Chinese folk music: Study and dissemination through online learning courses

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Abstract
The use of online learning courses can have a positive effect in the context of the study and dissemination of Chinese folk music. The purpose of this study is to investigate the effectiveness of an innovative teaching model of massive open online courses to assess the possibility of changes in the approaches to the study of Chinese folk music in higher education. The study used Massive Open Online Courses and a survey of respondents. The study, which took place from January to July within the framework of the 2020–2021 academic year, involved second-year students from four educational institutions of the People’s Republic of China: Zhengzhou Sias College, China Conservatory of Music, Shanghai Conservatory of Music, Fujian Normal University. A total of 419 people participated in the experiment. Comparison of the academic performance in folk music in the two groups of students suggests that the use of online courses in the context of teaching Chinese folk music is effective. The difference is 12.1% compared to the control group. The students noted that working on MOOC platforms helped them better master performance skills. The respondents also appreciated the fact that online courses with developed curricula can be an effective means of popularizing Chinese culture. This study has both practical and scientific value as it demonstrates the effectiveness of the impact of distance learning courses in the context of studying Chinese folk music. The results can be implemented in the development of training programs, the scope of application includes higher educational institutions.

Keywords Chinese folk music · Distance learning · Educational process · Music · Online courses

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1 Introduction

With the development of science and technology, computer technology has become widely used in an increasing number of areas of knowledge (Chen, 2013). The use of modern technology in the study of music implies a combination of science and art. At the same time, the principles of creation, reproduction and distribution in music can change (Yang, 2015). From the perspective of music education, the computer can penetrate the area in which folk music can be involved. Meanwhile, the current computer is a powerful practical tool that can provide a new stage for the folk music development (Yi, 2009). A composer can use computer music technology, professional music software, audio materials of a better quality, various sound sources and music creation techniques to compose their own musical works.

With the development of society, the education system also evolves through reforms. Chinese higher education of the twenty-first century has evolved through traditional student-centered teaching (Bai & Li, 2017). And the whole society realized the importance of students in the learning process and the accumulation of knowledge. When teaching music in educational institutions, modern teaching and learning methods are widely used (Bai & Li, 2017; Yang, 2015). The traditional mode of teaching folk music is gradually changing. The current application of multimedia and computer technologies in music education improves the effect and removes some limitations in traditional music learning. This allows students to study folk music more effectively and appreciate its charm with the help of modern teaching methods (Petersen & Camp, 2016; Wang, 2011; Xing et al., 2015).

The introduction and popularization of Asian culture is becoming a trend in all countries around the world (Zhang, 2018). The problem of preserving and popularizing cultural and musical heritage of China on the Internet is increasingly attracting the attention of researchers (Chen, 2014; Clothey et al., 2015; Williams et al., 2020). Multimedia teaching has a good effect and has become a widely used teaching method today. But classroom learning also has shortcomings in the context of teaching Chinese folk art, in particular music, as performing Chinese folk music is only partly part of the scope of music education (Jiang, 2017). In addition, the learning content is not interesting for students. The learning process is dominated by the teacher and students passively acquire knowledge; the learners are less proactive and do not show much interest in learning Chinese folk music (Han & Leung, 2015; Zhang, 2014). Due to these problems, multimedia environments can be used for extensive learning; they can meet the learning needs of students in accordance with the basic foundations of studying Chinese folk music.

While addressing the challenges of learning caused by the pandemic, this study aims to develop a multimedia method of teaching Chinese folk music to students based on an online learning course. This research is an original study of the effect of modern technology on learning Chinese folk music. An analysis of the development of Chinese folk music performance skills using modern instruments and technologies is relevant as it can provide ways to increase the cultural capital of the People’s Republic of China and suggest methods that will improve the quality of teaching and popularize Chinese culture.
This research is of practical and scientific importance as it can contribute to the introduction of innovations into the system of modern music education in the People’s Republic of China. Teaching Chinese folk music can be considered not only in the context of classroom learning but also in distance learning, which makes personal contact impossible. This refers to the COVID-19 pandemic.

