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Development of Orchestration Course to Enhance Music Creative for Piano Major Student

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Abstract

This develops the orchestration course for piano major students and evaluates the orchestration course for piano major students. This study combines the principles of quasi-experimental and survey methods. Samples are 20 students majoring in piano at the School of Music Education of Xinghai Conservatory of Music. Research instruments are pretest and posttest, questionnaire, and interview. Data were analyzed by statistics and content analysis.The findings revealed that the orchestration course for piano major students consists of Music Composition Theory Foundation (a=0.9333), Instrument combination and part arrangement (a=0.898), Harmony processing and form structure (a=0.857), and Dynamics and effect processing (a=0.871), all of which are greater than 0.8, indicating that the pretest data has high reliability and the reliability of the research data is excellent and can be used for further analysis. The orchestration courses improve students' comprehensive musical abilities and promote their all-round development in many aspects. However, there are also some problems in the course, such as insufficient resources, limited technical support, and insufficient cooperation opportunities, which must be addressed and improved. In order to solve these problems and further optimize orchestration courses, it is recommended that musical instrument and orchestration resources be increased and more robust technical support provided. By continuously combining students' feedback to improve orchestration courses, we can better meet students' needs and enhance teaching effects and learning experiences. Such efforts will help elevate students' learning experience to a new level and achieve better teaching outcomes

Keywords: *Orchestration Course, Piano Major Student, China.*

Introduction

Music is an art form that integrates technology and emotion. The original intention of music education is to cultivate well-rounded musical talents. For piano majors, the technique serves as the cornerstone of musical performance, giving students the ability to play and the confidence to do so. However, solely focusing on mechanical practice in pursuit of technical proficiency may lead to neglecting music's emotional and conceptual aspects. Consequently, traditional piano teaching methods often fail to stimulate students' creativity fully. Orchestration, as a crucial subject in composition, plays a significant role in piano majors' musical education and creative development. Orchestration involves allocating a piece's notes, melodies, harmonies, and rhythms to different instruments or voices to create a complete, rich, and expressive musical work. Piano majors can significantly enhance their musical creativity and overall abilities by accumulating a vast repertoire of musical pieces and combining them with orchestration studies.

Moreover, the ability to compose allows for a more profound expression of students' inner feelings. Mastering orchestration techniques enables individuals to comprehend how great composers controlled the sensitivity of symphony orchestras and how each composer uniquely utilized instruments to serve their musical concepts creatively. Higher music institutions are regarded as essential bases for cultivating professional musicians and are destinations for further advanced study for piano learners. In these institutions, the curriculum is comprehensive, including piano and other courses such as music theory, harmony, composition, sight-singing, and vocal accompaniment. However, over the years of teaching piano in higher education, the author has observed limitations in the teaching methods despite the presence of excellent faculty teams and abundant teaching resources. Students in piano performance refrain from engaging in piano and music composition. They only play by reading sheet music and need help with using

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sheet music. According to feedback from current teaching, most harmony courses focus mainly on traditional four-part harmony, and composition courses primarily emphasize traditional compositional techniques, often detached from practical application. Orchestration courses can help students understand music comprehensively, teaching them how to compose, adapt, and perform music for different instruments, deepening their understanding of various instruments' timbre, range, and characteristics. Orchestrating skills enable students to compose and arrange music, which is particularly important for those aspiring to become composers or arrangers. Through an in-depth study of orchestration, students can better comprehend the holistic nature of music, create memorable works of music, and make more significant contributions to the field of music. In addition to curriculum content, teaching methods are also crucial. Therefore, exploring how to implement one-to-two, group lessons, or collective lessons and developing more suitable curriculum content for such formats is necessary. A comprehensive curriculum system should also be established to ensure that students receive practical guidance and cultivate comprehensive music qualities, enhancing their music listening and cooperative abilities in such teaching environments.

Objectives

To develop an orchestration course to enhance the music creative ability of piano major students.

To evaluate the orchestration course to enhance the music creative ability of piano major students

