Design of Online Teaching Platform of College National Music Under the Background of Internet+ Education

Yantao Shi[(✉)]

Hulunbuir College, Hulunbuir, Inner Mongolia, China
1468080166@qq.com

Abstract. China's national music has a very profound cultural heritage. Integrating national culture into national music teaching can improve students' humanistic quality, cultivate patriotic consciousness, help students establish correct three views, and at the same time, help students develop the character of truth, kindness and beauty. After analyzing the importance of the inheritance of national music culture, studying the present situation of national music education in colleges and universities, and exploring the effective measures for the reform of national music education in colleges and universities, this paper designs and develops an online teaching platform of national music based on web technology and GO language, combining with the concept of Internet+ education, so as to provide reference for the cultivation of outstanding national music talents in colleges and universities.

Keywords: national music · Internet+ education · Web technology · GO language

1 Introduction

China is a country with a history of more than 5,000 years. There are great differences in history, culture, communication methods and religious beliefs in different stages. In the process of inheritance and development of the long history, through the accumulation and inheritance of ancestors, various musical forms that show national culture and national spirit have been formed. As a comprehensive art, national music not only has its own unique artistic style, but also has profound historical accumulation and cultural heritage [1]. It reflects the social aesthetics, historical features, economic nature, cultural language and so on. China's national music is the product of people's production and life with national dialect combined with cultural and economic background, assisted by national instrumental music, under the social and cultural background of a specific stage. It is a musical form used to express feelings and exchange emotions. There are many forms of national music, including national songs and traditional operas. National music is a carrier of national culture, national beliefs and national values. It is different from modern music, and it has the profound connotation, cultural charm and rich content of the excellent Chinese culture. Its development and inheritance are related to the confidence and patriotic feelings of Chinese people, and national music is an indispensable artistic

treasure for China [2]. Therefore, the charm of national music should not only be passed down and carried forward by more people, but also be passed down with the times in innovative ways. This requires the joint efforts and efforts of young people in the new era, so that the charm and spirit of Chinese national music can move to a more well-known stage. Under the educational idea that the state vigorously advocates and develops traditional culture, it has become one of the major tasks of music education in colleges and universities to carry forward national traditional culture and inherit excellent national music [3]. As an important part of college music education, national music teaching can not only improve the level and quality of college national music education, but also better inherit the national music culture. As contemporary art college students, they should be the inheritors and transmitters of Chinese national culture and music, and have the obligation to carry forward national music and contribute their own strength to the development of national culture. Therefore, when organizing national music teaching activities, colleges and universities should establish an effective link between national music and national culture, and ensure that national music teaching is more efficient, which is of great significance for improving students' musical literacy and realizing comprehensive national music education in colleges and universities. However, the emergence of new things in modern society, coupled with the strong impact of western music culture, has weakened the influence of national music culture. The characteristics of national music itself are gradually weakening or even disappearing, lacking excellent new works, and the lack of channels for students to obtain audio and video of national music has greatly hindered the inheritance and development of national music culture [4]. There are many problems in the development and publicity of national music in colleges and universities. There is a deviation in the emphasis of national music teaching in colleges and universities, and there is a wrong orientation of attaching importance to music skills and neglecting literacy education, which affects the value transmission and effective display of college music teaching. Using the thinking of "Internet+ education" to combine Internet technology with traditional teaching mode plays an irreplaceable role in promoting the sharing of national music teaching resources and realizing educational equity. Therefore, the national music education mode in colleges and universities has gained new development space and technical power. In particular, the national music education in colleges and universities has comprehensively broadened the music learning vision of the students of the national music department by drawing lessons from the Internet technology, adopting the educational concept of reasonable differences and orderly integration, and highlighting the cultural characteristics of national music and rich national music resources. The national music education in college music education also conforms to the pace of the development of the times, and actively explores and learns how to better combine the Internet with the national music teaching. The author thinks that compared with the traditional teaching mode of national music, the national music teaching platform developed based on web technology in this paper has obvious advantages. Through online learning, excellent teaching resources which are restricted by time and region are unlocked, and teachers can screen out some good national music works, upload them to the platform, and guide students to learn. Students can roam in the ocean of music knowledge [5]. Students can learn audio, video, documents and other resources of national music they are interested in through the Internet platform, and can

also interact with classmates and teachers online. Online learning is more conducive to innovative teaching methods of national music, which greatly improves students' interest in learning national music.