1.1 Literature review

In the musical life of the twenty-first century, computer technology has become increasingly common (Chen, 2014). In addition, music uploaded onto a computer can create, enhance, and enrich sound effects and expression that conventional instruments cannot do (Wang, 2011). The continuous development of computer music technology is making great changes to the study of popular music changing the way it is created and transmitted over thousands of years (Zhang, 2008).

Over the past decades, the Internet has become an indispensable tool for communication, study and work, shopping, leisure and entertainment (Zhu et al., 2021). As of January 2021, there are 4.66 billion active Internet users worldwide (59.5% of the world’s population) (Johnson, 2021). In the last decade, the growth and prosperity of Chinese media content have been observed (Feng, 2015). At the same time, Chinese music is quite popular (Feng & Liao, 2020; Heang & Khan, 2015; Liao et al., 2018). The development of the Internet has led to significant changes in the music market: firstly, the variety of music that people can afford to listen to has expanded, and secondly, the territory of music sales is no longer limited to national borders but is measured on a planetary scale (Shen et al., 2019).

From the perspective of the current issue related to Chinese folk music teaching, there is a link between computer technology and music teaching (Chen, 2014). Moreover, musical theory, historical context, and folk music performance skills are varied and complex. Thus, only long-term study and research can ensure some success (Bai & Li, 2017).

The use of computer technology can significantly improve the learning effect (Chen, 2013). When computer information technologies are not applied in music education, traditional teaching methods can suggest professional pedagogical knowledge and sheet music; therefore, students cannot feel certain specifics and sound effects. The use of computer technology in music education can form a system of the process of studying Chinese folk music, which includes the analysis of harmony, polyphony, playing, and singing. It can be said that the application of computer technology in music education is a kind of teaching reform, as well as the embodiment of the current spirit of education and innovation in learning, which can greatly contribute to improving the quality of teaching (Jiang, 2017).

Folk song is the most popular musical genre in traditional Chinese culture (China Culture, 2021). There are dozens of folk music styles in the People’s Republic of China. Along with Han folk music, ethnic folk music, which includes Tibetan, Uyghur and Dong folk music, is popular. Han folk music is the music of ordinary people living in the village. Han people have several languages and many dialects, as well as many regional styles of folk music. The most common instrument is the
suona, also called laba or heidi, which is a Chinese horn with two reeds. Also in Han folk music, gong ringing is used. It has several regional styles (Jiang, 2021).

The musical directions of the Northern regions have their own unique features. Their popular ensembles are characterized by the active use of wind (sheng and dizi, suonah and others) and percussion (drums, gong) instruments. In the Siyan region, which is located in the north of Central China, has existed and was widespread a special genre of drumming, accompanied wind instruments dizi and sheng (Jiang, 2021). Folk music in Eastern countries is characterized by a large variety of string instruments such as gu zheng, erhu, and gao hu. A special place here is occupied by gu zheng—a traditional Chinese musical instrument, which was usually made of wood, the number of strings ranged from 21 to 25 and they were made of silk. Instruments have been used for both solo performances and performances in ensembles or groups. For the musical culture of Fujian province, the most widespread genre were traditional ballads with a melancholy mood, which were called Nanyin and Nangun. Traditionally, this song was sung by girls, and they were accompanied by playing traditional string or wind instruments (Jiang, 2017). A particular importance in the formation of the musical tradition has the folk language. It has strongly influenced the culture of folk music in Guangdong and Guangxi provinces, where the Hakka language became the basis of singing rhythm. The region of Tibet and its traditional music is characterized by a high religiosity and a style similar to storytelling, where the musician performs a story or legend through music (Jiang, 2021).

