

Construction on Vocal Music Teaching and Training Mode in Colleges and Universities Based on Data Fusion Technology

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Abstract: Vocal music teaching in colleges and universities is an emotional art course. In the process of vocal music teaching and training, teachers not only teach vocal music skills, but also train students' singing practice. This paper aims to study the teaching and training mode of vocal music in colleges and universities under the data fusion technology. This paper proposes a neural network algorithm, and takes students majoring in vocal music in college A as the experimental object. It was learned that there were 1,500 questionnaires in the experiment, and 499 valid questionnaires from University A. 187 people chose this major because of their personal interests. This part accounted for about 37.47%, and 207 people chose this major because of family reasons, accounting for about 41.48%. It shows that the students of school A choose to study vocal music mainly because of family factors and personal hobbies. The experimental results show the effectiveness of data fusion technology in the research of vocal music teaching and training mode in colleges and universities.

1. Introduction

In recent years, the world economy has developed faster and faster, and people's education level has gradually improved. More and more teachers and parents pay attention to vocal music teaching, and they put forward more stringent requirements for vocal music teaching training. In college music education, vocal music teaching is one of the most important teaching contents and one of the most difficult to learn[1-2]. Vocal music teaching mainly uses scientific training methods to guide students to sing beautiful tunes through correct methods. The use of data fusion technology to study the vocal music teaching and training mode is conducive to in-depth research on the vocal music teaching and training mode in colleges and universities, and helps to prevent students from blindly conducting vocal music training[3-4]. Different students have different requirements for vocal music teaching and training mode. This article uses the form of questionnaire to find out what students think about vocal music training, in order to improve the vocal music teaching and training mode in colleges and universities[5], and build a relatively complete vocal music teaching and training mode. The innovation of this paper is that it combines data fusion technology to systematically study the vocal music teaching and training mode in colleges and universities, and

puts forward suggestions for improvement on the defects of the training mode[6].

2. Method of Vocal Music Teaching and Training in Colleges and Universities Based on Data Fusion

2.1 Vocal Music Teaching and Training Mode in Colleges and Universities

Vocal music is the most important part of the music professional discipline and occupies an important score in the music examination. The improvement of vocal music professional performance requires teachers to comprehensively consider factors such as the students' personal ability, professional foundation and teaching resources, so as to teach students according to their aptitude. As shown in Figure 1, it is a scene diagram of a college vocal music class[7-8].



Figure 1: College vocal music class

The training mode of vocal music teaching in colleges and universities means that teachers train students on vocal music in three aspects: teaching time, teaching method, and teaching content. It is more conducive to improve the professional level of students through specialized and specialized training of students' professional ability, as shown in Figure 2.



Figure 2: Various training modes of vocal music teaching in colleges and universities

2.2 Data Fusion Technology

Data fusion technology was first used in military research. It is a network data source obtained from several sensors, network connection analysis is performed, and relevant features are extracted.

Then, data processing is performed on the extracted features, and finally a high-quality result is obtained, and the corresponding information processing process is performed on the result. Figure 3 shows the application of data fusion technology in various fields.



Figure 3: Application of data fusion technology in various fields

As an information processing technology, data fusion technology can effectively deal with most data problems. Therefore, in real life, many research fields use data fusion technology. Scholars from all walks of life have developed a processing model for data fusion technology after research, which provides a reference for in-depth research on data fusion technology. As shown in Figure 4, it is a classic model of data fusion.

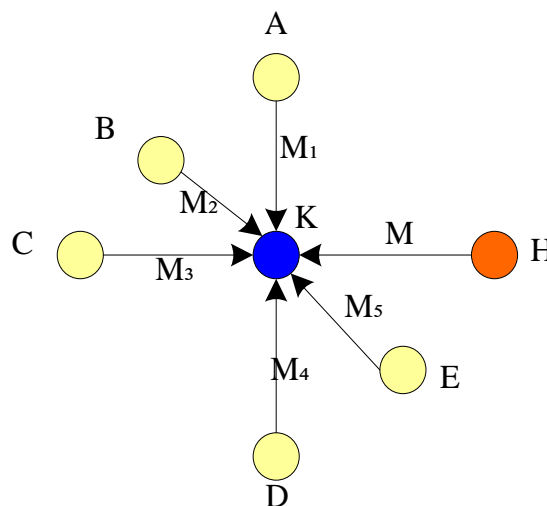


Figure 4: Classical model of data fusion

The multi-sensor data fusion system will perform information fusion processing in time and space according to the same observation target on different sensors. The system obtains more accurate results, and then the common methods of data fusion techniques are introduced.

