Music Education Online System with Cloud Computing

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Abstract. The educational goal of our country is to ensure the all-round development of learning, sports, beauty and labor. The quality of students is comprehensive. We should pay attention to the topics that were originally despised. The happiness of quality education embodies the important position of aesthetic education in education. Our country's ancient grape saw the beautiful, fast, beautiful, healthy moral education music. It can influence people's ideological and moral imperceptibly and promote the improvement of students' moral quality. Therefore, Zhai should attach importance to music education. At present, cloud computing is trying to improve the effect of music education worldwide.

Keywords: Cloud computing · Music · Teaching · Quality education

1   Introduction

Cloud computing is a commercial implementation based on distributed storage and processing, parallel processing and grid computing. Cloud computing can provide at least seven kinds of business services, such as super computing power, secure data storage and software as a service [1]. In other words, cloud computing stores data in the cloud, and puts software and services in the cloud. The services provided by cloud computing are based on various standards and protocols, and can access and process cloud data through various device terminals.

1.1   Cloud Computing has Stronger Security

Many people worry that the data security of cloud computing is not guaranteed, but in fact, cloud data is more secure than ordinary storage devices. Cloud computing operators have a professional team to save, maintain and disaster backup the user's data, so users don't have to worry about data loss and damage. Because the cloud appears as a server cluster, the cloud can provide very powerful data computing capabilities through grid computing. As a result, users do not have to stick to the hardware configuration of terminal devices. Cloud devices can easily handle large-scale data calculation, and then send the results back to the terminal.

1.2 Optimization Model of Cloud Computing

Given the cloud workflow task set t and mobile cloud resource set R, the goal of cloud task scheduling is to generate scheduling solution s to minimize the total execution time, total execution cost and total execution energy consumption of tasks [2]. Let time (T_i) denote the execution time of task T; cost (T_i) denotes the execution cost of task T; energy (T_i) represents the execution energy consumption of task T_i; D represents the deadline constraint of task completion; If B is the budget constraint for completing the task, C is the energy constraint of mobile cloud resources, then the multi-objective task scheduling problem can be formalized as

$$\min Time(S) = \max time(T_i) = AFT(T_{exit}) \tag{1}$$

$$\min Cost(S) = \sum_{T_i \in T} \cos t(T_i) \tag{2}$$

$$\min Energy(S) = \sum_{T_i \in T} Energy(T_i) \tag{3}$$

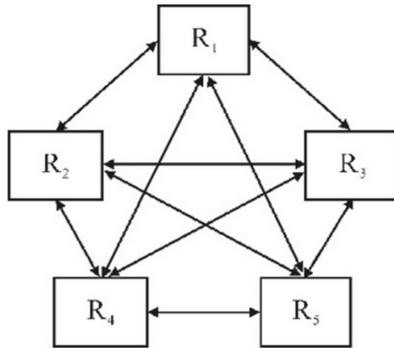The resource structure is shown in Fig. 1.

Fig. 1. Electronic resource structure

2 Problems Existing in Music Education in Schools

2.1 Improper Methods of Active Classroom

The new music curriculum standard of our country clearly stipulates that "according to the law of students' physical and mental development and aesthetic psychological characteristics, we should stimulate and cultivate students' interest in learning with rich and colorful teaching contents and lively teaching forms.". In the general music teaching, with the help of the former party's performance method, arranging students to perform part of the role in music teaching can let students live in the scene, better feel

the atmosphere described by music, so that students can get closer to music, and then have a pleasant feeling from the aesthetic of music. Many teachers pursue the classroom atmosphere one sidedly, and the teaching plan designed does not match the students' age and psychological characteristics. The performance arranged for students can not help students to deepen their understanding of music, so although the classroom atmosphere is active, it can not bring a little help to classroom teaching.

2.2   Blind Subject Synthesis, Ignoring the Characteristics of Music Itself

According to the requirements of the new curriculum standard, compared with the old teaching materials, the new teaching materials, both the integrity of teaching materials and the integration of subjects, should be significantly improved. However, if everything is to be measured, there must be a limit to synthesis. Synthesis is not abuse, nor is it a divergent and aimless explanation [3]. If it is too chaotic, it will only make students totally unable to accept the teaching content and make them self defeating.