Uighur folk music originates from the great deserts and highlands of Xinjiang province. This music is characterized by funny motives. For example, the composition Uyghur Muqam was included by UNESCO in the list of the intangible heritage of humanity (Chen, 2012; Jiang, 2021). The compositions are performed by an orchestra playing many traditional Uyghur instruments. These instruments differ from traditional Chinese instruments (Küssner, 2013; Zheng et al., 2017a). Unlike Tibet and Xinjiang, Dong villages occupy a small area. The Dong people live in southwestern China between Guizhou, Hunan and Guangxi. The Dong people are known for their polyphonic choir. Dong folk music uses a lusheng flute, which is an important dong musical instrument (Jiang, 2021; Zheng et al., 2017b).

Chinese folk music is marked with unique characteristics fundamentally differing it from the musical art of other countries both in terms of performance and notation ways (Dong, 2015). Hence, it is the individual style of Chinese music that forms the basis of its subjectivity (Hoene, 2017). All in all, the folk music of China has undergone a long historical evolution that has contributed to its original sound. However, if the aesthetic value of music is lost, there will be no point in its existence, which proves the need for performance and entrenchment of the traditional Chinese musical themes in modern society (Zhou, 2019).

Modern music education in the People’s Republic of China is intensely involved in the promotion of national identity and national culture through traditional musical art. Within such a patriotic upbringing, national sentiment refers to emotional attachment, while national consciousness is derived from shared traditions, values, and cultures of the past (Ho & Law, 2020). In accordance with this, values refer to beliefs or ideas shared by members of the same community and culture, while the term "national values," connotes beliefs and standards of a certain nation concerning
what is good and what is bad, what is pleasant, and what is not. On the whole, values have a considerable influence on human behavior and attitudes as they serve as general guidelines for human conduct in all situations. The current mass introduction of traditional Chinese music in the educational process is a sign of how nationalization has begun to manifest itself in music instruction and how the concept of patriotism has affected the entire pedagogical process (Lee, 2014).

1.2 Setting objectives

The key motive for conducting the study is the desire to obtain new experimental data on the influence of modern technologies on the process of teaching Chinese folk music performance skills as the results obtained can affect the implementation of online learning systems in traditional curricula. This will contribute to the improvement of the quality of education and the dissemination of the cultural heritage of the People’s Republic of China through the Internet. In addition, such measures can be a response to the challenges associated with the impossibility of the internal study mode faced by modern society. The purpose of this study is to investigate the effectiveness of the innovative teaching model of massive open online courses (MOOCs) to assess the possibility of reforming the study of Chinese folk music in higher educational institutions of the People’s Republic of China.

Also, the purpose of this research is to identify the impact of open online courses on the study of Chinese folk music in comparison with the control group, which mastered the skills of performing without the use of additional instruments. The research objectives are as follows:

1. To analyze the effectiveness of the use of massive open online courses in teaching the skills of Chinese folk music performance while comparing two groups: control group A (studied in accordance with the institution curriculum) and group B (additionally used MOOCs), as well as to identify the impact of traditional lessons and massive open online courses on learning progress.
2. To identify the impact of MOOCs on teaching Chinese folk music performance skills in the context of the dissemination of the cultural heritage of the People’s Republic of China by conducting an online survey among students.

2 Methods and materials

The study used Massive Open Online Courses (MOOCs) which are online learning courses designed for a large number of geographically dispersed students. The course may include filmed or recorded video lectures, readings, problem sets, online quizzes and exams, interactive training modules, interaction with other students through forums. MOOCs are usually used in the context of higher education and continuing education, but due to the coronavirus pandemic, many school districts and undergraduate programs have implemented them as a new standard (Chai, 2021).
MOOCs have a relatively complete structure and the objectives of the curriculum, coordinator, topic, schedule, and assignments. In addition, MOOCs do not have restrictions on the number of persons enrolled, time, and place. All course resources and information are open and distributed through the Internet. Students can use various tools or platforms to participate in training in accordance with their preferences; for example, wikis, blogs, social networking sites. Students mainly discuss a specific topic and have group sessions in the field of knowledge, thinking, and communication (Lu, 2015).

