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The Development of Piano Teaching for Piano Pedagogy Course

Xiaolin Zhang[1], Krisada Daoruang[2]

Abstract

As an ancient and beautiful form of music, piano education plays an important role in college music education. Piano teaching is an important part of college music education and an essential direction of music education research. However, there are still many problems in piano teaching. This study takes piano teaching methods and music education major college students as research objects in this context. This research aims to study and analyze 3 piano pedagogy methods, develop a piano teaching model manual for a piano pedagogy course, and use and evaluate my teaching model manual for a piano pedagogy course. Multiple research tools were used in this study, such as the literature research method, questionnaire, and experimental study. The three piano teaching methods are studied through the collection of literature and data. Meanwhile, the study explored and innovated piano teaching. A questionnaire survey was conducted among 80 sophomore students. These research methods aim to evaluate the impact of innovative pedagogy on improving piano-related quality for students majoring in higher music education. The findings reveal that each of the three teaching methods has its advantages and disadvantages; a suitable piano teaching method should have both the cultivation of skills and the skillful application of the piano, and the new piano teaching method has an excellent application effect in college music education, which can help students improve their piano playing skills and musical expression ability.

Keywords: *Piano Pedagogy, Xin Di Applied Piano Pedagogy, Suzuki Piano Pedagogy, Leschetizky Piano Pedagogy, Piano Education, Piano Skill.*

Introduction

Piano education, a vital component of music education in universities, has faced numerous challenges despite its long-standing importance. These challenges primarily revolve around the disconnect between piano education and its teacher-training objectives, outdated teaching methods, and a lack of innovative approaches that align with modern educational needs. Key issues include a curriculum overly focused on professional skill development, such as playing techniques, while neglecting the comprehensive abilities required of music teachers in primary and secondary schools. This imbalance often leaves graduates underprepared for effective music teaching, undermining the core goal of teacher training in normal universities (Chi, 2019).

The current teaching methodology in piano education is another major concern. General pedagogical principles are often applied without considering the unique aspects of music teaching. This approach neglects the emotional and artistic aspects of piano performance, focusing excessively on technical proficiency. Consequently, students' performances often lack emotional depth and artistic expression. Furthermore, the "one-size-fits-all" teaching model ignores individual learning styles and talents, while insufficient integration of music theory and practice results in a lack of comprehensive musical literacy. The reliance on speculative research methods in piano pedagogy is another limitation. Many studies base their conclusions on experience and theoretical derivation, lacking rigorous experimental evidence and diverse methodologies. This not only reduces the credibility of the findings but also limits their applicability in real-world teaching contexts. Moreover, the overemphasis on utilitarian education—where students prioritize examinations and certifications over artistic development—detracts from cultivating creativity and musical appreciation.

China's piano education has traditionally followed Western models, often emphasizing teacher

[1] Student, Chakrabongse Bhuvanarth International College of Interdisciplinary Studies, Rajamangala University of Technology Tawan-ok, Bangkok, Thailand, Email: xiaolin.zha@rmutto.ac.th

[2] Chakrabongse Bhuvanarth International College of Interdisciplinary Studies, Rajamangala University of Technology Tawan-ok, Bangkok, 10400, Thailand, Email: krisada_da@rmutto.ac.th, (Corresponding Author), ORCID: 0009-0009-5278-5229

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demonstrations and student imitation. While effective in some aspects, this approach restricts students' creativity and fails to utilize modern teaching resources and concepts. Although piano education has become more accessible, the rapid expansion of training institutions has led to inconsistent quality, with many teachers lacking adequate professional training and development. Furthermore, the dominance of foreign piano works in the curriculum leaves students disconnected from their local musical heritage, limiting their cultural understanding and creative potential. Scientific and technological advancements offer both opportunities and challenges for piano education. Tools like intelligent pianos and online courses provide innovative ways to enhance learning. However, effectively integrating these technologies into the curriculum remains an unresolved issue. There is a pressing need for a new piano pedagogy that addresses these challenges by emphasizing artistic expression, creativity, and the integration of local cultural elements.

Three notable teaching methods—Xin Di applied piano pedagogy, Suzuki piano pedagogy, and Leschetizky piano pedagogy—have been explored for their respective strengths and weaknesses. Analyzing these methods provides a foundation for developing an innovative teaching approach tailored to music education students. Such an approach would not only reform piano education in universities but also enhance the overall effectiveness of music education, fostering a more sustainable and culturally enriched future for piano teaching.

Research Objectives

To study and analyze three piano pedagogy methods.