2 Technical Overview

2.1 GO Language

Go is an open source programming language, which looks very similar to C language on the surface, and is a tool used by professional programmers to develop programs. However, Go is not only an upgraded version of C language, it takes the essence and discards the dross on the basis of various development languages. The language can not only realize the new and efficient facilities of concurrency, but also realize the automatic memory management, that is, garbage collection. Go language is intended to get twice the result with half the effort, so that developers can easily build simple, reliable and efficient applications. The language and its supporting tool set make the process of compiling and executing more expressive and efficient, and make it easy for programmers to write reliable and robust programs. Go is especially suitable for building infrastructure software, tools and systems used by programmers [6]. But it is a universal language, and it can be found in many fields, such as image processing and machine learning. It takes into account the advantages of expressiveness and security, so it is used as a substitute for typeless scripting language in many occasions. Go is well compatible with mainstream operating systems. As long as an application program is written in one of the operating systems, it can run in other environments without modifying the source code. Go language undoubtedly has higher development efficiency than most other languages in the development system, and it provides massive parallel support, which is why this paper chooses Go language as the back-end development language of the platform.

2.2 Beego Framework

Beego is an http framework for rapid development of Go applications, which can be used to quickly develop various applications such as API interface, goWeb and back-end services. It belongs to one of RESTFul frameworks. Its design inspiration mainly refers to tornado, sinatra and flask frameworks, and combines some characteristics of Go itself, such as interface and struct inheritance, which is why it is a highly decoupled framework. The original intention of the designer to develop beego is to realize functional modularity, that is, users can independently use the modules of beego without applying its http logic. They can use the cache module as your cache logic, log module to record your operation information, and config module to parse your files in various formats. Beego's design is very similar to Lego's, and these modules can be regarded as building blocks, and the final finished product is beego. Beego is a framework developed with Chinese as the main designer, and the development documents on beego official website are also detailed. The reasons for applying beego in this paper mainly include the following aspects besides the above modularity: 1. Simplification, that is, RESTful support, and
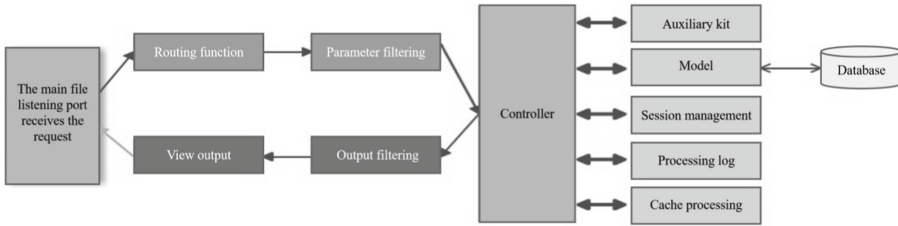
Fig. 1. The MVC architecture of the beego

its running mode follows the MVC model, as shown in Fig. 1, namely beego's MVC model. 2. Intelligentized, beego framework encapsulates the routing module, supports intelligent routing and intelligent monitoring, and can monitor memory consumption, CPU usage and the running status of goroutine, which is convenient for developers to monitor and analyze online applications. 3. High-performance, beego uses Go's native http request, and the concurrency efficiency of goroutine can cope with large-flow Web applications and API applications [7].