It should also be noted that the creator of MOOCs does not act as a stakeholder in the research and no personal benefit from mentioning the name of the courses was obtained. The use of MOOCs is determined exclusively by the scientific interest in the research topic and is not an advertising stunt.

Thus, an educational program was developed specifically for the study. It consisted of group seminars, views of the lessons given by masters playing traditional Chinese folk musical instruments, group activities, and improvisations. The educational approach based on MOOCs was aimed at motivating students, encouraging their self-expression, raising cultural awareness, informing learners about the cultural base and special components of folk music.

The majority of online lessons have been developed by teachers who have tried to include a wide variety of compositions. The focus was placed on the historical context of the creation of each training course episode, its general historical value, characteristics, cultural features, artistic techniques that are used in Chinese folk music and are the cultural foundation and property of the People’s Republic of China were described.

The developed training course was based on seven types of Chinese folk music – each to be studied in one month:

1. Haozi: Work Songs. The compositions included "Weed-pulling Song of Gong and Drum", "Flailing Song", "Ox-Driving Songs", "Sailing to the South Sea", "Rice Pounding" and "Spinning Wheel". The musical forms of these works have strong melodic motives.
2. Shan’ge: Mountain songs. The music is characterized by free rhythms, a wide range, and a sublime melody. The following compositions: "Hu’aer", "Xintian-you", "Mountaineering Song", "Zhengjinghong".
3. Tian’te: Field songs. Typical performances are performed to the accompaniment of gongs, drums, suona, and other instruments. This music is characterized by a large structure and numerous interconnected melodies. The compositions included "Jiashan Field Song" and "Rice Sapling".
4. Xiaodiao: Small Tunes. Music is characterized by fixed melody and lyrics, ordered structure, and tunefulness. The compositions included "Jasmine Tune" and "Mengjiangnu Tune".
5. Bu’re: Dance songs. The music is characterized by strong rhythms. Dance songs are mainly sung during festivals, celebrations or gatherings. The compositions included "Song of the Lantern", "Song of the Collection of Tea" and "Flower Drum Song".
6. Narrative songs. The music includes heroic epics, folklore and folk tales in the form of folk songs. The following compositions were used: "Brother Mawu and Sister Gadou", "Erip and Senam", "Saliha and Saman", "Gesar", "Manas".

7. Religious songs. Songs in the form of prayers. The following compositions were used: "Shamanic Melody", "Sacrificial Song" and "Song of Buddha".

All MOOC activities were thoroughly prepared and planned by the research teacher of the small group based on professional choices that gave students the right to study various folk music. The ideas were based on professional experience. Most materials were created and uploaded to the MOOC platform specifically for this study.

The factor analysis method was used to manage the research data. Fisher’s exact test (p) was used to validate the data collected; it allows conclusions to be drawn as to whether there is a significant difference between the two groups (A and B). The data obtained were considered satisfactory in accordance with the benchmark criteria. When using the test, the adequacy and reliability of the results obtained were ensured.

2.1 Participants

The study, which took place from January to July within the framework of the 2020–2021 academic year, involved second-year students from four educational institutions of the People’s Republic of China: Zhengzhou Sias College, China Conservatory of Music, Shanghai Conservatory of Music, Fujian Normal University. The introduction of MOOC in the study of Chinese folk music took seven months. Each student received an email to take part in the study. The total number of students involved in this process in three educational institutions is 428. As a result, 419 students were interviewed; the rest of the participants could not complete their participation in the study for some reason and their answers are not presented in the sample. More detailed information on the number of participants from each educational institution is presented in Table 1.

The total number of respondents is 419 people. The age of the students ranged from 19 to 20 years. Participation in the experiment was voluntary. The students were included in group B in accordance with their desire to take additional lessons when using the MOOC, the rest of the learners were assigned to the control group (group A). None of the students or teachers were forced to take part in the study, the involvement was voluntary. An hour-long MOOC was given by a teacher of Chinese folk music to the small groups (group B) and the students were informed about their possibility of contacting teachers (curators of the course) to obtain any information of interest and ask questions related to the functionality of the application.

