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Research on Innovative Teaching Practices of Piano Accompaniment Courses under Four-Dimensional Integration and Reconstruction

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Abstract: This study focuses on the core course "Piano Accompaniment 2" in music majors at universities, addressing the prevalent "disconnect between learning and application" in current music education. A systematic teaching innovation paradigm integrating "emotion, technique, aesthetic education, and information technology" was constructed and implemented. Using a methodological framework combining the OBE (Outcome-Based Education) concept and the BOPPPS (Bridge-Objective-Pre-test-Participatory Learning-Post-test-Summary) teaching model, a structured educational system of "six stages, three layers, and three loops" was established through comprehensive reorganization of course objectives, content, methods, and evaluation systems. Research practice demonstrates that this model effectively transforms students from "skill learners" to "aesthetic educators" through innovative approaches such as red music guided listening, AI scenario creation, microteaching exercises, and dual-layer interactive evaluation. It promotes the deep integration of value guidance, professional competence, and aesthetic education practice. The teaching reform not only significantly enhances students' composition skills and performance abilities but also extends to diverse social application scenarios including special education, new media teaching, and intangible cultural heritage dissemination, forming a positive educational ecosystem of "learning-application-creation-communication." This study provides replicable practical pathways and theoretical references for curriculum reform in higher music education.

Keywords: Piano Accompaniment; Four-Dimensional Integration; OBE; BOPPPS; Teaching Reengineering; Aesthetic Education Practice; IT Empowerment

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1. Introduction

In the current era of deepening reforms in higher education, music education, as a crucial vehicle for aesthetic education, is undergoing profound transformation from skill transmission to quality cultivation and from classroom learning to social service. As a key course bridging art theory and practical application for music majors, the improvement of piano accompaniment teaching quality directly impacts the formation of students' comprehensive artistic literacy and aesthetic education practice. However, traditional piano accompaniment teaching commonly suffers from issues such as "emphasizing technique over application," "focusing on imitation rather than creativity," and "prioritizing individuality over collaboration," resulting in students who, despite mastering certain accompaniment skills, struggle to meet diverse

social aesthetic education demands, leading to a noticeable "disconnect between learning and application" [1].

In recent years, with the widespread application of the OBE (Outcome-Based Education) concept in higher education and the notable advantages of the BOPPPS (Bridge-in, Objective, Pre-assessment, Participatory Learning, Post-assessment, Summary) teaching model in enhancing classroom effectiveness, the field of music education has also begun exploring the potential for deeply integrating these advanced pedagogical concepts with professional courses [2]. However, existing research primarily focuses on theoretical discussions, lacking a comprehensive practical framework and systematic validation specifically for piano accompaniment courses.

Based on this, this study takes the "Piano Accompaniment 2" course taught by the author as the practical framework and proposes and implements a four-dimensional teaching reconstruction plan integrating "emotion, technique, aesthetic education, and information technology." The research aims to address the following core questions: How can systematic curriculum reconstruction resolve the "disconnect between learning and application" in piano accompaniment teaching? How can the OBE concept and BOPPPS model be organically integrated into the entire teaching process? How does the four-dimensional teaching paradigm facilitate students' transition from skill mastery to aesthetic practice? Through two years of teaching practice and empirical research, this paper attempts to establish an innovative piano accompaniment teaching system with theoretical support and practical feasibility, providing a reference for similar course reforms.

2. Theoretical Foundation and Literature Review

2.1. The obe educational concept and its application in music education

Outcome-Based Education (OBE) emphasizes starting from the ultimate learning outcomes students should achieve, then designing the curriculum system, teaching content, and evaluation methods in reverse. In the field of music education, the OBE philosophy focuses not only on the quantity of repertoire or techniques students master but also on whether they can transform these knowledge and skills into artistic expression, aesthetic judgment, and social service capabilities [3]. In recent years, some domestic universities have begun incorporating the OBE philosophy into music curriculum design, but its application in practical courses such as piano accompaniment remains insufficient, particularly in systematically exploring how to break down "accompaniment ability" into observable and assessable learning outcomes [4].

2.2. BOPPPS teaching model and its effectiveness research

The BOPPPS teaching model originates from Canada's teacher training system, with its six components forming a complete instructional loop. Research indicates that the BOPPPS model significantly enhances classroom engagement, learning objective achievement rates, and timely instructional feedback [5]. In music skill instruction, the pre-test phase helps teachers accurately assess student foundations, the interactive learning phase fosters teacher-student and peer-to-peer engagement, while the post-test phase enables immediate evaluation of learning outcomes. However, existing studies primarily focus on theoretical courses, leaving further exploration needed on how to organically integrate BOPPPS elements with skill training and artistic creation in highly interactive and practical courses such as piano accompaniment.