2.3   Excessive Use of Multimedia Technology Teaching, Putting the Cart Before the Horse

As a means of modern teaching, multimedia through a variety of sensory stimulation can be more vivid and three-dimensional display of teaching process and content, and since a few years ago, multimedia teaching as an advanced teaching method has been widely used in students' music classroom teaching. In teaching, teachers use multimedia teaching methods to make sound and color coexist, help students feel and understand well, and let students form good sentiment and sound personality. However, these are only technology after all, and the content of teaching is the most fundamental thing. We need to grasp a certain degree, not putting the cart before the horse. At present, many teachers do not say a word from the beginning to the end, and there is no blackboard writing. They just display the content through the mouse and projector, and a music class becomes a PPT display. This is a very wrong behavior.

3   Application of Cloud Computing in Music Teaching

3.1   Building a Large Scale Shared Music Education Resource Library

At present, there are many problems in the music teaching resource library in China, such as uneven distribution of resources, lack of shared teaching resources, isolated island of teaching resources, and lack of cooperation between different schools. To deal with this problem, we can establish a cloud resource library for music teaching in China through cloud computing. With the powerful data sharing ability of cloud computing, we can summarize all teaching resources and store them in the data center with huge capacity which is shown in Fig. 2.

Fig. 2. The interface with music teaching platform

3.2 Construction of Network Teaching Platform for Music Course with the Help of Cloud Computing

The music classroom teaching is called appreciation class failure due to the wrong use of multimedia in music class. The music class network teaching platform constructed by cloud computing can take advantage of the characteristics of low terminal hardware requirements [3]. Music lessons can be conducted without having to be in the same classroom. Video and voice interaction can be used, and cloud computing platform can be used as the processing center of interactive data, The terminals of teachers and students only provide data input and output functions. This is mainly aimed at ensuring the overall development of students' quality and taking into account the increasingly heavy academic work. Therefore, students can learn music in front of terminals such as computers, tablets and mobile phones at home on weekends, which not only ensures the cultivation of quality, but also promotes the combination of work and rest of students, killing two birds with one stone.

3.3 Construction of Cloud Computing Music Library

Aiming at the problem that many students' music foundation is too poor, we can build a music library in the cloud, which mainly explains some music knowledge, and stores it in the cloud in the form of electronic journals for data sharing, allowing students to access materials anytime and anywhere through various terminals, In addition, the corresponding audio or video works are linked next to the names of different musicians' works [4]. So that students can understand and learn music through the two senses of watching and listening [5].

4   Cloud Online Simulation

Based on the online music assistant system proposed in the third section, in this section, we further optimize its system simulation system in the cloud environment, as shown in Fig. 2. From Fig. 3, we can see that the optimized system is richer in the interface, and has the function of automatically arranging tracks. The advantage of this online assistant system is that it does not occupy any resources of users, except broadband.
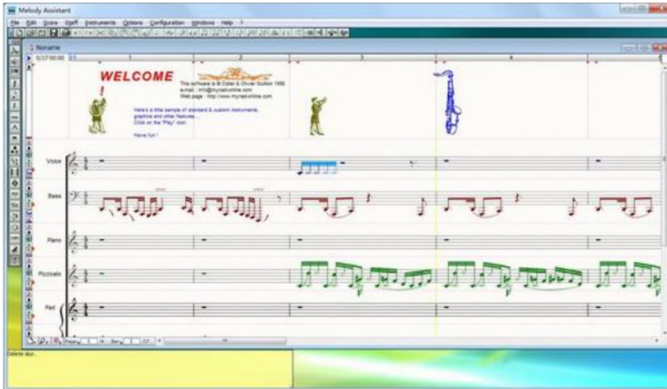
Fig. 3. Online assistant system with cloud environment

5 Problems in the Process of Training Self Playing and Self Singing Skills

With the continuous development of music education in Colleges and universities, as well as the improvement of basic music teaching requirements, the course of self playing and self singing has attracted more and more attention of music educators. Most colleges and universities in China have also formulated a set of effective teaching programs on self playing and self singing according to the actual situation of their own schools. However, it is just because the teaching of self playing and self singing has been gradually valued by more and more colleges and universities in recent years, so compared with the traditional conventional courses such as piano and vocal music, it is still not complete and systematic in terms of curriculum setting and teaching methods. It is still in the state of continuous improvement and exploration, and there are many problems in the teaching process [6].