2.2 Research design

Group B was divided into small groups of 10 students per 1 teacher for convenient online work; thus, 16 teachers took part in the study and gave marks. The study
lasted seven months. All learners attended standard folk music classes in accordance with the curriculum, and Group B had two one-hour and a half lessons per week within the MOOC, thus forming eight groups; there were two groups in each of the institutions.

At the end of the study, the performance of students was assessed by the teachers in accordance with the curriculum. Student progress was assessed on a 100-point scale involving 5 levels: 100–90—excellent, 89–80—good, 79–70—mediocre, 69–60—satisfactory, below 60—unsatisfactory. The assessment criteria were as follows: work in the classroom, independent work, module test, group work, final test.

In addition, in order to assess the impact of the MOOC on folk music performance skills in the context of the dissemination of the cultural heritage of the People’s Republic of China, an online survey was conducted among students (Appendix 1). All the respondents’ questionnaires were properly filled in and there were no irrelevant answers. The questionnaire contained 10 questions to assess the effectiveness of the MOOC. The respondents were required to indicate how much they agree with the statements on a 4-point Likert scale, where 1—Strongly agree (SA); 2—Agree (A); 3—Disagree (D); 4—Strongly disagree (SD).

### 2.3 Research limitations

This study involved four higher educational institutions in the People’s Republic of China so the results cannot reflect the impact of online learning on the study of Chinese folk music nationwide. The research participants were randomly selected and grouped regardless of their academic progress in the music mastery course. It is also worth noting that although the assessment criteria were the same across the study, there were different assessors in each institution. Another possible limitation is that

| Educational institution                  | Number | %  |
|------------------------------------------|--------|----|
| Zhongzhou Sias College                   | 102    | 24.4 |
| Group A                                  | 62     |     |
| Group B                                  | 40     |     |
| China Conservatory of Music              | 107    | 25.5 |
| Group A                                  | 67     |     |
| Group B                                  | 40     |     |
| Shanghai Conservatory of Music           | 109    | 26.0 |
| Group A                                  | 69     |     |
| Group B                                  | 40     |     |
| Fujian Normal University                 | 101    | 24.1 |
| Group A                                  | 61     |     |
| Group B                                  | 40     |     |

| Gender | Number | %  |
|--------|--------|----|
| Men    | 201    | 47.9 |
| Women  | 218    | 52.1 |
| Total students | 419 | 100 |
this paper provides no intra-participant results. That is, it does not evaluate the same student with and without the use of MOOCs in the learning process.

3 Results

The paragraphs below describe each research question results. As research question No. 1 aimed to analyze the effectiveness of massive open online courses in learning Chinese folk music, when comparing two groups, it is necessary to consider the results of the assessment according to the selected criteria. Table 2 shows the average music progress of second-year students from four universities in accordance with the selected assessment criteria in the context of each small group at the end of the study (July 2021). All p-values are below 0.05, which is a threshold; thus, the differences between the scores are significant in this study.

The lowest marks were obtained by small groups A that followed traditional curriculum without the use of an online platform in all educational institutions: 68.0, 68.8, 67.6, and 67.8 points with an average of 68.0. In contrast, small groups B in each educational institution performed better. Thus, students from small groups B, who also used the MOOC platform, received the following marks: 78.2, 78.4, 76.8 and 79.2; the average indicator was 78.1, which is 12.9% higher than that of the control groups. Based on these data, it can be concluded that the use of computer applications in the context of teaching Chinese folk music performance skills is effective.