2.3. The construction of the "four-dimensional integration" teaching concept

Based on an understanding of the OBE and BOPPPS theories and considering the characteristics of piano accompaniment courses, this study proposes a four-dimensional teaching concept integrating "emotion, technique, aesthetic education, and information technology."

Emotional Dimension: Emphasize the emotional attributes of music education by using works with cultural identity, such as red music and ethnic music, to evoke students' emotional resonance and intrinsic motivation for learning. Research indicates that emotional engagement is a crucial prerequisite for deep learning [6].

2.3.1. Skill dimension

Focus on the systematic training of piano accompaniment skills, including the development of professional competencies such as harmony arrangement, texture design, and improvisational accompaniment. Under the OBE framework, skill training is no longer isolated technical practice but a necessary process serving the ultimate learning outcomes [7].

2.3.2. Aesthetic Education Dimension

Integrate aesthetic education throughout the entire teaching process to cultivate students' abilities in discovering, creating, and disseminating beauty. Piano accompaniment is not merely a technical activity but also an aesthetic practice, requiring students to engage in creative expression based on an understanding of the work's aesthetic connotations [8].

Information Technology Dimension: Fully utilize modern educational technologies, including AI-assisted teaching, online learning platforms, and multimedia resources, to expand teaching time and space, enhance teaching efficiency, and achieve personalized learning support [9].

These four dimensions support and permeate each other, collectively forming the theoretical foundation for the innovation of piano accompaniment course teaching.

3. Problem diagnosis: the inevitability of teaching reconstruction from the disconnect between learning and application

3.1. Realistic challenges of traditional teaching

Through teaching observation and questionnaire survey of three consecutive years of students majoring in music at our school (sample size N=156), it was found that traditional piano accompaniment teaching has the following prominent problems:

3.1.1. Skill stratification and classroom participation dilemma

Due to significant differences in students' piano foundations (piano majors and non piano majors are taught in the same class), there is a tendency for polarization in teaching, where "excellent students may not have enough to eat and poor students may not be able to keep up". According to a survey, about 42% of non piano major students reported that they find it difficult to keep up with the pace of teaching in the classroom, gradually shifting from "slow paced" to "not participating", resulting in a decline in the quality of classroom interaction.

3.1.2. Shallow cognition and value disconnection

Students have insufficient understanding of ethnic music vocabulary such as pentatonic modes, which can easily lead to the phenomenon of "foreign style and tone" when accompanying folk songs. At the same time, post-2000 students have a cognitive barrier towards classic red music works. A questionnaire survey shows that only 23% of students can accurately state the creative background of three or more red songs, and ideological and political education has not been truly integrated into professional learning [10].

3.1.3. Passive learning motivation and lack of subjectivity

About 65% of students indicate that learning engagement "mainly depends on teacher requirements" and lacks intrinsic motivation. Teaching has long been teacher centered, suppressing students' independent exploration and creative expression. When faced with real tasks such as "providing accompaniment for intangible cultural heritage folk songs," there is a clear dependence on decision-making and a fear of innovation.

3.1.4. Single evaluation method and lagging feedback

Traditional evaluation mainly relies on a one-time final assessment (accounting for 70% of the total evaluation), and only

a portion of homework can receive feedback in class, causing students to miss the opportunity to revise during the critical period of practice. The evaluation subject is single, lacking peer evaluation and self reflection.

3.2. Structured analysis of problems

These problems do not exist in isolation, but are interrelated systemic issues. The "virtualization of practice, suspension of ideological and political education, single evaluation, and lack of technology" in the teaching end directly lead to the "skill gap, meaning gap, subject deficiency, and feedback delay" in the student end. This structural contradiction makes the disconnection between learning and application an inevitable result. Simply repairing teaching methods is no longer enough to solve the problem, and a systematic curriculum reconstruction is necessary.