Conceptual Framework

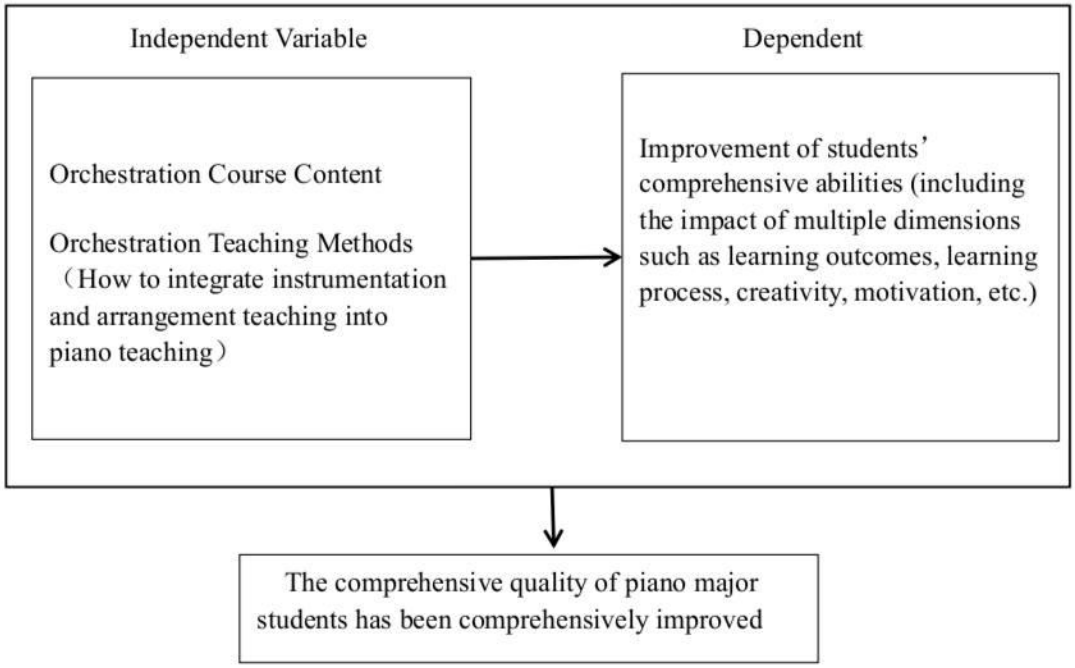

Figure 1. Conceptual Framework

Orchestration

Orchestration is a complex and exquisite art and science that requires a deep understanding of instrument characteristics, music theory, and harmony. It also requires composers or arrangers to possess creative thinking and aesthetic awareness. Through systematic study and practice of orchestration, they can better

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understand and master music composition techniques, creating expressive and compelling musical works for orchestras or ensembles (Adler, 2016).

Orchestration involves knowledge of music theory and harmony. Composers or arrangers need to have a profound understanding and mastery of music structure, harmonic principles, and principles of melodic development. Only through an in-depth study of music theory can rational orchestration choices be made, ensuring the perfect integration of melody and harmony in the composition. Additionally, knowledge of harmony can help composers maintain harmony and unity when writing orchestrations, ensuring that the relationships between different instruments are correctly arranged, resulting in a more prosperous and harmonious overall musical effect(Li,2018).

The fundamental knowledge and skills of orchestration are the starting point for learning this art and science and the key to understanding and applying orchestration. This section will explore the basic concepts of orchestration, skill requirements, and learning pathways to provide a foundation for creating a practical orchestration course for piano majors. The basic orchestration concepts include understanding instrument characteristics, timbre, range, and performance techniques. Instruments are the basic materials of orchestration, and composers or arrangers need to have a deep understanding of the characteristics of each instrument, including string instruments, woodwind instruments, brass instruments, percussion instruments, and more. They must understand instruments' timbral characteristics, range, and performance techniques to combine them and effectively create rich and colorful musical effects. Orchestration involves understanding music structure, harmony, and melodic development. Composers or arrangers must delve into music theory, mastering the basic principles of harmony progressions, melodic development, and music structure. They can effectively write music for orchestras or ensembles through an in-depth understanding of music structure and harmony, ensuring harmony, unity, and expressiveness (Xu, 1984).

The Pragmatism Curriculum Pedagogy Theory promotes an educational approach that emphasizes practicality, experiential learning, and the application of knowledge in real-world contexts. It underscores the importance of nurturing students' practical application skills and problem-solving abilities by integrating theoretical concepts with hands-on experiences. In orchestration courses, this entails strongly emphasizing practical exercises where students actively arrange music to enhance their orchestration skills. Moreover, the theory advocates developing critical thinking skills through active exploration and problem-solving tasks. Students can effectively apply their acquired knowledge and skills by aligning educational objectives with real-life situations. Thus, orchestration courses should clearly define objectives and incorporate practical projects to ensure students attain proficiency in orchestration techniques and can confidently apply them in practical scenarios (Ding, 2019).

As an educational theory and practical approach, pragmatism has attracted widespread attention and educational research. By emphasizing practicality, experiential learning, and applicability, pragmatism connects education with real-life situations, enabling students to apply their knowledge and skills in practical contexts. Studies in the literature have explored the application and effects of pragmatism in educational practice. Research findings indicate that pragmatist educational theory helps cultivate students' practical application abilities and problem-solving skills, facilitating their learning and development in real-world environments. Additionally, pragmatism is an effective teaching method that can stimulate students' interest in learning, enhance their motivation, and increase their engagement. However, some studies also highlight challenges associated with pragmatist education, such as balancing theoretical knowledge with practical experience and ensuring the attainment of educational goals. Therefore, future research should investigate the application effects of pragmatism in various educational settings and disciplines further and propose more effective teaching strategies and methods (Wu,2013).

The Pragmatism Curriculum Pedagogy Theory offers an educational theory and practical approach emphasizing practicality, experiential learning, and applicability. It provides essential theoretical guidance for creating orchestration courses tailored to piano majors. When designing orchestration courses, it is crucial to consider students' participation and experiences, focusing on fostering their problem-solving abilities and critical thinking. Additionally, clear educational objectives should be outlined to ensure students genuinely master orchestration skills and can apply them in practical contexts (Chen, 2017).

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Orchestration Course

The development of orchestration courses marks a significant milestone in the long history of music education and composition, reflecting continuous exploration and practice in these fields. The origins of orchestration courses can be traced back to the classical music period when composers began systematically exploring combining different instruments and their sonic effects to enrich musical works' expressive range and palette. During the 19th and early 20th centuries, orchestration courses became essential subjects in music conservatories and schools. Many renowned music educators and composers started incorporating orchestration into the music education curriculum, establishing various teaching methods and theoretical frameworks for orchestration courses. These courses focus on studying instrument characteristics and sonic effects and emphasize the relationship between orchestration and harmony, structure, and expression, providing students with comprehensive orchestration education (Lin, 2017).