2.3 Development Environment

The development environments used in this online teaching platform of national music are all installed, configured and run under the windows operating system. The following describes the installation and configuration process of the development environment. First, download go1.17.1msi (the download version specified by Windows) from https:// golang.org/dl/ website. After downloading, double-click the startup program to select the installation path for installation, and then configure the environment variables: check whether there is GOROOT in the system environment variables. If there is no custom goroot during installation, it is installed by default. For the convenience of later development, configure GOPATH and add a GOPATH system variable in the environment variables. Then download and install the IDE tool LiteIDE in go language, version liteidex32.1. Windows-qt5, start it to check the GOPATH, and determine whether the GOPATH of the system is consistent with the GOPATH set in the environment variable. Download the distributed version control system Git, the version of which is Git-2.15.1.2-XX-bit.exe. Then use Git to install beego, right-click "Git Bash" and enter go get-u-v github.com/astaxie/beego. After a while, it will be installed. Install bee framework generator, right-click "Git Bash" and enter go get-u-v github.com/beego/bee. Use bee to generate the engineering code of the framework: find the command prompt in Start, right-click Run as Administrator, enter the bin path of GOPATH, and then enter "bee new Project Name". A folder named after the previous project name will be generated in the src directory of GOPATH, so a Beego framework project will be generated. Just open and run it with LiteIDE and enter the code to connect to the database, as shown in Fig. 3. Download the last Docker server to deploy goweb. The downloaded version is Docker Desktop Installer.exe (2.1.0). While waiting for the download, enable Hyper-V, install Docker, click Close and log out, and restart the computer. Open Docker to create the image, that is, create the code and files needed to run the system, then write Dockerfile, create the image in the project directory of this development and specify the image name,

```
package controllers
import (
    "github.com/astaxie/beego/orm"
    _ "github.com/go-sql-driver/mysql" //Database-driven, must be determined by the database
)
func Regdb() {
    // Use the drive
    orm.RegisterDriver("mysql", orm.DRMySQL)
    // Register the default database connection
    orm.RegisterDataBase("default","mysql","root:19961129@tcp(192.168.1.112:3306)/test?charset=utf8")
}
# Whenever you use a database, you need to use the Regdb method first.
import (
    "hello/controllers"
)
// All databases need to be registered. The database registration model RegisterModel must be in init, but it can only be
registered once in the model.
type Users struct {
    Id     int
    Name string `orm:"size(100)"`
    Pass string `orm:"size(100)"`
}
func init() {
    controllers.Regdb()
    orm.RegisterModel(new(Users))
}
```

Fig. 2. Beego connection database code

and enter "docker run -p 8888:8888 goweb_app" to run the image. The configuration of the above development environment provides feasible support for the development of the national music teaching platform in this paper (Fig. 2).

3 Requirements Analysis

3.1 System Requirements Analysis

This paper analyzes and studies the present situation of college national music, combines the thinking of "Internet+ education" to change the traditional teaching form, develops the teaching platform of national music, optimizes and adjusts the curriculum of national music, improves the status of national music and shows the unique charm of national music culture, so as to promote the reform of the teaching mode of national music. The platform is designed for teachers and students, and different roles have different permissions. The platform in the student side creates a learning environment with a strong national music culture atmosphere for students. Through videos and materials released by teachers, students can intuitively feel the music culture, background, development process and so on in various regions and learn from them [8]. On the teacher side, music teachers can prepare relevant videos, materials and audios in advance and publish them to the platform, so as to guide students to appreciate and help them learn to appreciate music works by using music theory knowledge. In music teaching, teachers should also pay attention to communicate with students, guide students to think, and let students
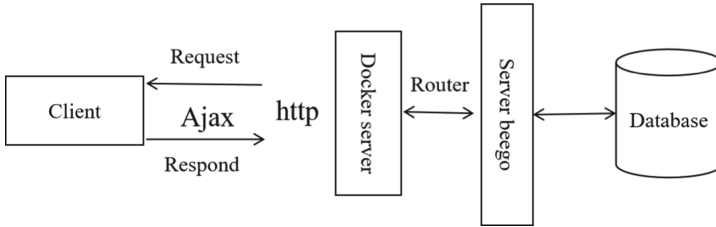
Fig. 3. Overall architecture

take the initiative to master various styles of national music, so as to maximize the effect of national music teaching. Music teachers can also choose different music tracks reasonably, so that students can practice repeatedly according to their own interests, thus enhancing students' ability to learn music actively.

3.2 Global Design

The whole system is divided into three parts, the client is mainly a page written and presented in HTML, the server is a series of interactive operations written in go language combined with beego framework, and the database is mainly responsible for storing the data operated and accessed by the client and server. The process of Web processing requests is based on MVC design pattern, and its specific process is as follows: the client sends a request to http protocol through Ajax interaction, and http protocol sends it to docker server, which sends the request to the router after parsing. Determine the type of routing request, and determine who (control layer) will handle the forwarding resources of the request according to URL and method [9]. After different controllers are designated according to different requests to arrive at the server application, the multiplexer selects a designated processor for processing according to the request URL, the process model processes the data, and then sends a corresponding response to the front end, which is usually Json type data or html page. If it is html page, the template engine mechanism is used to load the designated template and fill the required data into the template, and the rendered html page will respond to the client, thus completing the processing process of a request. In the server, main. go is the entry file of the project, and initializing some running systems is the required resources, configuration information and monitoring ports. Views stores the contents of views, and Model stores the contents of databases. The controller loads models, core libraries, auxiliary functions, and any other resources needed to process specific requests. The controller is mainly responsible for processing business logic.