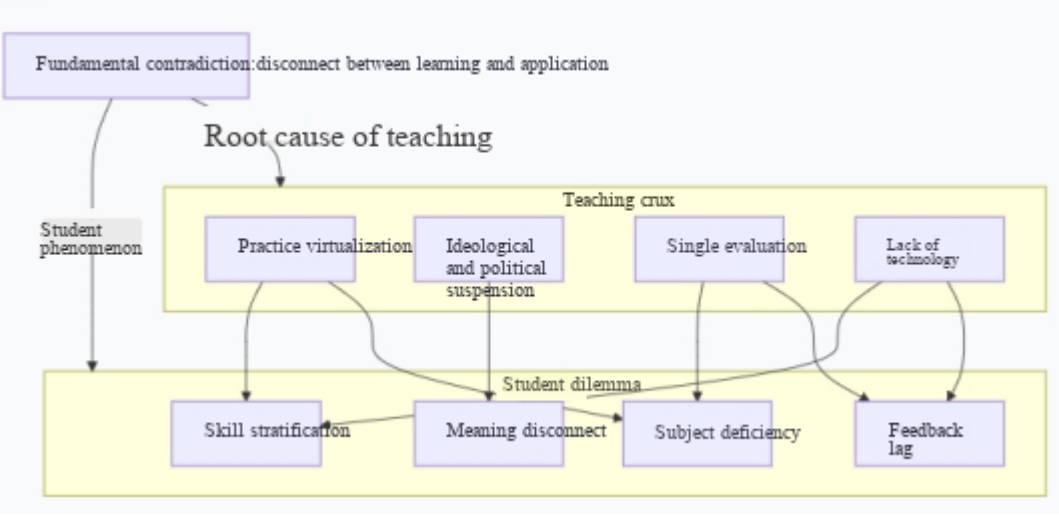

Figure 1. "teaching-student interaction model"

4. Innovation path: a "six stage, three layer, three ring" teaching model based on OBE and BOPPPS

4.1. Overall framework design

Based on the OBE concept, the course first clarifies the ultimate learning outcome: to cultivate versatile talents who can creatively arrange and interpret piano accompaniment in response to diverse social needs, and possess the ability to spread aesthetic education. Based on this final outcome, a dual level goal system of "basic standards" and "ability improvement" was reverse designed, and a complete teaching process was constructed according to the BOPPPS model.

4.2. OBE oriented target system reconstruction

4.2.1. Final result

Students should be able to meet the piano accompaniment needs of primary and secondary school music teaching, social art institution aesthetic education services, cultural communication, and other positions 3-5 years after graduation, and possess certain artistic innovation abilities.

4.2.2. Course level objectives

Basic objective: To independently analyze the characteristics of pentatonic folk songs and complete accompaniment arrangements that meet artistic standards.

Advanced goal: To be able to differentiate and disseminate teaching materials according to different audiences (children, elderly, special groups, etc.) and scenarios (stage performances, community activities, new media platforms, etc.)

Unit level objectives: Each lesson follows the BOPPPS model to clarify specific and measurable learning objectives, such as “being able to use three or more accompaniment fabrics to perform designated folk songs” and “being able to simplify accompaniment scores based on the characteristics of the elderly population”.

4.3. BOPPPS structured teaching process innovation

4.3.1 Bridge in (bridge import)

(1) Pre class stage: Push red music listening resources through the Learning Platform to guide students from “passive listening” to “active interpretation”. For example, in the guide to “Osmanthus Blossoms Everywhere in August”, the cultural significance of “osmanthus” symbolizing revolutionary victory is analyzed, and emotional connections are established.

(2) At the beginning of the lesson: Using AI tools such as Instant Dreams and 3D Blender to create real teaching scenarios, such as “accompaniment for senior college students” and “teaching for children in special education schools”, to stimulate learning motivation.

4.3.2. Objective (clear objectives)

At the beginning of each class, students are clearly informed of the learning objectives, key and difficult points, and their correlation with the final outcome. For example, “After this lesson, you will be able to design three different styles of accompaniment for ‘Jasmine’ and explain the teaching scenarios applicable to each style.

4.3.3. Re assessment (pre-test diagnosis)

Conduct a quantitative pre-test through Wenjuanxing to understand students’ mastery of pentatonic modes and familiarity with red songs. Based on data feedback, dynamically adjust teaching focus and grouping strategies.

4.3.4. Participatory learning

This is the core part of teaching, specifically reflected in the “six level ability development path”:

Phase 1: Pre testing and Import (corresponding to stages b, o, and p of BOPPPS)

Students complete the red song cognitive pre-test and guided listening online, and teachers conduct targeted introductions in the classroom based on the data.

Phase 2: Basic construction (main part of phase p)

Focusing on fundamental knowledge such as pentatonic theory and harmonic vocabulary, adopting a cycle of explanation demonstration imitation feedback.

Phase 3: Vocabulary expansion (deepening of stage p)

Introduce more accompaniment weaving and floral techniques, and expand students’ musical expression abilities through comparative listening, group analysis, and other methods.

Phase 4: Application customization (application conversion in phase p)

Students work in groups to design differentiated arrangements for different teaching scenarios created by AI, such as senior universities, special education schools, and new media live broadcasts. Select the optimal solution through questionnaire star voting and conduct group debates to cultivate critical thinking.