With music education's continuous development and innovation, orchestration courses have been constantly enriched and improved. Modern orchestration courses cover traditional orchestral arrangements and include content such as electronic music orchestration and cross-genre orchestration. Students can learn traditional orchestration techniques, the latest music production technologies, and sound effects, making orchestration courses more closely aligned with the practical needs of music composition and performance. Moreover, with the rapid development of information technology, orchestration courses are gradually leveraging the Internet and multimedia technology for innovation. Many music conservatories and schools have begun offering online orchestration courses, providing more students with opportunities and platforms to learn orchestration. Through online teaching platforms, students can learn orchestration knowledge and skills anytime and anywhere, engage in discussions, and interact with excellent orchestration instructors to improve their proficiency. In conclusion, the development of orchestration courses has undergone a long historical process, from exploration and practice in the classical music period to modern diversification and innovation. In the future, with the continuous development of music education and technology, orchestration courses will continue to keep pace with the times, providing students with a richer and more comprehensive music education experience and nurturing more outstanding music composition talents (Xu, 2008).

The Teaching Method of the Orchestration Course

The teaching methodology of orchestration courses is crucial concerning effectively imparting orchestration skills and knowledge to students. In selecting and designing teaching methods, various approaches and strategies are aimed at helping students better understand and master the fundamental principles and application techniques of orchestration. A standard teaching method is case-based learning. Students can understand the characteristics of different instruments, orchestration combinations, and the relationship between musical structure and harmony by analyzing and discussing actual orchestration cases. Teachers can choose classical orchestration pieces or students' compositions as cases, guiding students in analysis and discussion to cultivate their orchestration thinking and creative abilities. Secondly, teaching methods also include a combination of theoretical lectures and practical exercises. In classroom teaching, teachers can lay the theoretical foundation by explaining the basic principles of orchestration and introducing the characteristics of different instruments and performance techniques. Simultaneously, emphasis should be placed on practical exercises, allowing students to arrange music themselves and engage in actual orchestration practice and projects, enhancing their orchestration skills (Ding, 2019).

Teaching methods may involve group discussions and collaborative learning. Through group discussions and collaborative learning, students can exchange and share orchestration experiences, solve problems, and promote mutual learning and growth. Teachers can design group projects or tasks for students to complete cooperatively, fostering their spirit of teamwork and communication skills. Moreover, teaching methods should also prioritize personalized and differentiated instruction. Tailoring teaching methods and strategies to different students' learning characteristics and needs, teachers can flexibly adjust teaching content and approaches, ensuring that each student receives effective learning and guidance. Encouraging students to create and practice based on their interests and strengths is also essential, allowing them to unleash their potential (Zhang, 2017).

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Application of the Orchestration Course in Piano Teaching

The training objectives for piano major students encompass comprehensive development in piano skills, music theory, music history, and music performance. Understanding these training objectives is crucial before designing an orchestration course for them because it directly impacts the course's design and content. Piano major students must master high-level piano skills, cultivating exceptional performance abilities through practice and playing. Therefore, in an orchestration course, enhancing their piano performance level and expanding the application range of performance skills can be achieved through learning orchestration techniques and practicing arranging music pieces. Additionally, piano major students require a solid understanding of music theory and analytical capabilities, including knowledge of harmony, musical forms, and rhythm and the fundamental principles of orchestrating different instruments' timbres and voice parts. Hence, in an orchestration course, fostering students' comprehension and analytical skills in music through learning the basic principles and analytical techniques can provide theoretical support for their music composition and performance endeavors (Zhang, 2017).

Furthermore, piano major students need to understand the background of music history and music culture. They should be familiar with music works from different periods and styles, understanding the historical and cultural contexts behind them to comprehend better and interpret musical pieces. Therefore, in an orchestration course, students can learn about music history and culture by studying orchestration works from different periods and styles, enriching their musical knowledge and perspectives. The training objectives for piano major students include mastering high-level piano skills, a solid understanding of music theory and analytical capabilities, and knowledge of music history and culture. When creating an orchestration course for them, appropriate course content and teaching methods should be designed based on these training objectives to help them comprehensively improve their musical literacy and professional skills, laying a solid foundation for their future music careers (Xu, 2008).

As an essential group in music education, piano majors need to learn a wide range of music theory, techniques, and performance skills, which are crucial for their comprehensive development. They must thoroughly analyze their educational goals and professional requirements to create a practical orchestration course. Piano majors need to master solid piano playing skills, so the orchestration course should provide advanced training and practical opportunities. They also need a rich understanding of music theory, so the course should include systematic learning and practical applications. Furthermore, they require solid musical expression abilities and performance skills, so the course should offer diverse opportunities to learn various music pieces and techniques, helping them cultivate unique musical personalities and expressive styles (He,2020).

In summary, piano majors must master solid piano playing skills, have a rich understanding of music theory, and possess strong musical expression abilities and performance skills. When creating an orchestration course for them, appropriate course content and teaching methods should be designed based on these professional requirements. This will help them comprehensively improve their musical literacy and professional level, preparing them adequately for their future music careers.

Pragmatism Curriculum Pedagogy Theory

Creating a course requires a clear understanding of student's learning needs and teaching objectives. It is crucial to align with piano majors' cultivation goals and professional requirements, determine the core content and critical tasks, cover aspects such as piano performance skills, music theory knowledge, and orchestration techniques, and foster students' creative thinking and aesthetic awareness. Building on this foundation, selecting appropriate teaching resources and methods is essential. This involves choosing suitable materials, references, and learning resources tailored to the characteristics of the orchestration course and student's learning needs, as well as providing diverse learning materials and practical opportunities. Incorporating modern teaching techniques and multimedia technology diversifies teaching methods and activities, enhancing teaching effectiveness and student engagement.