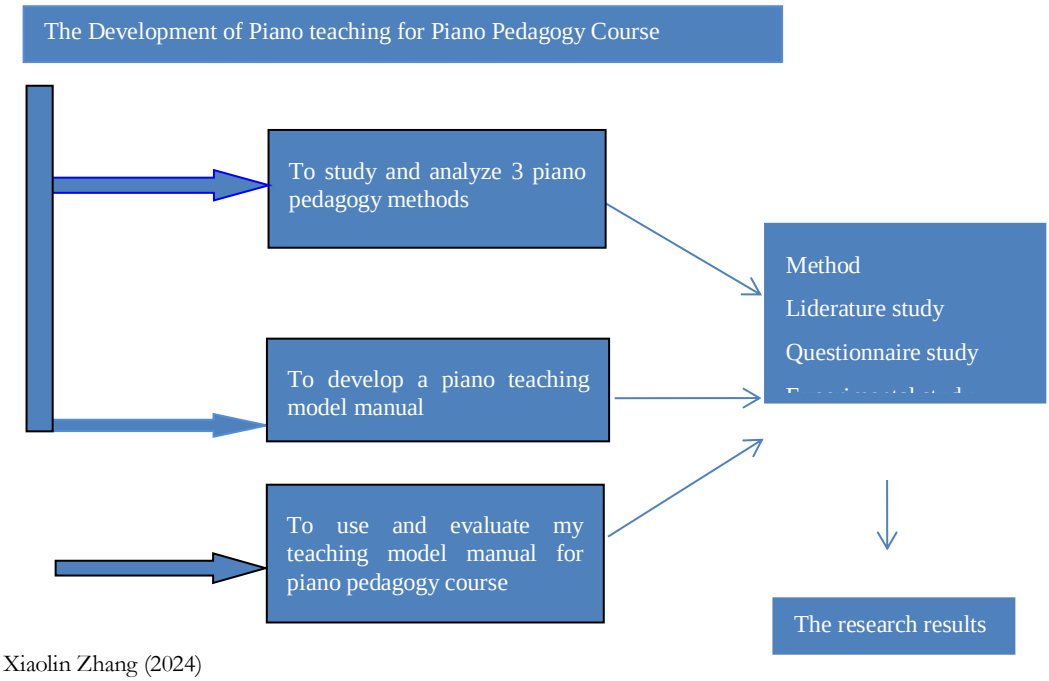
To develop a piano teaching model manual for a piano pedagogy course.

To use and evaluate my teaching model manual for piano pedagogy course.

Conceptual Framework

This research from studying the concepts, theories, and related research papers, which can be used to create a research framework as follows:

Figure 1. Research Conceptual Framework



Source: Xiaolin Zhang (2024)

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Literature Review

Piano Teaching Theory

The development of piano teaching theory has been enriched by numerous studies and publications that address its multifaceted aspects. Situ (2007), in The Piano Pedagogy, offers a comprehensive exploration of piano teaching methods, professional qualities of teachers, grading systems, technical and psychological training, and teaching principles, providing significant theoretical support for piano education in normal colleges. Similarly, Fan (2007), in On Piano Teaching, delves into piano pedagogy using insights from music acoustics, pedagogy, psychology, and sports medicine, revealing the underlying principles of piano teaching with substantial academic value. Chen (2021), in Piano Education Theories and Methods, presents an in-depth discussion on the history of piano education in China, teaching theories, teacher-student dynamics, teaching materials, and performance arts teaching, offering a rigorous and detailed resource. Xiao's article on virtual reality (VR) in piano teaching highlights how VR technology can enhance students' interest and skill development, introducing a technological perspective to piano pedagogy. Additionally, Chen (2020) summarizes the China (Shanghai) International Piano Education Conference, offering a platform for academic exchange on piano teaching methodologies. Hao (2020), in Research on Piano Teaching Theories and Methods, systematically introduces diverse aspects of piano education, making it a rich reference for further research. Lan and Zhou (2024) explore the emotional dimensions of piano teaching through psychological analysis, demonstrating the crucial role of emotion in teaching outcomes. Zhang (2019), in The "Four Main Factors Theory" of Piano Teaching, identifies vision, hearing, touch, and innovative consciousness as essential elements for effective piano performance, emphasizing the coordination of eyes, ears, hands, and brain. These contributions collectively enhance the theoretical foundation and practical approaches in piano education, addressing both traditional and modern perspectives.