The second objective of this study was to identify the effect of the MOOC on teaching Chinese folk music performance skills in the context of the dissemination of the cultural heritage of the People’s Republic of China by conducting an online survey among the respondents from group B. The results of the survey related to student experience and the subsequent effectiveness of the MOOC introduction in the learning process are presented in Table 3.

| Assessment criteria       | Zhengzhou Sias College | China Conservatory of Music | Shanghai Conservatory of Music | Fujian Normal University | Average |
|---------------------------|------------------------|-----------------------------|--------------------------------|--------------------------|---------|
| Grades on a 100-point scale | A  | B  | A  | B  | A  | B  | A  | B  | A  | B  |        |
| 1. Work in the classroom  | 67 | 76 | 68 | 80 | 67 | 76 | 66 | 77 | X  | 72.1 | X  |
| 2. Independent work       | 65 | 80 | 70 | 77 | 65 | 78 | 65 | 80 | X  | 72.5 | X  |
| 3. Module test            | 71 | 78 | 67 | 79 | 66 | 77 | 70 | 79 | X  | 73.4 | X  |
| 4. Group work             | 67 | 80 | 65 | 80 | 70 | 74 | 67 | 80 | X  | 72.9 | X  |
| 5. Final test             | 70 | 77 | 74 | 76 | 70 | 79 | 71 | 80 | X  | 74.6 | X  |
| Average                   | 68 | 78.2 | 68.8 | 78.4 | 67.6 | 76.8 | 67.8 | 79.2 | X  |
| p-value                   | 0.031 | 0.029 | 0.024 | 0.031 | 0.026 | 0.027 | 0.019 | 0.023 | X  |
Table 3  Results of the survey identifying the effectiveness of the implementation of online learning of Chinese folk music on the MOOC platform

| Question                                                                 | Respondents | Question                                                                 | Respondents |
|-------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------|-------------|
|                                                                         | Option      | Frequency | Percent          | Option      | Frequency | Percent          |
| 1. I am generally pleased with my participation in the Chinese folk music performance training program using MOOCs | SA          | 73        | 45.6             | SA          | 78        | 48.8             |
|                                                                         | A           | 68        | 42.5             | A           | 69        | 43.1             |
|                                                                         | D           | 17        | 10.6             | D           | 12        | 7.5              |
|                                                                         | SD          | 2         | 1.3              | SD          | 1         | 0.6              |
| 2. Participation in online lessons helped me master the skills of performing Chinese folk music | SA          | 78        | 48.8             | SA          | 70        | 43.8             |
|                                                                         | A           | 66        | 41.3             | A           | 71        | 44.4             |
|                                                                         | D           | 12        | 7.5              | D           | 16        | 10.0             |
|                                                                         | SD          | 4         | 2.5              | SD          | 3         | 1.9              |
| 3. I prefer studying Chinese folk music with the use of modern technology to traditional classroom learning | SA          | 78        | 48.8             | SA          | 79        | 49.4             |
|                                                                         | A           | 54        | 33.8             | A           | 60        | 37.5             |
|                                                                         | D           | 18        | 11.3             | D           | 15        | 9.4              |
|                                                                         | SD          | 10        | 6.3              | SD          | 6         | 3.8              |
| 4. I believe that the MOOC has had a positive impact on increasing my knowledge of the history of folk music of the People’s Republic of China | SA          | 80        | 50.0             | SA          | 76        | 47.5             |
|                                                                         | A           | 59        | 36.9             | A           | 70        | 43.8             |
|                                                                         | D           | 12        | 7.5              | D           | 11        | 6.9              |
|                                                                         | SD          | 9         | 5.6              | SD          | 3         | 1.9              |
| 5. I believe that MOOCs contribute to the improvement of Chinese folk music teaching methods and make the process more interesting | SA          | 78        | 48.8             | SA          | 28        | 17.5             |
|                                                                         | A           | 62        | 38.8             | A           | 24        | 15.0             |
|                                                                         | D           | 14        | 8.8              | D           | 68        | 42.5             |
|                                                                         | SD          | 6         | 3.8              | SD          | 40        | 25.0             |

*note: SA—strongly agree; A—agree; D—disagree; SD—strongly disagree

**note: p < 0.05
The survey results clearly demonstrate that the students were satisfied with their participation in the Chinese folk music performance course using the MOOC (statement No. 1). Thus, the total percentage of SA and A options among the students is 88.1%. In addition, online lessons helped 90.0% of students master the skills of performing Chinese folk music (statement No. 2). Statement No. 3 shows that 82.5% of students prefer learning with the use of modern technologies to traditional classroom learning. It is worth noting that 86.9% of students believe that the MOOC has had a positive impact on their knowledge of the history of folk music of the People’s Republic of China (statement No. 4). At the same time, 87.5% of students think that MOOCs contribute to the improvement of folk music teaching methods (statement No. 5).