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Furthermore, crafting an appropriate course structure and content is necessary. Based on students' learning needs and teaching objectives, they outline the overall framework and teaching plan, including course arrangement, scheduling, content, and progression, prioritizing the integration of theory and practice and emphasizing student involvement and experiential learning to stimulate their interest and initiative. Finally, developing sound assessment methods and criteria is imperative. Designing corresponding assessment methods and standards based on teaching objectives and content ensures comprehensive evaluation and effective feedback on student learning progress. By comprehensively considering factors such as students' learning needs, teaching resources, methods, and assessment, the effectiveness and practicality of the orchestration course can be ensured, providing piano majors with comprehensive orchestration education and assisting them in achieving tremendous success in music composition and performance (Wang, 2017).

In orchestration courses, assessing the rehearsal skills for ensemble performance is crucial. Students need to develop the ability to conduct rehearsals for musicians, listen to collaborative performances among various instruments, and understand the coordination between different instruments to enhance their musical expression and overall proficiency. Therefore, the evaluation should focus on students' performance and techniques during rehearsals and their coordination and cooperation with other instruments. This includes assessing aspects such as intonation, rhythm, tone color, dynamics, and expression to evaluate students' performance levels and capabilities comprehensively. The evaluation should also consider students' roles and responsibilities during rehearsals, encouraging them to actively leverage their strengths to improve the overall rehearsal effectiveness. Feedback from evaluations should be promptly communicated to students, helping them understand their strengths and weaknesses and develop corresponding learning plans and improvement strategies to foster their learning progress and development (Li, 2017).

The assessment of students' performance holds a crucial position within the orchestration course. Through evaluating students' learning situations and performances, issues can be promptly identified, teaching strategies adjusted, and students' motivation stimulated, thereby facilitating their learning progress. The assessment covers various aspects, including theoretical knowledge, practical skills, and creative thinking, employing diverse and flexible evaluation methods encompassing quantitative and qualitative approaches. Clear and impartial assessment criteria are established based on the evaluation content and methods to ensure the objectivity and reliability of assessment results. Feedback on assessments is promptly provided to students, facilitating communication and discussion to assist in formulating learning plans and improvement strategies. Actively engaging with students and collaborating in problem-solving endeavors further promotes their learning advancement and development (Chen, 2020).

Student performance assessment methods should be diverse and flexible, tailored to the course's characteristics and the student's needs. Evaluation methods may include both quantitative and qualitative approaches, utilizing traditional methods such as written tests, assignments, and examinations, as well as practical assessment methods such as performance demonstrations, classroom discussions, and group projects, to comprehensively understand students' learning situations and performances (Sherrill, 2022).

Research Methodology

This study combines the principles of quasi-experimental and survey methods. Quasi-experimental methods involve manipulating independent variables but not randomly assigning research participants or groups; survey methods collect data through observation and questionnaires (Creswell & Clark, 2018). From 100 students majoring in piano at the School of Music Education of Xinghai Conservatory of Music, 20 students were randomly selected as the experimental subjects of this study to study the impact of arranging songs on students' engagement and musical skills.

The sample of this study are divided into two parts:

Part I: A group of 5 music education experts will be formed to be responsible for the IOC project test syllabus and curriculum implementation plan. These experts will review and evaluate the content and

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feasibility of the syllabus and provide professional opinions and suggestions for the implementation of the course.

Part II: Twenty students will be randomly selected from 100 registered piano majors of China Xinghai Conservatory of Music to participate in the study and research. The research will focus on these students' performance in comprehensive music training and modern music creation and their needs and effects on orchestration courses.

The selection of key informants has the following criteria:

Professional background and experience: Key informants need professional knowledge and experience related to the research topic. They may be scholars, experts, practitioners, or have a rich educational background, especially in the field of composition.

Unique insights and perspectives: Besides their professional knowledge, key informants should be able to provide unique perspectives and deep insights. This usually stems from their multi-field experience, which enables them to fully understand the research topic and provide novel insights, especially in music composition.

Academic reputation and authority: Experts who enjoy a certain degree of fame in the field of composition often have higher academic reputation and authority. Their views and opinions are more influential and help enhance the credibility of research, especially in music creation.

Rich resources: Key informants in the field of composition may provide rich resources, such as data, literature, or research results, which can help researchers delve deeper into the topic and provide more materials and a basis for research.

Research Tool

Pretest and posttest. This test assesses students' mastery of basic instrumentation

technical skills, theoretical knowledge, symbols, and musical understanding. Students must complete an original piece of music before and after the course and provide detailed analysis and explanation.

Self-report questionnaire. A pretest self-report questionnaire will independently assess students' ability to arrange music and whether they have previous experience with orchestration and music composition, thereby assessing the impact of these variables on student responses. A posttest self-report questionnaire assesses the students' experience with orchestration and learning outcomes. This questionnaire will measure students' perceptions and feelings of engagement and enjoyment in all experiences and activities about a set of achievement criteria that may be met and motivation to learn the orchestration course.