3. Teaching and Training Experiments of Vocal Music Majors in Colleges and Universities

3.1 Teaching and Training Experimental Plan for Students Majoring in Vocal Music in Colleges and Universities

This paper organizes the existing research results of the vocal music teaching and training mode in colleges and universities. In order to further understand the significance of the vocal music teaching and training model, this paper takes the students of the major in College A as the experimental object, and the students of the major in College B and College C as the experimental control group to conduct a questionnaire survey. A total of 1,500 questionnaires were distributed, and each of the three universities distributed 500 copies, and a total of 1,480 copies were recovered. Among them, 499 valid questionnaires were returned by University A, 488 valid questionnaires were returned by University B, and 489 valid questionnaires were returned by University C, with an effective recovery rate of 98.4%.

In this experiment, under the data fusion technology, the neural network algorithm is used as the experimental method of pharmacy. The questionnaires from three universities are distributed to the surveyed students, and the collected questionnaires are analyzed by data fusion technology. In this questionnaire, 6 questions were raised, and the neural network algorithm was used to fuse all kinds of information, which was convenient for experimental analysis.

3.2 Experimental Results of Teaching and Training of Vocal Music Students in Colleges and Universities

A total of 6 questions were asked in this experiment, including the reasons why students choose to study vocal music, how long the students have studied vocal music, how many class hours students want to take in vocal music lessons per week, what students in each school think are the main methods of vocal music teaching and training in the school, and students' evaluation of the teacher's teaching mode and whether the students are satisfied with the teaching mode of the teachers in the school. Details are as follows:

(1) Reasons for choosing to study vocal music

Understanding the reasons why students choose vocal music majors is more conducive to prescribing the right medicine when building a vocal music teaching and training model. The attitude of its students to the major determines the effect of vocal music teaching and training.

Table 1: A survey of the reasons why students in various colleges and universities choose vocal music majors

	Hobby	Parents' expectations	Good job prospects
A	187	207	105
B	288	57	143
C	271	66	152

From the data in Table 1, it can be seen that there are 499 valid questionnaires in University A, and 187 people choose this major because of their personal interests. This part accounted for about 37.47%, and 207 people chose this major because of family reasons. Parents wanted students to study this major, accounting for about 41.48%. There are 105 people who believe that learning vocal music has good employment prospects, accounting for about 21.05%. Looking at the data from the control group, the majority of students in colleges B and C chose vocal music because of their hobbies, 288 and 271 respectively. The proportions are 59.02% and 55.42% respectively, which is more than that of A colleges and universities. It shows that most of the students of school A

do not like vocal music very much, and most of them choose to study vocal music mainly because their parents want them to study this major. Therefore, when constructing a teaching and training model, we can conduct selective and targeted vocal music teaching based on this data.

(2) Time to learn vocal music

Investigating the time of students studying vocal music can help to understand the students' foundation in vocal music, which is helpful for schools to build a good vocal music teaching and training model.

Table 2: Questionnaire on the time of students studying vocal music in various colleges and universities

	1-3 years	4-6 years	More than 6 years
A	201	185	113
B	108	173	207
C	127	178	284

It can be seen from Table 2 that the students' study duration is divided into three stages, 1 to 3 years, 4 to 6 years and more than 6 years. A college students have the largest number of study hours from 1 to 3 years, with 201 students, accounting for about 40.28%. There are 185 students in the period of 4 to 6 years, accounting for about 37.07%, and 113 students who have studied for more than 6 years, accounting for 22.65%. This shows that the vocal music learning of most students in College A is only in the initial stage, and the foundation is relatively weak. According to the data of the two colleges and universities in the control group, it can be seen that the number of students who have studied for more than 6 years in the two schools B and C is the largest. There are 207 and 284 students respectively, accounting for 42.42% and 58.08%, which is higher than that of school A. This shows that the students in the control group study vocal music for a long time and have a better vocal music foundation.

(3) How many class hours do people want to take in vocal music lessons per week

Investigating students' expectations of taking multiple vocal music lessons a week can help them understand their personal needs, which has a certain reference for the construction of a vocal music teaching model.