Practical Application of Piano Teaching Method

Li (1986) published a book titled Questions and Answers on Piano Teaching for Children. from the perspective of infant physiology, psychology, and pedagogy, the book answers the specific problems in infant piano teaching in the form of questions and answers and provides practical guidance for children's piano teaching. Tong and Sun (1992) published a book titled Piano Learning Guidance for Children, which elaborates on the psychological characteristics of children's piano learning, how to develop good practice habits, correct practice methods, and standardized playing skills, and provides comprehensive guidance for children's piano teaching. Fan (2024) published an article titled "The value and application of double piano teaching method in piano teaching", which pointed out that the dual piano teaching method can improve students' interest in playing and increase their musical accomplishment. The paper also puts forward some suggestions on how to use the dual piano teaching method in teaching. Li, Wang, & Xia (2024) published an article titled My opinion on piano teaching method (6), which gives an in-depth analysis of the technical problems commonly encountered in piano teaching and puts forward solutions. Lin (2024) published an article titled "exploration of the practical path of experiential teaching method in piano teaching in comprehensive universities", which points out the importance of piano education in music major of comprehensive university, puts forward the use of experiential teaching method in piano education, and puts forward some reasonable suggestions. Lei (2024) published an article titled "Deep learning dual neural networks in the construction of learning models for online courses in piano education", which points out that the introduction of deep learning and artificial intelligence in piano teaching will greatly improve the quality of piano teaching, and students can learn Western classical music and music theory knowledge and piano lessons by using AI. At the same time, the article also introduces how to introduce deep learning and artificial intelligence in piano teaching.

Xin Di Applied Piano Pedagogy

The Xin Di applied piano pedagogy integrates humanistic education, technical application, practical cases, and educational innovation, offering a comprehensive framework for piano teaching. First, the theoretical foundation emphasizes humanistic education and student-centered teaching. Ye (2022), in The Educational Concept of "Humanism" in the Xin Di Applied Piano Teaching Method, highlights how this method fosters the holistic development of students. Similarly, Ye (2023), in Disenchantment and Return: The Transformation of Xin Di's Curriculum View of Applied Piano Teaching Method, explores the pedagogy's multicultural values and its effort to reconnect piano teaching with life. Lai (2020), in Research on the Application of The Piano Teaching Method to Promote the Cultivation of Core Literacy of Music Discipline, underscores its focus on people-oriented, diversified, and sustainable development principles.

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Second, technical research and application are central to Xin Di's pedagogy. Liu's article, A Preliminary Study on the Construction of the Piano Course Groups for Musicology Majors in Applied Undergraduate Colleges, discusses the development of structured piano courses with clear goals and systems. Zhang (2022) examines How to Apply the Piano Teaching Method with Xin Di in Zero-Basis Electric Piano Elective Group Classes, proposing evaluation, teaching content, and methods innovations. Qiu (2021), in The Application of Xin Di's Piano Teaching Method in Colleges and Universities under the Core Quality of Music Discipline, outlines strategies such as revising teaching concepts, innovating methods, enriching content, and improving evaluations.

Practical applications include Zhu's (2021) research on preschool education majors, emphasizing real-world teaching techniques. Deng (2022), in On the Inheritance and Innovation of Mencius' Educational Idea by Xin Di's Application of Piano Teaching Method, highlights how Xin Di aligns with Mencius' emphasis on practical application and adherence to educational principles. This pedagogical approach merges traditional values with innovative teaching for comprehensive musical education.

Suzuki Piano Teaching Method

The Suzuki piano teaching method emphasizes the psychological and educational foundation, practical application, and its value in fostering musical ability and emotional expression in children. Theoretical Basis: Zhang (2014) explored the psychological principles of Suzuki's "Talent Education" in a master's thesis, emphasizing that musical talent is nurtured, not innate. Based on studies by Kucenski, Galton, and others, Zhang demonstrated how specific teaching methods and supportive environments can significantly develop infants' musical abilities. Suzuki's focus on repetitive listening to music CDs supports the development of "aesthetic memory," where conscious and unconscious attention play roles in encoding and storing musical information. Additionally, Wu (2003) highlighted the philosophical underpinnings of Suzuki's method, which values innate potential, the importance of educational environment and attitudes, and the holistic development of individuals through music education.

Application Research: Zhu (2023) identified five strategies for applying Suzuki's method: creating engaging learning environments, guiding students to imitate music for enhanced sensitivity, promoting group activities for teamwork, encouraging performance practice to reduce stage anxiety, and involving parents to foster cooperative learning. Cheng (2016) further analyzed its application in China, focusing on educational philosophy, recognition methods, teacher requirements, and student engagement. Practical Cases and Verification: Zou (2022) examined the Suzuki teaching method at the Beijing Suzuki Zebra Piano School, identifying its strengths and limitations, such as neglecting music reading skills and challenges in parental involvement. The study proposed solutions, including fostering music reading skills, harmonizing cognition with interest, and improving home-school collaboration. Value and Promotion: Li (2014) underscored the Suzuki method's contribution to early musical ability, emotional expression, teacher development, and cooperative learning. The study offered strategies for its promotion, emphasizing its adaptability to local contexts in China and its potential for broader adoption in music education.