Posttest interviews. The interview items for students are constructed based on the theoretical framework in the literature review section. These items are based on some theoretical frameworks. Three to five experts will then review the teaching. Revisions will be made based on the opinions and comments of these five experts. After obtaining the validated interview questions, the researcher decided on the interview questions are shown in Tables 1 and 2:

Course Design

To provide more targeted instrumentation courses for piano students, we studied foreign methods for creating arrangement courses and evaluating students' skills. After repeated research and approval by five experts from the IOC, we finally built a course setting for piano students to learn instrumentation. The course has 15 lessons, divided into four main learning stages to improve students' music understanding, creative ability, performance skills, and music education techniques.

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Phase 1: Basic cognition and single melody creation (Lessons 1-3)

In this phase, the course establishes students' basic cognition of string instruments and their functional properties. In the first lesson, students learn basic knowledge of string instruments' structure, range, tuning, and fingering to stimulate their interest in learning. In the second lesson, by creating a single melody of string instruments, students will master basic creation skills and understand the timbre and characteristics of different instruments through practical practice. The third lesson focuses on creating duets between piano and string instruments. Students will learn how to reasonably combine piano and string instruments and use the alternation techniques of accompaniment, main melody, and primary and secondary melody to create fascinating musical works.

Phase 2: Polyphonic Creation for Strings and Piano (Lessons 4-6)

Phase 2 aims to explore polyphonic creation for strings and piano in depth. The fourth lesson guides students to explore the creation of string duets further, combining different string instruments to enrich the sound layers of music. The fifth lesson expands to piano and string trio, where students will learn how to create harmonious musical effects through interweaving timbres of different instruments and arranging melodies and harmonies. The sixth lesson focuses on the creative combination of cello and other instruments, exploring the unique musical effects produced by the combination of cello and different instruments.

Phase 3: Arrangement and Multi-Instrument Combination (Lessons 7-11)

In this phase, students will learn the techniques of music arrangement and multi-instrument combination. The theme of the seventh lesson is the arrangement of piano works for string ensembles, allowing students to practice arrangement techniques. The eighth lesson focuses on the arrangement of duets between woodwind instruments and piano. Students will learn the types, timbre characteristics, and basic arrangement techniques of woodwind instruments. The ninth lesson combines the arrangement of trios of piano, woodwind instruments, and string instruments to enhance students' arrangement ability further. The tenth lesson focuses on creating single melodies for Chinese plucked instruments and encourages students to incorporate elements of traditional Chinese music into their creations. The eleventh lesson explores the arrangement of duets between piano and traditional Chinese instruments in depth. Students will learn how to arrange these instruments into harmonious duets.

Phase 4: Comprehensive application and creation of final works (Lessons 12-15) The last stage focuses on comprehensive application and creation. The twelfth lesson expands to the arrangement of piano and Chinese string instrument trio, exploring the infinite possibilities of music creation. The thirteenth lesson explores different music styles and arrangement techniques in depth. Students will understand the characteristics of various music styles, such as classical, pop, and jazz, and use their knowledge to create music that conforms to different music styles. The fourteenth lesson guides students to complete the final repertoire to ensure that each student can grasp the assignment requirements and create high-quality work. The last lesson presents students' final works as a report concert to test their creative ability and provide valuable stage experience.

Through these four stages of learning, students can not only master the theoretical knowledge of arrangement but also improve their creation and arrangement skills through practical operations, laying a solid foundation for future music creation.

Data Collection

Data collection will include two stages: quantitative and qualitative. Quantitative data collection will be conducted in three different ways: music skills and creativity tests, questionnaires on learning motivation and participation in orchestration teaching method learning, and interviews with students about their learning experience (challenges and solutions).

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First, 100 students will be asked to fill out the registration intention form to understand the student's learning motivation and participation attitude through these registration intention forms. Finally, 20 students were selected as the subjects of the teaching experiment, and a pre-questionnaire will be used to measure and prove the students' experience. All students will survey the first questionnaire before the experiment begins. In this stage, students fill out the self-test questionnaire form to assess their views on their initial motivation and participation in learning the orchestration course, as well as to understand the students' basic level and ability before the orchestration course teaching, providing a comparative basis for the subsequent teaching effect evaluation.

In the second stage, the researcher used the same questionnaire in the posttest survey to assess the students' motivation and participation level after learning the orchestration teaching method course and to measure the students' development of music skills and creativity.

In the third stage, semi-structured interviews were conducted with students—the interviews aimed to explore students' views on the problems and solutions in the orchestration teaching course.

Data Analysis

Reliability analysis is critical to ensuring the rationality of course design and data reliability when constructing a practical instrumentation course. Cronbach's α reliability coefficient is the most commonly used reliability coefficient, which is used to evaluate the consistency between the scores of each item in the scale to judge the internal consistency of the scale. Its formula is $\alpha = (1 - (\Sigma Si^2 / ST^2) * (K / (K - 1)))$, where K is the total number of items in the scale, Si^2 is the intra-item variance of the score of the i-th question, and ST^2 is the variance of the total score of all items. As can be seen from the formula, the higher the α coefficient, the higher the internal consistency of the items in the scale.

The reliability coefficient range is generally considered above 0.8 for the best, between 0.7-0.8 for good, and between 0.6-0.7 for acceptable. Therefore, it is very important to ensure that the reliability coefficient is at a high level when designing and evaluating instrumentation courses.

For the quantitative research questions in the first two experimental designs, paired sample t-tests will be used for data analysis. This test will compare the level of change in motivation, engagement, and learning outcomes before and after the experiment and can determine whether the difference in students' average scores is statistically significant.