Self playing and self singing is a comprehensive skill which is composed of piano playing, vocal music, improvisation accompaniment, harmony, musical form analysis and other skills. Then, by interviewing the students and searching the undergraduate music education programs of major colleges and universities on the Internet, the author also understands that during the first and second year of the undergraduate course, students majoring in music education usually learn a series of core degree courses, such as basic piano performance, vocal music, basic music theory, harmony, musical form analysis, improvisation accompaniment, etc. Until the third year of undergraduate course, most colleges will open the whole academic year's big class of self playing and self singing [7].

For the final assessment form of self playing and self singing class, each school is different. According to the data from the questionnaire survey, colleges and universities mainly carry out the assessment in two ways: 1. 2. At the end of the semester, we will hold a teaching performance of playing and singing by ourselves. There is also a small part of the paper, classroom practice and competition in the form of assessment. To sum up, the main problems in the teaching of self playing and self singing are as follows: first, in the teaching of "self playing and self singing" at this stage, the teaching materials used

are relatively messy, such as the use of vocal art songs and impromptu accompaniment as the teaching materials of self playing and self singing, which will lead to students' lack of scientific and systematic training. Second, the final assessment form of the course is not comprehensive enough. For example, in the form of papers as the final assessment criteria [8].

6   Training Strategies of Self Playing and Self Singing Skills

With the deepening of education reform, it has become the demand of the times to comprehensively promote "aesthetic education" teaching and improve the comprehensive practical ability of music education students. According to the promulgation and implementation of music curriculum standards for compulsory education (2011 Edition), music teachers' skills of "playing and singing by themselves" are playing an increasingly important role in primary and secondary school music classes. The level of a music teacher's self playing and self singing skills can directly affect the quality of teaching. Since 2010, the role of the cultivation of self playing and self singing skills in improving the comprehensive practical ability of students majoring in music education has been recognized by colleges and universities and teachers, and has been valued ideologically. At present, according to the current situation of this course in several colleges and universities involved in the questionnaire survey, except for a few colleges and universities which have not yet opened the course of self playing and self singing, the vast majority of colleges and universities with music education major have opened this course. In terms of curriculum, some colleges and universities set up the course of self playing and self singing as a compulsory course, that is, every student must study it; some colleges and universities set it as an elective course, after the end of the second year of undergraduate students to choose courses, students who choose the course of self playing and self singing learn the course [9].

6.1   Optimize the Curriculum

In the dictionary of education, it is mentioned that "the education content selected for the educational goal of the school is called curriculum setting". Curriculum setting is the arrangement of each specific subject in the whole curriculum system. It is also formulated according to the characteristics of different majors and their teaching objectives. As far as music education major is concerned, its goal is to cultivate qualified music educators with comprehensive music literacy. Therefore, the curriculum should be more teacher oriented [10]. By observing the current curriculum of music education major in Colleges and universities in China, it can be roughly divided into the following three categories: general compulsory courses, professional compulsory courses and professional elective courses.

(1)   General compulsory courses: that is, public compulsory courses, including: English; physical education; Chinese modern history, ideological and moral foundation and legal cultivation, introduction to basic principles of Marxism and other political courses; pedagogy, psychology, teachers' oral English, educational psychology and other educational courses.

(2) Professional required course: the course that students must study during their study. Including: Piano, vocal music, impromptu accompaniment and other basic professional courses; and acoustics, musical form analysis, Chinese and foreign music history and other basic theoretical courses; world music, art introduction and other music appreciation courses.

(3) Professional elective courses: some courses that students choose to study during their study, which can develop students' personality and highlight the characteristics of the school. Including: drama appreciation, art appreciation, dance appreciation and other sister disciplines.

6.2 Optimize Teaching Methods

The evaluation standard and the final assessment form of the course are quite different in Colleges and universities. Some take the form of papers as the final assessment; some take the form of concerts as the final assessment; others take the form of random draw for the final assessment. The author analyzes the advantages and disadvantages of these assessment forms for reference [11, 12].

