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Assessment and Development Strategies for Creative Thinking Among Non-Music Teacher Training Students: A Case Study of the 'Fundamentals of Music' Course in Primary Education

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Abstract

Creative thinking is an important component of the core literacy of the 21st century and also the main purpose of aesthetic education reform in the new era. Primary education teacher trainees are the direct implementers of future basic education aesthetic education, and their creative thinking level directly affects the quality of primary school music education. However, currently non music major music foundation courses in universities generally have a structural problem of emphasizing skill imitation over thinking cultivation, and emphasizing knowledge transmission over teaching transformation. Based on Guilford's theory of creative thinking and the laws of music education, this article conducted a field survey of 240 students and 12 teachers from three normal universities across the country to explore the actual situation of cultivating music creative thinking among non music normal students. An evaluation system was created, which includes 5 first level dimensions and 18 second level indicators. After one semester of teaching practice, it was tested and concluded that the "knowledge deconstruction ability transfer thinking transition" training model is effective. The research results indicate that adopting the PBL-OBE integrated teaching model can significantly improve the music creative thinking level of non music teacher trainees, and the teaching transformation ability has also been improved by 32.7%. This article provides a feasible model for the reform of non professional art courses in universities.

Keywords

Non music teacher trainees; Creative thinking; Basic music courses; Evaluation system; Teaching transformation.

1. Introduction

With the implementation of the opinions on comprehensively strengthening and improving the work of aesthetic education in schools in the new era, the fundamental role of aesthetic education in cultivating moral character has been unprecedentedly emphasized. Music education is the main way of aesthetic education, which can improve students' aesthetic level and cultivate a good environment for creative thinking. The primary education major bears the responsibility of cultivating comprehensive teachers for basic education. The normal students trained should have certain music literacy and music teaching abilities, and carry out creative music education activities in future primary school classrooms[1].

However, currently most primary education majors in universities use the teaching mode of music majors for the course of "Music Fundamentals", which places too much emphasis on the systematic imparting of music theory knowledge and standardized training of singing and performance skills, neglecting the cultivation of students' creative thinking, and lacking systematic training to transform music creativity into teaching creativity. The teaching model that emphasizes skills over thinking and results over process makes it difficult for teacher

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trainees to adapt to the creative teaching requirements of primary school music education after graduation. Therefore, how to scientifically evaluate the music creative thinking level of non music teacher trainees and explore effective training methods has become an urgent problem to be solved in the current reform of music education in universities.

2. The Intrinsic Relationship Between Music Education and The Cultivation of Creative Thinking

There is a natural intrinsic connection between music education and the cultivation of creative thinking. Music is a non semantic, emotional, and expressive art form that requires the participation of creative thinking in music creation, performance, and appreciation[2]. In 1963, the Yale Music Education Symposium first proposed that "creativity is a method for developing musical abilities," officially establishing the academic position of cultivating creative thinking in music education. In 1967, Harvard University's "Zero Project" confirmed the important role of art education in enhancing students' creative thinking ability through more than ten years of research, and gave birth to the theory of multiple intelligences, laying the foundation for the independent status of artistic intelligence.

The mechanism of cultivating creative thinking in music education is mainly reflected in three aspects: firstly, the non semantic nature of music provides students with a broad space for imagination, which can stimulate their divergent thinking; Secondly, music practice activities such as improvisation and ensemble performances require students to flexibly apply their existing knowledge to solve practical problems, which can cultivate students' thinking flexibility; Thirdly, personalized interpretation and expression of music works can encourage students to think independently and cultivate their creativity. For teacher trainees, music education can not only cultivate their own creative thinking, but also enable them to master the methods and strategies for cultivating students' creative thinking in primary school classrooms.