The researcher will interview participants to collect their views on the challenges encountered while learning the instrumentation course and their solutions. The researcher will then analyze the interview data using thematic analysis. This analysis method will be based on dimensions such as motivation, engagement, skills, creativity, challenges, and solutions to reflect students' responses in the learning process and feedback in the teaching process. This part of the analysis will refer to Creswell & Clark's method (2018).

Results

Orchestration course to enhance music creative ability for piano major student IOC result

In order to build a practical instrumentation course for piano students, it is necessary to ensure the rationality of the course design and the reliability of the data. First, through reliability analysis, the internal consistency of the course is evaluated using the Cronbach α coefficient to ensure that the consistency of each item is above 0.8, which indicates that the course has high reliability. Secondly, through validity analysis, the KMO sampling suitability measurement and Bartlett sphericity test are used to ensure that the KMO value of each dimension is more significant than 0.7, indicating that the scale has good validity and is suitable for factor analysis. Finally, the normality test ensures that the data conforms to the normal distribution, thereby verifying the scientificity and effectiveness of the course design. This analysis shows that the designed instrumentation course has good internal consistency and validity in improving students'

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comprehensive musical and creative ability and can effectively promote improving the comprehensive quality of piano students.

Validity Analysis of the Questionnaire

In order to evaluate the validity of the questionnaires filled out by students after learning, the researchers conducted an exploratory factor analysis (EFA) test to evaluate the structural validity of the questionnaire tool, that is, the consistency of the questionnaire content with its design objectives. Exploratory factor analysis aims to determine the connection between the questionnaire items and their underlying structure to verify whether the tool has reasonable structural validity. KMO measure: The Kaiser-Meyer-Olkin （KMO） measure is used to assess the suitability of the sample. A KMO value greater than 0.7 indicates that the data is suitable for factor analysis. Bartlett's Test of Sphericity: Bartlett's test of sphericity is used to test the correlation between variables. The significance level of this test should be below 0.05 to indicate a sufficient correlation between variables to be suitable for factor analysis.

If both conditions are met, the variables in the questionnaire data have a strong correlation, making them suitable for factor analysis. Through factor analysis, we can evaluate the questionnaire's dimensional structural validity and verify its consistency with the design objectives, thereby ensuring the questionnaire tool's scientificity and reliability.

Reliability Analysis

The reliability coefficient range is generally considered above 0.8 for the best, between 0.7-0.8 for good, and between 0.6-0.7 for acceptable. Therefore, it is very important to ensure that the reliability coefficient is at a high level when designing and evaluating instrumentation courses.

Table 1. Reliability Analysis (Pretest)

Item	N of Items	Cronbach α
Music Composition Theory Foundation	3	0.933
Instrument combination and part arrangement	4	0.898
Harmony processing and form structure	4	0.857
Dynamics and effect processing	4	0.871

As can be seen from Table1, the Cronbach α reliability coefficient value of the theoretical basis dimension of music creation is 0.933, the Cronbach α reliability coefficient value of the instrument combination and voice arrangement dimension is 0.898, the Cronbach α reliability coefficient value of the harmony processing and form structure dimension is 0.857, and the Cronbach α reliability coefficient value of the dynamic and effect processing dimension is 0.871, all of which are greater than 0.8, indicating that the pretest data has a high reliability and the reliability of the research data is excellent and can be used for further analysis.

Table 2 shows the reliability analysis results of the posttest data:

Table 1. Reliability Analysis (Posttest)

Item	N of Items	Cronbach α
Music Composition Theory Foundation	3	0.867
Instrument combination and part arrangement	4	0.865
Harmony processing and form structure	4	0.884
Dynamics and effect processing	4	0.886

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As can be seen from Table 2, the Cronbach α reliability coefficient of the dimension of music creation theory is 0.867, the Cronbach α reliability coefficient of the dimension of instrument combination and voice arrangement is 0.865, the Cronbach α reliability coefficient of the dimension of harmony processing and form structure is 0.884, and the Cronbach α reliability coefficient of the dimension of dynamic and effect processing is 0.886, all of which are greater than 0.8, indicating that the reliability of the posttest data is also excellent. The reliability of the research data is very high.

Based on the above reliability analysis results, whether pretest or posttest, the Cronbach α reliability coefficients of all dimensions are more significant than 0.8, indicating that the items of the orchestration course designed in this study in each dimension are highly consistent and reliable. Therefore, it can be considered that the orchestration course designed in this study has good internal consistency in improving the orchestration ability of piano major students, which provides a solid foundation for further analysis and evaluation of the course's effectiveness.

Student evaluation after used Orchestration course to enhance music creative ability for piano major student result

Table 3. KMO and Bartlett's Test (Pretest)

	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity (p-value)
Music Composition Theory Foundation	0.746	0.000
Instrument combination and part arrangement	0.744	0.000
Harmony processing and form structure	0.750	0.000
Dynamics and effect processing	0.772	0.000

From Table 3, the KMO values of the dimensions of music creation theory foundation, instrument combination and voice arrangement, harmony processing and form structure, dynamics, and effect processing are all greater than 0.7. The p-values of the Bartlett sphericity test are all less than 0.05, indicating that the validity of the pretest data is good. All dimensions of the scale are suitable for factor analysis.