Phase 5: Ability output (comprehensive practice of P stage)

Through micro teaching exercises, students conduct live teaching as “prospective teachers”, and classmates in the class provide real-time feedback through bullet comments, achieving an instant cycle of “teaching feedback optimization”.

Phase 6: Expansion and post assessment (corresponding to post assesment)

After class, the Learning Platform provides expanded resources (such as versions of folk songs from different regions, academic lecture videos, etc.) and sets up online tests to consolidate learning achievements.

4.3.5. Post assesment (post evaluation)

Adopting multiple evaluation methods:

(1) Skill level: "Weekly Song" video assignment, submitted through enterprise WeChat, and conducted peer evaluation

(2) Literacy level: Micro teaching exercise video, conducting inter group cross evaluation

(3) Final assessment: On site ammunition distribution+audio AI spectral analysis to improve evaluation efficiency and accuracy

Summary (Reflection)

At the end of each class, a "one sentence harvest sharing" will be set up, and a weekly learning reflection log will be written to promote the development of metacognitive abilities.

4.4. "Three layer contextualization" ideological and political integration mechanism

In response to the issue of "suspension" in ideological and political education, the curriculum has established a three-layer integration mechanism of "emotional foundation - skill comprehension - dissemination externalization":

Level 1: Red Music Listening Guide - Value Decoding and Emotional Identification

Through specialized music analysis, guide students to understand the political symbols and cultural metaphors in red music, and establish value recognition in aesthetic experience.

Level 2: Red Music Workshop - Differential Practice and Activation Transformation

Students differentiate and arrange the same red song based on the characteristics of different audiences, and understand the profound meaning of "inheritance is not replication but innovation" in practice.

Level 3: Micro teaching exercise - social communication and responsibility

Students can teach and disseminate red songs through new media platforms such as Tiktok and Station B, transform their personal learning achievements into social aesthetic education resources, and achieve the identity sublimation from "learner" to "communicator".

4.5. Technology empowered "three rings" teaching support system

4.5.1. Pre class environment

Questionnaire Star learning situation diagnosis+Learning Pass resource push, achieving precise teaching preparation.

4.5.2. Lesson

AI scenario creation+live interaction+real-time voting, building a high engagement learning environment.

4.5.3. After class environment

Cloud homework submission+AI audio conversion+online peer evaluation, forming a closed-loop feedback system.

4.6. Innovation of "dual layer interaction" evaluation mechanism

Skill level evaluation: Focus on the completion and artistry of accompaniment arrangement, and achieve process accumulation through the task of "one song per week".

4.6.1. Evaluation at the literacy level

Focus on teaching design ability, aesthetic education dissemination effect, and conduct comprehensive evaluation through micro teaching exercises.

4.6.2. Diversified evaluation subjects

Construct a weight system of "student self-evaluation (20%)+peer evaluation (30%)+teacher evaluation (50%)", and

introduce AI tools to assist teachers in technical detail analysis.

5. Practical effectiveness evaluation

5.1. Quantitative analysis of learning outcomes

Through comparative analysis of students from grade 22 (before the reform, N=52) and grade 23 (after the reform, N=54), the teaching reform has achieved significant results:

5.1.1. Optimization of grade distribution

The average score of Grade 23 students has increased from 78.3 to 85.6, and the excellence rate (above 85 points) has increased from 28.8% to 51.9%. Moreover, high scoring students are no longer concentrated in piano majors, showing a trend of "blooming everywhere".

5.1.2. Improvement in ability achievement

In dimensions such as fabric design, floral innovation, and overall artistic expression, the excellent rate of Level 23 has significantly increased compared to Level 22 (from 33% to 68%, 26% to 46%, and 9% to 10%, respectively).

5.1.3. Online learning participation

According to data from the Learning Platform, the completion rate of video viewing for Grade 23 students has increased from 67% to 92%, and the average accuracy rate of online tests has increased from 76% to 99%.

5.2. Qualitative evaluation of aesthetic education practice ability

5.2.1. social service extension

Students spontaneously formed multiple art education practice groups to carry out music teaching in special education schools (serving 12 visually impaired students, of whom 3 are already able to participate in public performances), development of piano courses in senior universities (compiling suitable accompaniment scores), and dissemination of intangible cultural heritage music (collecting and recreating local folk songs and publishing them on Bilibili).

5.2.2. New media aesthetic education communication

Students set up Tiktok and B station accounts for live broadcast of red song teaching, with the highest number of praise per session exceeding 5000, forming a certain social influence.