Table 3: How many class hours each college student expects to have in vocal music lessons per week

	3-5 times	5-6 times	More than 6 years
A	214	128	157
B	186	201	101
C	153	194	142

It can be seen from Table 3 that students' expected class hours are divided into 3 parts, the first part is 3 to 5 times, the second part is 5 to 6 times, and the third part is more than 6 times. School A has the largest number of students expecting 3-5 lessons per week, with 214 students, accounting for about 42.89%, and the second part with the smallest number, with 128 students, accounting for about 25.65%. Looking at the data of the two colleges and universities in the control group, the number of students in School B and School C who choose to take 5-6 class hours a week is relatively large. The numbers were 201 and 194, respectively, accounting for 41.19% and 39.67%. Most of the students in School A choose 3-5 classes a week. The main reason is that students think that the course pressure is too high, and there are too many homework in class. 3-5 courses a week is already the limit, too many class hours, and the professional content is difficult to digest. In contrast, the students from the two colleges and universities in the control group were more inclined to take classes 5-6 times a week. Their professional foundation was better and their ability to absorb

professional knowledge was faster.

(4) The main methods of vocal music teaching and training in our school

Investigating the main methods of vocal music teaching and training in the student's school can help to understand the school's teaching model, and make up for omissions, which is conducive to improving the professional teaching and training model.

Table 4: The main methods of vocal music teaching and training in various colleges and universities

	Multimedia technology	Breathing training	Practical training
A	376	111	12
B	8	270	210
C	2	273	214

It can be seen from Table 4 that the teaching modes of different colleges and universities are different, and their training methods will also be different. A majority of students in colleges and universities believe that the school's vocal music teaching and training mainly relies on multimedia equipment. This is an emerging technology. By using this technology, students' vocal training voices are recorded into professional equipment for data analysis, but the technology still has some shortcomings and has not been popularized. However, students in colleges B and C believe that the training methods of their professional courses for students are mainly the combination of breathing training and practical training. This is a relatively traditional teaching method. 273 of the B colleges believe that the most important training method is breathing training. There are 210 people who think that the most important training method is the time training method, accounting for 55.33% and 41.19%, and the proportion of the number of people is not much different. There are 273 students in college C who believe that the most important training method is breathing training, and 214 who believe that the most important training method is time training, accounting for 55.83% and 43.76%. It can be seen from the data of the control group that the two schools B and C are more inclined to the traditional mode of training. In the experimental group, college A is more keen to use new technology to train students. To sum up, when building a vocal music teaching and training model, new technologies and original methods should be combined, which is more conducive to students' learning of vocal music.

(5) Students' evaluation of the teacher's teaching mode

In any course, the teacher's teaching mode will be different. By investigating the students' evaluation of the teacher's teaching mode, we can know whether the school's teaching mode is perfect, which is beneficial to the development of the professional teaching and training mode. As shown in Figure 5, it is the student's evaluation of the teacher's teaching mode in the school.

Students' evaluation of teaching mode is divided into two aspects: single and plural. It can be seen from the data in the figure that the number of students in college A who believe that the teachers in their school have a relatively simple teaching mode is significantly more than the number of students who have a more diversified teaching mode. The data in the control group behaved completely opposite to the data in the experimental group. In the experimental group, there were 293 students who believed that the teaching mode was too simplistic, accounting for 58.72%, while 206 students believed that the teaching mode was diversified, accounting for 41.29%. In the control group, although the proportion of single teaching mode is lower than the proportion of diversified teaching mode. In the evaluation of students from School B and School C, more than 100 students believed that the teaching mode was single, accounting for 24.80% and 23.11%. The proportion of this number is too high, which shows that the teaching mode of vocal music courses in the three colleges and universities still has certain defects and still needs to be improved.