Table 4. KMO and Bartlett's Test (Posttest)

	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	Bartlett's Test of Sphericity (p-value)
Music Composition Theory Foundation	0.702	0.000
Instrument combination and part arrangement	0.745	0.000
Harmony processing and form structure	0.784	0.000
Dynamics and effect processing	0.791	0.000

As can be seen from Table 4, the KMO values of the dimensions of music creation theory foundation, instrument combination and voice arrangement, harmony processing and form structure, and dynamic and effect processing are all greater than 0.7. The p-values of Bartlett's sphericity test are all less than 0.05, indicating that the validity of the posttest data is also good. All dimensions of the scale are suitable for factor analysis.

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Based on the above validity analysis results, whether pretest or posttest, the KMO values of all dimensions are more significant than 0.7. The p-values of Bartlett's sphericity test are all less than 0.05, indicating that the items of the orchestration course designed in this study have good validity in each dimension and are suitable for factor analysis. Therefore, the orchestration course designed in this study has good validity for improving the orchestration ability of piano major students, which provides a solid foundation for further analysis and evaluation of the effectiveness of the course.

Implementing orchestration courses has significantly improved piano major students' comprehensive musical ability and creative ability. Through reliability analysis, each course dimension's Cronbach alpha reliability coefficients are more significant than 0.8, indicating that the course design is highly consistent and reliable. Validity analysis shows that the KMO values of each dimension are more significant than 0.7, and the p-values of Bartlett's sphericity test are all less than 0.05, indicating that the validity of each dimension of the course is excellent and suitable for factor analysis. In addition, through the normality test, the research data conformed to the normal distribution, further verifying the scientific nature of the data. The test results show significant differences in all dimensions between the pretest and the posttest ($p<0.05$). Students have significant differences in the theoretical basis of music creation, instrument combination and part arrangement, harmony processing and musical structure, and dynamics. There were significant improvements in aspects such as effect processing, and the average value of the pretest was significantly lower than that of the posttest. These analysis results collectively show that orchestration courses significantly positively impact improving piano majors' comprehensive musical and creative abilities.

Interviewing Students in the Experimental Cohort

Before analyzing the student interviews, the researcher would like to explain how the interviewees were selected. In this study, the researcher conducted focus group interviews with 20 interviewees. Due to the large number of interviewees, it was unrealistic to interview one by one, so the focus group interview became the most convenient. The interview mainly included four main questions: 1) The learning experience of the orchestration course. 2) The difference between the orchestration course and traditional music theory. 3) The effectiveness of the orchestration course. 4) Difficulties and challenges when learning the orchestration course.

The focus group interview procedure was as follows: After the experimental activity, the researcher asked each interview question in class. In order to avoid misunderstanding the content of the questions, the interview was conducted in Chinese. After each question was answered multiple times in Chinese, the researcher invited a research team to record and organize the students' responses and categorize them according to the emerging themes. In this course, the researcher classified the students' answer excerpts into five categories and listed their commonalities and percentages in a table. Subsequently, the classification results were explained in detail. The results of the analysis of the interviews with the students are detailed in the table.

Table 5. Themes Emerging from the Student Focus Group Interviews

	Theme extension	N(20)	%
1	Motivation and engagement		
	a.Students reported high interest and engagement in the orchestration course.	18	90%
	b. Students like the content of the orchestration course, such as the introduction of different instruments, learning of playing techniques, analysis of musical pieces, and immediate feedback from practical performances.	20	100%
2	Cognitive and selective skill development		
	a. Instrumentation courses can improve students' cognitive skills, such as harmony arrangement, music	19	95%

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	analysis, and composition, which are transferable to other areas of study.		
	b.Students can notice improved skills in the orchestration course, such as improved playing technique, sense of rhythm, and musical expression.	18	90%
3	Emotional and psychological impact:		
	a. Students feel that the orchestration course can broaden their learning horizons because they are interested in the content.	20	100%
	b. students gained confidence in their musical skills after completing the course tasks.	18	90%
4	Cooperation and mutual assistance		
	a.Students can collaborate with their classmates in the orchestration course to play music and enhance their cooperation.	19	95%
	b.Students can share their orchestration skills and music creation experiences to promote mutual learning and communication.	20	100%

Based on the data and content in the above table, the author can summarize the extension of the following four main themes and explore their specific impacts and feedback in depth:

First, in the interviews, students generally expressed high interest and participation in orchestration courses. The data showed that 18 students (90%) reported strong learning interest and active participation in the course. All 20 students (100%) stated that they particularly enjoyed the content of the course, such as the introduction to different instruments, the learning of performance techniques, the analysis of musical works, and the immediate feedback on practical performances. These factors significantly improve students' learning motivation and participation. Specifically, the instant feedback mechanism in the course allows students to adjust their playing skills quickly. In contrast, the diverse course content stimulates their enthusiasm for learning and reduces the dull feeling of learning.

Secondly, orchestration courses significantly improve students' cognitive skills, such as harmonic arrangement, music analysis, and composition. These skills are not only developed in orchestration courses but can also be applied to other areas of study. Nineteen students (95%) confirmed that their cognitive skills had improved, and 18 students (90%) stated that they had significantly improved their performance skills, sense of rhythm, and musical expression. Through a combination of practical operations and theoretical learning in the course, students gained a deeper understanding of the principles of harmonic arrangement. They were able to apply them in practice flexibly. In addition, the cultivation of music analysis and creation skills enables students to be more confident and calm when facing complex musical works.

The orchestration course also played an essential role in expanding students' learning horizons. All 20 students (100%) said their interest in the course content had significantly increased, thus expanding their learning horizons. In addition, 18 students (90%) were confident in their musical skills after completing the course tasks. This increase in self-confidence has played a positive role in promoting their future learning and performance. Students said that through the challenging tasks and gradually increasing difficulty in the course, they learned more knowledge and skills and cultivated perseverance and determination to overcome difficulties.

