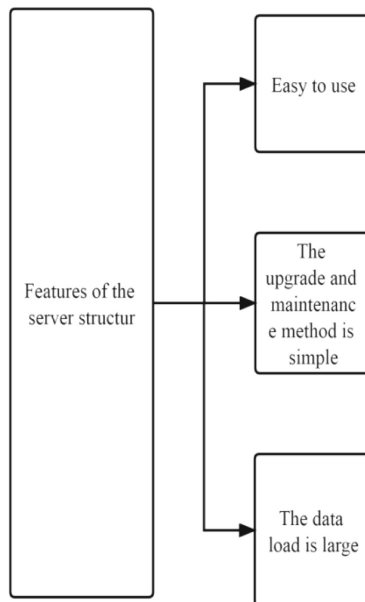


Fig. 1. Features of the server structure

to a network and entering your account and password as instructed by an administrator. Usually sign up online and then arrange an account for yourself. With this account, players can use it without anyone’s permission. In B/S architecture, effective control of the server is all that is required. All users are just browsing, there is no need to repair. No matter how many people use it or how many branches it has, it doesn’t make it difficult to maintain updates, and everything is targeted at the server. If it is in the field, as long as the server is connected to the private network, you can carry out remote technology maintenance, technology upgrade, and resource sharing. Therefore, in the future network environment, the “thin” of the user and the “fat” of the server has become the development trend of the network environment. Moreover, the update and maintenance of the system become more convenient, users also save a lot of manpower, material resources, time and cost. Therefore, the most common way to repair and update is to make the client become “thin” and “fat”. At present, with the continuous updating and updating of software technology, development tools based on B/S structure are more convenient.

Third, the server side load is very large. The operation mode of the system is relatively simple, only need to be configured in the system, the system administrator can realize all the information in the system only by managing the server in the system. However, due to the large amount of application processing, if a failure occurs, it can have a big impact. So, relatively speaking, you have to back up your database (Fig. 2).

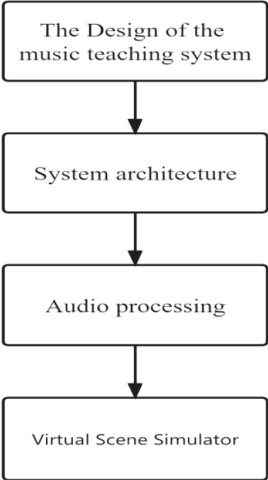


Fig. 2. The Design of the music teaching system

4 The Design of the Music Teaching System

4.1 System Architecture

The music teaching system provides a variety of musical services and online guidance, virtual environment learning and intelligent evaluation of learning results. To achieve this function, the whole platform adopts a five-layer architecture, namely, access layer, data processing layer, data storage layer, scene management and application layer.

The first is an access layer: the access layer includes audio access and video access. Audio access mainly realizes the sound input through the voice acquisition equipment; video access realizes the video acquisition and input through video acquisition and transfer. The second is the data processing layer: The data processing layer is a device used to process the audio. Audio processing requires the implementation of data extraction and comparison of sound features (Peng, 2011). The fourth is the scene management: the scene management includes virtual scenes and real scenes. Virtual scenes are virtual environments and tasks that need to be created through software, and real scenes need to be realized by providing access to real videos. Finally, the application layer: the application layer needs to realize the intelligent evaluation of conventional online guidance learning, virtual environment learning and autonomous learning.

4.2 Audio Processing

The audio processing system contains a feature extraction module and a feature processing module. The feature extraction module includes the frequency pitch converter, pitch comparator and pitch comparator. The frequency pitch converter is converted as follows:

$$X = [12 \times \lg(y/27.5)] / \lg 2 + 1 \quad (1)$$

Among them, y refers to the gene leveling rate, and X refers to the corresponding pitch. This formula can accurately calculate the frequency and pitch, and the schematic diagram is shown in Fig. 3.

The dynamic display of audio processing results in virtual scene can increase the interaction of learning in virtual scene, and realize the results and prompt information of real audio processing in virtual scene through Unity3D development, which can be displayed by the following methods:

```
void Awake
(// initializes the Alhpa formulation font and color
Color alpha = mText.color;
alpha.a = DefAlpha;
mText.color = alpha;}
void Start
mText.text = Texts [CurrentTextIndex]; // assign values to mText
Fade(true)
```

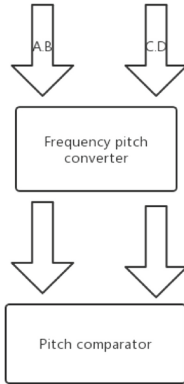


Fig. 3. The pitch length comparator

4.3 Virtual Scene Simulator

The virtual scene simulator uses 3DMax to create a model of the virtual learning environment and import the built model into the Unity 3D for rendering. In order to truly simulate the behavior change in life, the corresponding behavior change component can be designed (Luo, 2014). When the dynamic object enters the specified trigger area, the call function changes the value of the state parameter, activating the behavior gradually, and then changes when the dynamic object leaves the trigger area. In Unity, the configuration of the camera requires a combination of many modules. The main codes of the specific perspective transformation components are as follows:

```

// Get the current location
x=Input.GetAxis("Horizontal")*Time.deltaTime*speed;//
z=Input.GetAxis("Vertical")*Time.deltaTime*speed;//
transform.Rotate (new Vector3 (x, y, 0)); // rotation angle (increase)
// Camera location
transform.rotation=Quaternion.Slerp(transform.rotation,targetRotation,
Time.deltaTime * 3)

```

5 Conclusion

With the popularization and development of information technology, the Internet is becoming more and more inseparable from our lives, and the education industry is no exception. Combined with the social needs and the overall design, this paper is based on the digital music classroom teaching system design is mainly based on the characteristics of music classroom teaching, and has completed the design and implementation of the music classroom teaching system. According to the current situation of music classroom teaching, based on the main music teaching software, combined with the actual situation of music teaching, the overall structure design of the digital music classroom teaching

system is completed, which provides certain technical support for the music classroom system teaching.

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