3. Research on the Current Situation of Creative Thinking Cultivation in the "Music Fundamentals" Course for Primary Education Majors

Table 1. Setting of Teaching Objectives for the Course "Fundamentals of Music"

Teaching objectives and content	Teacher's perceived importance level (%)	Implementation level in actual teaching (%)	Student perceived importance level (%)
Mastery of music theory knowledge	100.0	91.7	78.5
Singing and playing skills	100.0	83.3	82.9
Music aesthetic ability	83.3	50.0	67.1
Creative Thinking in Music	25.0	8.3	45.6
Music teaching ability	58.3	33.3	72.4

In order to understand the current situation of creative thinking cultivation in the course of "Music Fundamentals" in primary education majors, this article adopts a combination of questionnaire survey and classroom observation. From March to April 2024, a survey was conducted on 240 primary education students and 12 music teachers from three normal universities (one affiliated normal university and two local normal colleges) in China. A total of

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240 student questionnaires were distributed, 228 were collected, and 228 were valid, with an effective response rate of 95%. 12 teacher questionnaires were distributed and collected, with an effective response rate of 100%. The research results are as follows:

3.1. Current situation of course teaching objective positioning

Research shows that the current teaching objectives of the "Music Fundamentals" course are still mainly focused on knowledge transmission and skill training, with a serious lack of emphasis on cultivating creative thinking.

From Table 1, it can be seen that all teachers believe that music theory knowledge and singing and performance skills are important teaching objectives, and their implementation is good in actual teaching. However, 25% of teachers regard cultivating students' creative thinking in music as an important teaching objective, and the actual implementation level is only 8.3%. Students value the cultivation of music teaching ability and creative thinking more than teachers, reflecting a significant gap between the current curriculum teaching objectives and students' career development needs.

3.2. Current Status of Teaching Content and Methods

The current teaching content of the "Music Fundamentals" course mainly revolves around music theory knowledge, sight singing and ear training, and vocal singing. The content system overly emphasizes the systematicity and professionalism of the subject, which is disconnected from the actual teaching of primary school music. There is a lack of specialized creative training in the course, with improvisation, music composition, and other content accounting for less than 10% of the class hours. Even with a small amount of creative activities, they mostly remain at the level of simple rhythm imitation and melody adaptation, lacking depth and challenge[3].

In terms of teaching methods, 75% of teachers still use the traditional teaching method of "teacher lecturing, student listening", 66.7% of teachers use the skill training method of "teacher demonstration, student imitation", and only 16.7% of teachers have used creative teaching methods such as project-based learning and inquiry based learning. This single teaching method suppresses students' creative thinking and turns music learning into mechanical skill training.

3.3. Current Status of Evaluation System

The current evaluation method for the course "Fundamentals of Music" mainly relies on final exams, with a focus on the mastery of music theory knowledge and the level of singing and performance skills. The evaluation criteria emphasize uniformity and standardization.

Table 2. Composition of Evaluation Content for the Course "Fundamentals of Music"

Evaluation content	Weight (%)
Music theory knowledge written test	40-50
Singing and playing skills	40-50
Regular grades (attendance, homework)	10-20
Creative expression	0
teaching practice	0

According to Table 2, students' creative performance and teaching practice ability are not included in the evaluation system. The evaluation system that emphasizes results over processes cannot comprehensively reflect students' music literacy and learning outcomes, nor can it promote the development of students' creative thinking.

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4. Construction of Evaluation System for Music Creative Thinking of Non Music Teacher Trainees

A scientific evaluation system is the guarantee for cultivating creative thinking. Based on the characteristics and training objectives of non music teacher trainees, and in accordance with Gilford's theory of the four characteristics of creative thinking, combined with the particularity of the music discipline and the professional needs of teacher trainees, a music creative thinking evaluation system consisting of 5 primary dimensions and 18 secondary indicators is created[4].