It was interesting to investigate whether the respondents believe that the use of MOOCs can attract people not only from the PRC but also from other countries to the study of Chinese folk music (statement No. 6). Thus, 91.9% of students agreed with this statement. It was extremely important to find out whether the respondents believe that the further use of MOOCs to study Chinese folk music will expand their knowledge and improve musical skills and professional abilities (statement No. 7). Thus, 88.1% believe that the use of modern technologies has a positive effect not only on the skills of performing musical compositions but also on other areas of knowledge.

It can also be noted that 86.9% of students indicated that the introduction of modern technologies in the learning process has a beneficial effect (statement No. 8). In addition, 86.9% of respondents believe that online courses with specially designed curricula are an effective means of popularizing Chinese culture (statement No.9). It should be noted that only 32.5% of respondents believe that such a learning practice could be more effective if implemented in classroom studies while 67.5% disagree with this and consider the online sphere to be quite effective (statement No. 10).

To more clearly demonstrate the factors under study, we can consider the data presented in the form of a figure by the criteria that relate to the positive effect of introducing online lessons for studying Chinese folk music on the MOOC platform (Fig. 1).

Based on the analysis of the data obtained, it can be concluded that the students noted that the MOOC helped them master the skills of performing Chinese folk music and that the online platform can attract people not only from the PRC but also from other countries to the study of Chinese folk music. The respondents also appreciated the possibility that online courses with specially designed training programs can become an effective means of popularizing Chinese culture (statements No. 2, 6, 9). The students were slightly less likely to note that they prefer learning with the use of modern technologies to traditional classroom learning (82.5%), which proves that online lessons cannot fully replace the traditional classroom lessons, but their combination may provide a good effect.

4 Discussion

Research confirms that the application of computer technology in the context of music education can combine scientific strength and pedagogical power, increase student interest and enthusiasm, and promote reform and development of music
teaching (Wang, 2011; Zhiqiang, 2017). The development of science and technology will promote the combination of scientific and technological potential, and some scientific advances related to music learning are demonstrating their effectiveness in practical learning (Zhiqiang, 2017), which is also confirmed by the present paper.

Moreover, the results of scientific studies prove that the study of music based on the traditional learning method is less effective compared to the multimedia method with the use of online platforms (Yang, 2015). The application of computer technology introduces innovation in music teaching and combines theory and practice, which helps to stimulate students’ interest in learning and contributes to improving the quality and level of teaching. A change in the method of teaching folk music also promotes and optimizes the technology for popularizing folk music; thus, the two aspects are mutually reinforcing each other (Wang, 2011). A number of these studies support the data highlighted in the present paper.

Current research confirms the possibility of popularizing Chinese folk music through an online platform. Similar findings are demonstrated by the research highlighting that Chinese musical heritage is primarily promoted through the Internet (Wang, 2021). Moreover, such areas as instrumental music, vocal music and dance performance are of particular interest to the whole world. In addition, the use of the Internet and multimedia platforms can contribute to the development of Chinese composers and musicians, both professional and non-professional ones, as it allows them to freely familiarize themselves with the work of all generations of musicians from their native country and other countries (Wang, 2021).

Understanding and accepting music education play a critical role in promoting culturally diverse music education (Cain, 2015). Another study has shown that specialized computer applications expand understanding of the culture and

![Fig. 1 Group B results reflecting the positive effect of introducing online lessons for studying Chinese folk music on the MOOC platform](image-url)
traditions of the Chinese people, enhance the perception of national musical identity, increase interactivity and interest in new knowledge, as well as can serve as a basis for inspiration (Hong & Wu, 2021). This is confirmed by the results obtained in this study.