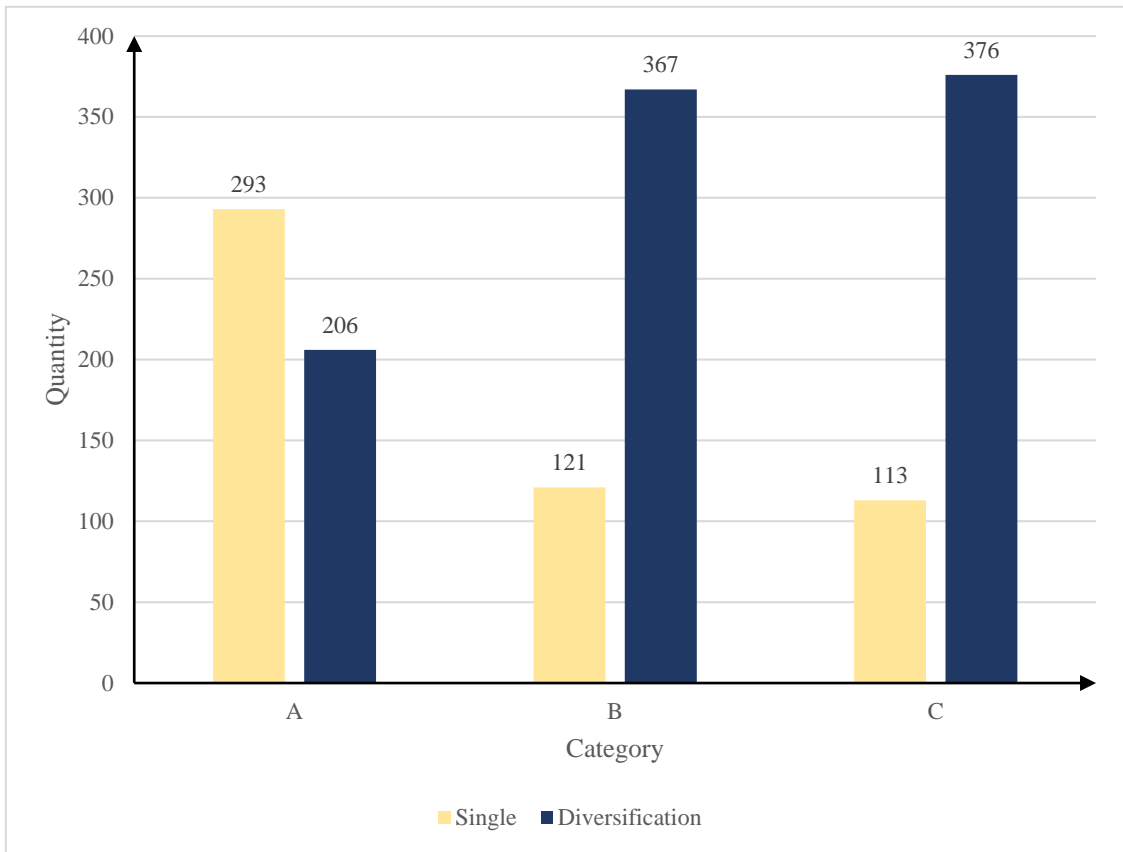


Figure 5: Students' evaluation of the teacher's teaching model in the school

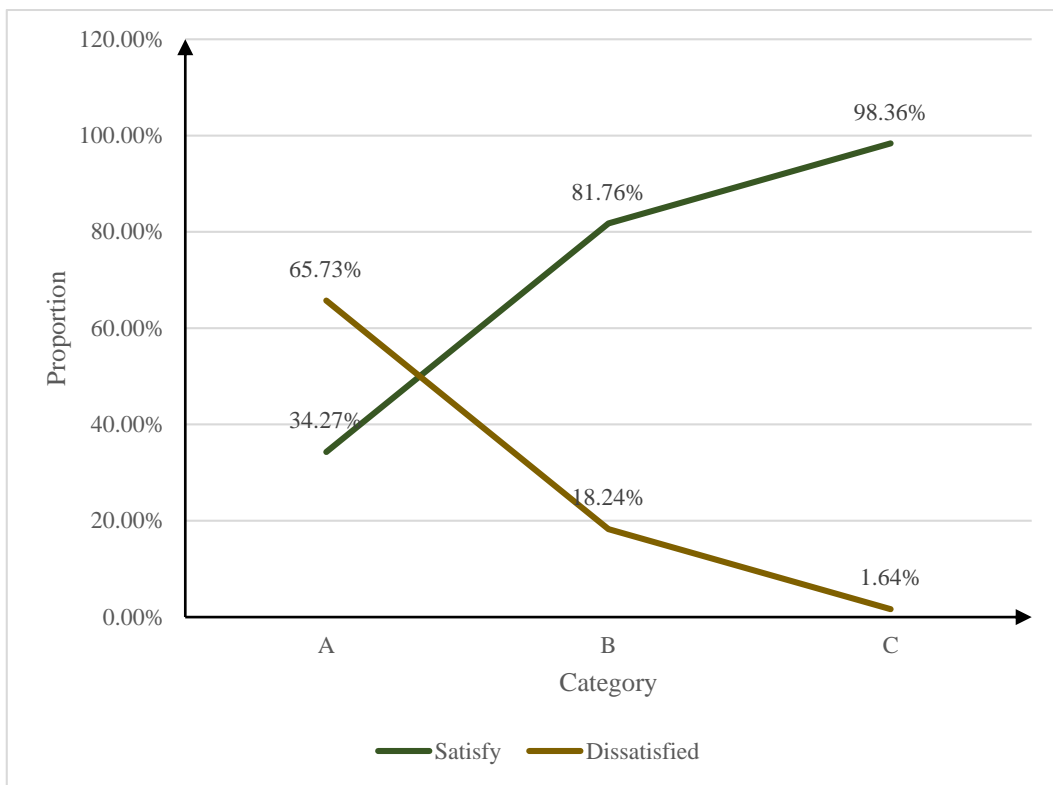


Figure 6: Data graph of the survey data on whether students are satisfied with the teaching mode of teachers in this school

(6) Satisfaction survey on the teaching mode of teachers in our school

Students' enthusiasm for learning depends on whether students are satisfied with the teacher's class mode, and students' satisfaction with the teacher's curriculum mode will help improve their academic performance. As shown in Figure 6, it is the survey data for whether students are satisfied with the teaching mode of teachers in this school.

It can be seen from Figure 6 that the proportion of students in college A who are dissatisfied with the teaching mode of their teachers is significantly higher than the proportion of students who are satisfied. Among them, 171 people were satisfied with the school's teachers' teaching mode, accounting for only 34.27%, while 328 people were dissatisfied with the school's teachers' teaching mode, accounting for as high as 65.73%. Similarly, in school B of the control group, although the number of students who are satisfied with the teaching mode of their teachers is higher than that of school A, the number of students who are dissatisfied with the teaching mode of their school is 89. The proportion is 18.24%, which is relatively large. In school C, which is also the experimental control group, the proportion of students' satisfaction with the teaching mode of school C teachers is as high as 98.36%. This shows that School C still attaches great importance to the teaching mode of students' vocal music courses, while School A and School B still need to improve the quality of vocal music courses.

To sum up, it can be seen from the various charts that in the vocal music teaching and training courses in college A, students are not satisfied with the school's vocal music teaching mode, and they are not satisfied with the teacher's teaching mode. The quality of students also lags behind that of the two universities in the experimental control group. This also reflects that the vocal music teaching professional courses of A college are inferior to those of the other two colleges. Therefore, it is suggested that A college can improve such problems and improve the corresponding teaching mode and teaching quality.

3.3 Teaching and Training Experimental Plan of Vocal Music Majors in Colleges and Universities