4.1. Evaluation Dimensions and Indicator System

Table 3. Evaluation System for Music Creative Thinking of Non Music Normal Students

first-level dimension	Weight (%)	secondary indicator	Evaluation points
Fluency of musical thinking	20	Rhythm improvisation fluency Number of melody creations Music association richness Speed of solving music problems	The number of rhythmic patterns generated per unit time The number of melodies created based on given lyrics The number of scenes and emotions associated with music Response time for solving music problems
Flexibility in musical thinking	20	Ability to convert music styles Diversity in the application of timbre Diversity in forms of expression Diversity of problem-solving methods	Being able to perform the same piece in different styles Ability to use multiple instruments/vocal tones Can adopt various forms of expression such as singing, playing, dancing, etc Being able to solve the same music problem in multiple ways
Originality in musical thinking	25	Novelty of music theme Uniqueness of Melody Creation Innovative rhythm design Show the degree of personalization	Is the music theme unique Does the melody trend have uniqueness Is the rhythmic design innovative Does the musical expression have personal characteristics
Precision of musical thinking	15	Integrity of music structure Reasonable harmony arrangement Appropriateness of changes in force and speed Show delicacy level	Is the structure of the work complete and logically clear Is the harmony arrangement harmonious and appropriate Does the change in intensity and speed match the emotional tone of the music Is the musical expression delicate and layered
Teaching conversion ability	20	Innovative design of teaching activities Students' ability to stimulate creativity Flexibility of teaching methods Teaching reflection and improvement ability	Can creative music teaching activities be designed Can it effectively stimulate primary school students' musical creativity Can teaching methods be flexibly adjusted according to classroom conditions Can effective reflection and improvement be made on teaching

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4.2. Evaluation Methods and Implementation

This evaluation system adopts a combination of process evaluation and outcome evaluation, qualitative evaluation and quantitative evaluation, and multi subject evaluation. Process evaluation uses classroom observations, student reflection logs, learning portfolios, etc. to record students' creative performance during the learning process, while outcome evaluation uses final creative work exhibitions[5], teaching practice assessments, etc. to evaluate students' final creative thinking level.

Evaluation should be integrated throughout the entire teaching process. In rhythm teaching, improvisational rhythm relay is used to evaluate students' fluency in thinking. In melody teaching, melody creation competition is used to evaluate students' creativity in thinking. In teaching practice, simulated teaching is used to evaluate students' teaching transformation ability. The evaluation results should be immediately fed back to students, so that they understand their own strengths and weaknesses and the direction of their future efforts.

5. Teaching Strategies for the Course "Fundamentals of Music" Based on the Cultivation of Creative Thinking

5.1. Refactoring course objectives, highlighting the dual cultivation of creative thinking and teaching ability

The basic music courses for primary education majors need to reconstruct teaching objectives, with the main goal of cultivating students' creative thinking and teaching abilities in music. A five in one goal system should be constructed, which includes knowledge, skills, processes, methods, emotional attitudes, and values. Knowledge and skill objectives should not only include basic music theory knowledge and singing and performance skills, but also music creation skills and music teaching skills; The process and method objectives should highlight the process of students' independent exploration, collaborative learning, and practical experience, and develop students' creative thinking; Emotional, attitudinal, and value goals should cultivate students' interest in music, love for music, and sense of responsibility towards music education.

5.2. Optimize teaching content and build a spiral upward content system

We should break the traditional content system centered on disciplinary knowledge and create a spiral upward content system of "knowledge deconstruction ability transfer thinking transition". The knowledge deconstruction stage (weeks 1-4) guides students to have a deeper understanding of the basic elements and expressive techniques of music, laying the foundation for the emergence of creative thinking; During the ability transfer stage (weeks 5-12), practical activities such as improvisation and music composition are used to cultivate students' ability to apply music knowledge to solve problems; The stage of thinking transition (weeks 13-16) combines music creative thinking with primary school music teaching to cultivate students' teaching transformation ability.

The teaching content should be linked to the actual situation of primary school music teaching, adding content related to primary school music textbooks, so that students can understand the future teaching objects and content during the learning process. Choose a song from primary school music textbooks to adapt and create, so that students can learn the methods and strategies of primary school music teaching through practical operation[6].