1. Thesis: it is relatively one-sided to take the form of submitting thesis as the final assessment. Because playing and singing is a professional and practical comprehensive skill, so for such a subject, the final assessment form must be practical. The advantage is that playing and singing also has a certain theoretical basis, and all skills training is based on a certain theoretical basis. Through the way of writing papers, it is more conducive for students to have a deeper grasp of the theoretical knowledge of self playing and self singing, so that they can realize the importance of self playing and self singing on the theoretical level, so that they can attach importance to self playing and self singing.

2. Concert: in the form of concert assessment standards, relatively speaking, practice is very strong. But as far as the scope of the examination is concerned, if the time of a concert is counted as one hour, then the playing and singing time allocated to each student will have certain limitations. Basically, each student plays and sings a self playing and self singing song. When preparing for this concert, each student must only focus on practicing a piece of playing and singing repertoire that needs to be performed. In this way, the assessment will lose its significance and cannot check the students' learning effect. But the advantage of the examination in the form of concert is that it can exercise students' comprehensive ability and enrich their stage performance experience.

3. Draw lots: that is, teachers choose several songs to play and sing by themselves, number them, and students randomly choose one of them to improvise. There are two kinds of lottery playing and singing, one is that teachers choose songs they have learned in class to number and draw lots, the other is that teachers choose songs they haven't learned in class to number and draw lots. This method is relatively scientific and effective. The first way of drawing lots can make students have an overall review of the self playing and self singing songs learned in a semester, which plays a role in assessing the learning situation; the second way of drawing lots is more perfect and scientific than the first one. In the "Pearl River Piano" national

music education teachers' basic skills competition, the competition mode is that the contestants randomly select songs to perform impromptu self playing and self singing, with only 10 min to prepare. Some of the songs in this competition are even specially created for the competition, which are songs that we have never heard before, This competition mode can test a player's music comprehensive quality, and the competition results are more referential. However, in the school, such a form of assessment for students' own requirements are very high, it needs students' piano, vocal music, improvisation and other basic professional skills balanced development. As far as the actual situation is concerned, it is still relatively difficult to implement [13].

6.3   Optimizing Training Methods

Playing and singing by oneself is a kind of performing art form in which one can perform independently and simultaneously. In the actual operation, it needs to be multi-functional and coordinated. In the above survey, we found that many students think that when they learn to play and sing by themselves, what makes them feel very difficult is that they can not give good consideration to "singing and playing" at the same time. In view of this problem, the author understands that in cognitive psychology, such behavior of "playing while singing" is called attention distribution [14].

The ability of distribution of attention can not only make students give consideration to and coordinate "playing and singing", but also produce rich expressive force, so that students can have spare power to consider problems in various aspects while "playing and singing", so that the completion of self playing and self singing is higher. Playing and singing by oneself is an extremely complex psychological and physical movement, which requires that attention be always distributed throughout the process of playing and singing by oneself. However, sometimes subjective and objective factors will change, such as the difficulty of the repertoire, the change of the state of mind and so on, which requires the students to shift their attention, so as to ensure that the self playing and self singing repertoire has a high degree of completion. However, the difficulty of the selected music and the change of teaching environment are sometimes unpredictable objective factors, which can directly affect the students' on-the-spot performance. For example, in the class of playing and singing by oneself, the teacher chose one of the students to return the class, and the rest of the students watched from their seats. At this time, if the student is confident about the homework assigned by the teacher in the last class and goes smoothly in the middle of returning the class, he will naturally get praise from the teacher and his classmates [15]. Therefore, the student does not need to allocate his attention to some factors other than the songs, instead, he can concentrate his attention on the songs he needs to return the class, The class will be returned successfully. On the contrary, if the student does not have enough practice after class, then when he is called by the teacher to return the class, his attention will not only be part of the songs, but also be distributed in the evaluation of the teachers and students, which will lead to the unsatisfactory effect of the final return of the class.

7   Conclusion

Cloud computing is the product of the continuous development of the Internet. As a new computing method and new resource use mode, its originality determines the vigorous vitality of cloud computing and the universality of its promotion. At present, cloud computing has gradually entered a better situation in the commercial field, and is promoting the earth shaking changes in the business operation mode. Although in the current situation, cloud computing has not made much achievements in the field of education in China, but with the deployment speed and quality of cloud computing for applications, as well as its incomparable advantages compared with traditional teaching, it can be proved that cloud computing will surely shine in the future education field.

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