Finally, the orchestration course also enhanced cooperation and interaction among students. Nineteen students (95%) reported that their cooperation ability was improved by collaborating with classmates and playing music together. In addition, all 20 students (100%) said they shared their orchestration skills and music creation experience in the course, promoting mutual learning and communication. This cooperative and mutual assistance learning environment helps students progress together and enhances the fun and effectiveness of learning. Specifically, students learned how to listen to others, coordinate different playing

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styles, and complete complex musical works together in group cooperation. This improves their musical literacy and cultivates their teamwork spirit and communication skills.

Although the instrumentation course has achieved remarkable results in many aspects, some problems still need to be solved and improved. For example, the first is the need for course resources. Some students reported that the instruments and instrumentation resources provided in the course are limited and cannot meet the needs of all students. This limits students' practice opportunities and may affect their learning effects. The second needs more technical support. In the operation process, technical problems, such as instrument debugging and software use, are sometimes encountered, affecting students' learning progress and experience. The third is limited opportunities for cooperation. Although the course design emphasizes cooperation and interaction, the opportunities for cooperation between students are limited in actual operation due to time and resource constraints. Increasing the proportion of cooperative projects and collective activities can further promote students' teamwork and mutual learning. By solving these problems, the instrumentation course will better meet students' needs and further improve teaching effects and students' comprehensive abilities.

Conclusion

Orchestration course to enhance music creative ability for piano major student concept and principle

This analysis shows that the designed instrumentation course has good internal consistency and validity in improving students' comprehensive music and creative abilities and can effectively promote improving the comprehensive quality of piano students. Implementing orchestration courses has significantly improved piano major students' comprehensive musical ability and creative ability. Students have significant differences in the theoretical basis of music creation, instrument combination and part arrangement, harmony processing and musical structure, and dynamics. There were significant improvements in aspects such as effect processing, and the average value of the pretest was significantly lower than that of the posttest. These analysis results collectively show that orchestration courses significantly positively impact improving piano majors' comprehensive musical and creative abilities.

These data and interviews show that orchestration courses improve students' comprehensive musical abilities and promote their all-round development in many aspects. However, there are also some problems in the course, such as insufficient resources, limited technical support, and insufficient cooperation opportunities, which must be addressed and improved. In order to solve these problems and further optimize orchestration courses, it is recommended that musical instrument and orchestration resources be increased and that more robust technical support be provided. By continuously combining students' feedback to improve orchestration courses, we can better meet students' needs and enhance teaching effects and learning experiences. Such efforts will help elevate students' learning experience to a new level and achieve better teaching outcomes.

Evaluation of the Orchestration Course for Piano Major Students

To sum up, piano majors have significantly improved their learning interests, cognitive skills, emotions and psychology, and cooperation abilities through orchestration courses. These data and interviews show that orchestration courses improve students' comprehensive musical abilities and promote their all-round development in many aspects. However, there are also some problems in the course, such as insufficient resources, limited technical support, and insufficient cooperation opportunities, which must be addressed and improved. In order to solve these problems and further optimize orchestration courses, it is recommended that musical instrument and orchestration resources be increased and more robust technical support provided. By continuously combining students' feedback to improve orchestration courses, we can better meet students' needs and enhance teaching effects and learning experiences. Such efforts will help elevate students' learning experience to a new level and achieve better teaching outcomes.

Research Implication

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Curriculum Design Enhancement: The findings suggest that a well-structured orchestration course can significantly improve students' comprehensive musical abilities. Future research could explore how integrating these elements (Music Composition Theory Foundation, Instrument Combination, Harmony Processing, Dynamics) into a broader curriculum may impact the overall development of musicians in other instrumental fields.

Interdisciplinary Application: The inclusion of harmony processing, form structure, and dynamics training can be extended to interdisciplinary studies, such as music technology, sound engineering, or film scoring. Research could explore how these skills translate to non-performance careers and whether students can transition smoothly between areas.

Teaching Methodology and Pedagogical Approaches: Understanding how these core elements of the orchestration course are taught, and which methodologies prove most effective, can provide a foundation for developing improved teaching practices. Research could focus on the comparison between traditional and innovative approaches, such as project-based learning or technology-aided composition.

Evaluation and Assessment Techniques: There is potential to study how orchestration courses can be evaluated for their impact on comprehensive musicianship. Research could analyze whether traditional assessment techniques (e.g., exams, performance) or alternative methods (portfolio work, peer reviews) better gauge students' progression in these core areas.

Skill Transferability and Career Readiness: Investigating how skills learned in orchestration courses (instrument combination, harmony processing) contribute to students' readiness for professional music careers or advanced studies can help refine course objectives. Longitudinal studies could track how these abilities influence career paths in music performance, composition, or other music-related fields.

Technological Integration in Orchestration: Research could explore how technology (music software, virtual orchestras) enhances students' understanding of orchestration. Studies can examine whether technology can supplement or replace certain traditional teaching methods, potentially making orchestration courses more accessible or cost-effective.

Cultural and Contextual Variability: The orchestration course structure may have different impacts based on cultural or educational contexts. Future research can look at how these courses are implemented in different regions or countries, identifying whether regional musical traditions or educational standards require course modifications.

All-Round Development and Personal Growth: Research may also investigate how orchestration contributes to students' non-musical development, such as critical thinking, creativity, and problem-solving skills.

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