4   Function Implementation

This national music teaching platform divides users into two modules, corresponding to different permissions: the student module has the functions of viewing, reading, uploading and downloading; The teacher module has the right to upload, download, add, delete and change. This platform has four main functional modules for teachers and

students: video teaching, material courseware, music appreciation, communication and interaction.

4.1 Student Module

When students log in to the platform for the first time, they need to verify and register by inputting their student ID number and ID number. After the completion, they can enter the platform for exchange and study. The platform has set the permission to remember passwords, so they can log in with one click without filling in the account password for the next login. When you log in, you can see the navigation bar. Select different modules and click to enter for learning and communication.

Video teaching: In this module, you can see the ethnic music learning videos uploaded by teachers. The videos can be paused at any time and the historical viewing progress can be kept. Students can learn in pieces according to their own schedule. In the course, there are examples of different ethnic singing methods and introductions to the development of national music, such as the documentary of ethnic musical instruments "Chinese Musical Instruments" and the documentary of ethnic songs "Walking Ballads". Students can choose their own professional needs or interests and practice while watching videos, so as to consolidate their professional practice and learn about the development and classification of Chinese national music.

Material courseware: Students can download the materials about national culture and music uploaded by teachers and read them locally. The materials are in various forms, such as texts, pictures and texts, PPT, etc., such as the classification and introduction of national musical instruments in China and the lifestyle of ethnic minorities, which will help students to have a more comprehensive understanding of the cultural background and manifestations of national music and increase their national confidence.

Music Appreciation: Students can listen to the national music sung and played by different national instruments online, as well as the introduction written by the teacher at the bottom of the audio, such as "Night Thoughts" played by Fang Jinlong, singing excerpts from the "Sound of Heaven" of a national music concert, so that students can feel the diversity of Chinese national music and better edify their sentiment and cultivation of national music.

Communication and interaction: Students can share their feelings of review, reading and listening with classmates and teachers online. They can also upload videos of their recorded exercises to the platform for evaluation by students and teachers, so that students can experience the joy of learning national music in the process of sharing and communication.

4.2 Teacher Module

In this platform, teachers, as teaching guides, guide students to learn by uploading videos and courseware. Teachers can also communicate with students online to guide students to think, so that students can take the initiative to learn various styles of national music, thus maximizing the effect of national music teaching.

Video teaching: Teachers can search and screen some classic and new-style documentaries and movies of national music performances on the Internet, upload them to

the platform, edit and introduce the content, and then release them to the students for them to watch and learn, such as the documentary "Where should the future of national music go?", the national music movie "Shining Girl", let students feel the strong vitality of national music in the collision between classic and modern, thus inspiring their patriotism.

Material courseware: Teachers can combine their own teaching methods and collected materials, and publish them to the platform, so that students can download and read them by themselves, such as "The Development Course of National Music" and "The Rise and Fall of National Music", so that students can feel that they are shouldering the responsibility of carrying forward national music while learning the theoretical knowledge of national music.

Music Appreciation: Teachers can collect music works in different forms of national music, classify them, add background introduction, and publish them to the platform for students to download and listen to, such as audio excerpts from the national concert The Great Wall. Let the students listen to the songs of musicians of different nationalities, so as to improve their ability to appreciate national music [10].

Communication and interaction: Teachers can enter this module to see students' discussions and exercises they share, give encouragement and evaluation, and improve students' learning enthusiasm.

5   Conclusion

Colleges and universities are an important base for cultivating talents, and also an important carrier for spreading various mainstream social cultures. In order to play an important role in cultural communication, we must pay full attention to the inheritance of national music and culture in higher education, and at the same time, we must combine traditional teaching methods with modern technology. Therefore, colleges and universities can make use of the advantages of online learning platform to give full play to their national music culture inheritance function, further promote the reform of national music education, organically integrate into national music culture, innovate the teaching theory and teaching methods of national music culture, and cultivate more outstanding national music talents.

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