5.3. Innovative teaching methods, adopting PBL-OBE integrated teaching mode

This article combines Problem Based Learning (PBL) and Outcome Based Education (OBE) to create a task progression teaching model consisting of four aspects: perception performance understanding practice. The project aims to design a music activity class called 'Where is

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Spring?' for third grade elementary school students, breaking down the entire semester's teaching content into several sub tasks to enable students to develop creative thinking while completing the tasks.

Comprehensively use teaching methods such as improvisation, interdisciplinary integration, and group cooperative learning in the teaching process. In rhythm teaching, students are encouraged to improvise according to the given rhythm pattern. In melody teaching, students are encouraged to create melodies based on lyrics. In music appreciation teaching, music is linked to subjects such as poetry, art, and dance to broaden students' thinking space.

5.4. Improve teaching evaluation and establish a multi-dimensional process evaluation mechanism

We should change the traditional evaluation method mainly based on final exams and establish a multidimensional and process oriented evaluation system to give full play to the guiding and motivating role of evaluation. Include students' classroom performance (30%), creative works (30%), teaching practice (25%), reflection logs (15%), etc. as part of the evaluation system, and increase the proportion of process evaluation. At the same time, we should attach importance to the guiding role of evaluation, value the developmental potential of students, and support them to boldly try and innovate.

6. Teaching Practice and Effect Analysis

In order to test the effectiveness of the above strategies, this article selected two parallel classes of 2023 in the primary education major of normal universities for one semester of teaching practice. The experimental class (45 people) used the method proposed in this article, while the control class (43 people) used traditional teaching methods. There is no significant difference in music foundation and creative thinking level between the students in the two classes, with a P value greater than 0.05.

At the end of the semester, students will be tested using the Torrance Creative Thinking Test (TTCT) and the Music Creative Thinking Evaluation Scale established in this study. The test results are as follows:

Table 4. Comparison of scores in various dimensions of music creative thinking between the experimental group and the control group (M ± SD)

evaluation dimension	Experimental class (n=45)	Control class (n=43)	T-value	P-value
Fluency of musical thinking	82.3±7.5	73.6±8.2	5.214	<0.001
Flexibility in musical thinking	79.5±8.1	71.2±7.8	4.987	<0.001
Originality in musical thinking	76.8±9.2	65.4±8.7	6.123	<0.001
Precision of musical thinking	78.2±7.9	72.5±8.3	3.456	<0.01
Teaching conversion ability	81.5±8.4	61.4±9.1	10.876	<0.001
total score	79.7±7.8	68.9±8.2	6.543	<0.001

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According to Table 4, the total score of music creative thinking among students in the experimental class was higher than that of the control class ($p<0.001$). In terms of teaching transformation ability, the experimental class also showed the greatest improvement, with an increase of 32.7%. From this, it can be seen that the method proposed in this article can effectively improve the music creation thinking level of non music teacher trainees, and has a significant effect in transforming music creation into teaching creation.

At the same time, through classroom observation and analysis of student interviews, it can be seen that students in the experimental class have significantly improved their interest and enthusiasm for learning, and their classroom participation has greatly increased. They can ask questions and engage in creative thinking. Many students believe that after studying this course, they not only learn basic music knowledge and skills, but more importantly, learn how to creatively conduct music teaching.

7. Conclusion

The cultivation of creative thinking is the main task of aesthetic education reform in the new era, and it is also one of the goals of talent cultivation in primary education majors. The course of "Music Fundamentals" for primary education majors should break free from the constraints of traditional skill training and integrate the cultivation of creative thinking into all aspects of teaching. This article uses empirical research methods to discover the current difficulties in cultivating creative thinking in music for non music teacher trainees. It creates an evaluation system consisting of 5 primary dimensions and 18 secondary indicators, and proposes a three-stage training model of "knowledge deconstruction ability transfer thinking transition". Teaching practice has proven that using the PBL-OBE integrated teaching model can significantly improve the music creative thinking level and teaching transformation ability of non music teacher trainees. The results of this study can provide practical paradigms for the reform of the "Music Fundamentals" course in primary education majors in universities, as well as provide some references for the cultivation of creative thinking in other non professional art courses.

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