According to the above analysis, the data fusion technology and the research on the vocal music teaching and training mode in colleges and universities are perfectly combined. With the advancement of science and technology, the fields of application of data fusion technology are becoming more and more extensive. The idea of using data fusion technology to analyze the teaching and training mode of vocal music in colleges and universities has greatly facilitated the research of scholars from all walks of life in this area. Due to the lack of thorough learning of data fusion technology, there are still some shortcomings, which need to be improved. The specific improvements are as follows: First, the research is conducted with the A university as the research object and the other two universities as the control group. This is the same type of comparison. This paper does not analyze the situation of students in A college over the years, and the results obtained in this way are still inaccurate. Second, during the experiment, the selected sample size was too small, and the sample data type was relatively simple. It is recommended to increase the sample size to achieve the purpose of more accurate and perfect experimental data. At the same time, the credibility of the experiment will also increase. Based on data fusion technology, the construction of vocal music teaching and training mode in colleges and universities has been a hot topic among professional scholars in recent years, and this topic can be further studied.

4. Conclusion

This paper takes data fusion technology as the main research method, and conducts a questionnaire survey on the vocal music students of A college. By adding two universities B and C

as the experimental control group, this paper uses data fusion technology to collect questionnaires and analyze and summarize. Through case analysis, the following conclusions are drawn: College vocal music teaching and training mode also needs to combine traditional teaching mode with modern technology. The combination of both can better impart professional knowledge, thereby improving the quality of teaching. In the process of admission, colleges and universities should increase the difficulty of admission and raise the admission threshold to ensure the quality of admitted students. In short, the analysis of the vocational training mode of vocal music in colleges and universities still needs to be considered comprehensively. Considering from many aspects and angles, we can ensure the quality of the school's professional courses and the quality of students' vocal music courses.

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