In the scientific world, there are results demonstrating that the combination of music and technology contributes to the enthusiasm and initiative of students, as well as the growth of their interest, which is partially confirmed by the present paper. The integration of music and technology into folk music teaching methods can deepen its understanding to some extent (Wu, 2018). In the learning process, teachers should promote student initiative, thereby contributing to their learning through literature and modern electronic technology in order to find new ways to understand the history underlying folk music (Wang-Shu, 2014). As an important part of the musical heritage, Chinese traditional and folk music not only takes on the hereditary task of developing musical literacy in students but also plays a role in promoting national culture and cultural capital (Shi, 2021).

Also, the MOOC platform has already demonstrated its effectiveness in the context of learning to play the Chinese traditional Gu zheng instrument. The data obtained make it possible to state that online platforms can positively influence the educational process in music education (Lu, 2015).

5 Conclusions

As the conducted experiment unveiled, the lowest marks in the folk music course were obtained by small groups A (control groups), with an average of 68.0. In contrast, small groups B (experimental) were marked with far better results – the average mark for them was 78.1, which is 12.9% higher than that of the control. These outcomes testify to the effectiveness of using computer applications in teaching Chinese folk music.

This study has both practical and scientific value as it demonstrates the effectiveness of the impact of distance learning courses in the context of studying Chinese folk music. This research clearly demonstrates that by using additional multimedia tools, higher quality and better results can be achieved. In addition, the present paper sheds light on the impact of the introduction of the MOOC platform, which involves organized and planned training, which is relevant for international education and can be useful for further research on this topic.

There are several broad areas of application of the results obtained, namely educational programs of higher institutions and scientific research. An important aspect is the popularization of modern technologies for their further official inclusion in educational programs as in a global sense, society is faced with new challenges, for example, with the pandemic that has affected the whole world. For further research, it is important to study the long-term effects of the influence of modern technologies on the learning process, as well as the possibility of a full transition to distance learning in the future.
Appendix 1

Questionnaire

Please assess the statements by expressing your agreement / disagreement on a four-point scale:

1. *Strongly agree (SA)*
2. *Agree (A)*
3. *Disagree (D)*
4. *Strongly disagree (SD)*

1. I am generally pleased with my participation in the Chinese folk music performance training program using MOOCs.

   ○ 1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

2. Participation in online lessons helped me master the skills of performing Chinese folk music.

   ○ 1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

3. I prefer studying Chinese folk music with the use of modern technology to traditional classroom learning.

   ○ 1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

4. I believe that the MOOC has had a positive impact on increasing my knowledge of the history of folk music of the People’s Republic of China.

   ○ 1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

5. I believe that MOOCs contribute to the improvement of Chinese folk music teaching methods and make the process more interesting.

   ○ 1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

6. I believe that the use of MOOCs can attract people not only from the PRC but also from other countries to the study of Chinese folk music.

   1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

7. Further use of MOOCs to study Chinese folk music will expand knowledge and improve musical skills and professional abilities.
1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

8. The introduction of modern technologies in the process of teaching folk music performance skills has a beneficial effect on learning.

○ 1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

9. I believe that online courses with specially designed curricula are an effective means of popularizing Chinese culture.

○ 1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

10. I believe that this teaching practice would be more effective when introduced into classroom training.

○ 1. Strongly agree ○ 2. Agree ○ 3. Disagree ○ 4. Strongly disagree

Authors’ contribution statement The research was conducted fully by Renli Li.

Data, materials and code availability Data, Materials and Code will be available on request.

Declarations

Ethics approval The study was conducted in accordance with the ethical principles approved by the Ethics Committee of Zhengzhou Sias University in Zhengzhou.

Consent All participants gave their written informed consent.

Competing interests There is no competing interests to declare that are relevant to the content of this article.

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