5.2.3. Teaching achievement transformation

Students apply the knowledge learned in the course to campus art practice evenings, choir rehearsals, and other activities, and the accompaniment quality has received unanimous praise from professional teachers.

5.3. Changes in emotional attitudes and values

Through pre - and post test questionnaire surveys and in-depth interviews, it was found that:

(1) Students' identification with red music has shifted from 'unfamiliarity and alienation' to 'emotional identification'.

(2) Learning motivation shifts from "task driven" to "interest driven" and "meaning driven".

(3) Professional confidence has significantly improved, especially for non piano major students who have transitioned from 'afraid to play' to 'willing to show off'.

6. Discussion and reflection

6.1. Theoretical value of innovative models

The "four-dimensional fusion" teaching paradigm constructed in this study has achieved three breakthroughs at the theoretical level:

6.1.1. The localization practice of OBE concept

Concretizing abstract "learning outcomes" into "aesthetic education dissemination ability", and decomposing it into operable and assessable teaching activities through a "six step path", providing an example for the application of OBE in art courses.

6.1.2. Professional adaptation of BOPPPS mode

Based on the characteristics of piano accompaniment courses, the six stages of BOPPPS are organically combined with skill training and artistic creation, especially the "participatory learning" stage, which is expanded into a complete learning chain including basic construction, vocabulary expansion, application customization, and ability output, enriching the application connotation of BOPPPS mode in practical courses.

6.1.3. The organic integration of "ideological and political education in curriculum"

Through the design of "three-layer contextualization", ideological and political education is transformed from "additional content" to "endogenous elements", and value guidance is naturally integrated into professional teaching, achieving the systematic sublimation of "ideological and political curriculum" to "curriculum ideological and political education".

6.2. Practical challenges and optimization directions

6.2.1. The balance between technological dependence and the essence of teaching Overreliance on technological tools may lead to a neglect of the perception of the essence of music. In the future, further exploration is needed on how human-machine collaboration can better serve the art experience rather than replace it (Jin Hui, 2024).

The contradiction between individual needs and collective teaching: Although hierarchical teaching alleviates the problem of skill differences, there is still insufficient attention to extreme individuals (extremely high or low levels). The next step could be to introduce a more flexible "micro certification" system that allows students to complete competency certification at their own pace.

6.2.2. The generalizability of the evaluation system

The application of AI audio spectrum conversion and other technologies requires certain hardware and technical support, which may be difficult to promote in resource limited universities. Consider developing a simplified version of the evaluation tool or establishing a regionally shared evaluation center.

6.3. Implications for music education reform

6.3.1. The transformation from "skill imparting" to "literacy cultivation"

Piano accompaniment teaching should not be limited to "how to play", but should focus more on "why to play", "for whom to play", and "how to teach others to play", cultivating students' comprehensive artistic literacy and social service ability.

6.3.2. The construction of the "classroom society" connectivity mechanism

Through real project driven and social service extension, breaking the boundaries of the classroom, allowing students to achieve knowledge construction and ability development in the process of solving real problems.

6.3.3. The repositioning of the role of teachers

Teachers have transformed from “knowledge transmitters” to “learning designers”, “resource coordinators”, and “growth companions”, which puts higher demands on their curriculum design ability, technical application ability, and cross disciplinary coordination ability.

7. Conclusion

This study aims to address the problem of “disconnection between learning and application” in piano accompaniment courses in universities, and constructs and practices a teaching innovation paradigm based on the four-dimensional integration of “emotions, skills, aesthetic education, and information technology”. By organically integrating the OBE concept with the BOPPPS model into curriculum design, a structured teaching model of “six levels, three layers, and three loops” has been formed. Two years of teaching practice have shown that this model significantly improves students’ learning outcomes, aesthetic education practical abilities, and social responsibility, effectively promoting the transformation of students from “skill learners” to “aesthetic education disseminators”.

The innovation of the research lies in the theoretical proposal of a “four-dimensional fusion” framework suitable for music practice courses, which realizes the creative application of OBE and BOPPPS in professional teaching; In practice, a series of actionable teaching strategies have been developed, including the Red Music Workshop, Micro Teaching Live Streaming, and AI Audio Score Conversion Evaluation; In terms of value, deeply integrating the dissemination of aesthetic education and social services into professional teaching has expanded the social function of music education in universities.

Of course, this study still has limitations such as limited sample size and short tracking time. In the future, we will further expand the scope of practice, conduct long-term tracking research, and explore the feasibility of transferring this model to other music professional courses. We hope that this study can provide useful references and inspirations for the reform of music education in universities in the new era, especially for the teaching innovation of practical courses.

Disclosure statement

The author declares no conflict of interest.

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