Leschetizky Piano Pedagogy

The Leschetizky piano teaching method emphasizes individuality, solid technique, and a natural, expressive approach to playing. Theoretical Basis: Leschetizky's core teaching principle is to "teach students according to their aptitude." Zhao (2021) highlights his focus on developing students' personalities and adapting methods to suit individual needs. Jiang (2003) further emphasizes his approach to piano technique, timbre, and sound, noting that Leschetizky valued technique as a tool for expression rather than an end goal. Wang (2004) explored his wrist and arm techniques, stressing full-body coordination and the relaxed, flexible use of wrists and arms in performance. Tian Jun analyzed his fingering principles, showing how Leschetizky designed fingering tailored to each performer and piece, promoting flexibility and individuality. Zhou (2005) outlined Leschetizky's integrating classical techniques with innovative weight-playing methods, achieving a natural and harmonious playing style.

Teaching Achievements and Influence: Leschetizky's pedagogy had a profound global impact. Xue (2022) noted his weight-playing technique's adoption by Russian, Polish, and Shanghai piano schools, each emphasizing unique aspects such as sound quality, teacher training, and basic skills. Wang (2010) explored his influence on Russian, German-Austrian, Polish, American, and Chinese piano traditions, highlighting his systematic and aesthetic teaching principles. Malwine (2020) authored Leschetizky's Piano Teaching Method, the only authorized text on his pedagogy, detailing practical aspects like

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posture, hand shape, scales, chords, and rhythm. Zhu (2003) described Leschetizky as a legendary piano educator whose innovative teaching system shaped modern piano education. His philosophy encouraged students to become self-reliant, and his methods, including collective teaching, remain influential. Leschetizky's contributions have solidified his legacy as one of history's greatest piano pedagogues.

Piano Education

Reforming piano education has been a central research focus. Ding (2024) emphasized the need for a diversified teaching model in higher vocational colleges to promote all-round student development. Liu Chang (2024) discussed aligning piano education with professional and societal needs by integrating curriculum cooperation, folk music, theoretical teaching, and creative writing. Wang (2024) highlighted the significance of integrating "Internet+" into university piano teaching to enhance student engagement and diversify teaching resources. Improving student quality through piano education is another key topic. Zhao (2013) proposed a three-dimensional goal for piano courses to develop students' hearing perception, improvisation, and cultural appreciation. Zhou (2014) emphasized fostering children's musical comprehension, aesthetics, and artistic accomplishment through basic piano education. Curriculum system construction is also explored. Zhang (2011) advocated a student-centered piano module curriculum in colleges, optimizing course content and evaluation. Xu (2006) proposed incorporating performance physiology, psychology, and cultural knowledge into introductory piano theory courses in normal universities.

Piano Skills

Research on piano techniques often focuses on specific works. Zhang (2023) analyzed technical aspects of Tan Dun's Memories of Eight Watercolor Paintings, while Fan (2023) examined techniques like touch, dynamics, and pedal use in Brahms' Sonata No. 1. Studies by Sheng (2021) and Zhang (2019) explored unique techniques in Chinese and Liszt's works, respectively. Skill training methods are also examined. Liu (2020) discussed five-finger exercises and arpeggios, while Lv (2024) provided strategies for mastering octave techniques. Deng (2017) analyzed modern techniques like blocking keys and bowed piano. Finally, studies on pianists' techniques include Wei & Wu (2024) on Matthay's concepts of "Resting, Added-improvement, and Aiming" and Wan (2020) on Alexander's staged approach to piano teaching. These insights deepen the understanding of advanced performance methods.

Research Methodology

This study employs experimental research to evaluate a newly developed piano textbook. Key informants include Di Xin, founder of Xin Di Applied Piano Pedagogy and dean at Xinghai Conservatory of Music; Xiaoni Shen, a Suzuki piano teacher in Canada with a master's degree from Brandon University; Shanshan Wu, a piano teacher at Wuhu College; and Jingjing Wang, an associate professor at Anhui Normal University with a diploma from the Manhattan School of Music. Eighty music education students from Anhui Normal University participated in questionnaires, practice observations, and experimental studies.

The research involves reviewing three piano pedagogies through literature and online resources to create a new piano textbook for music education students. Tools include questionnaires aligning with the research objectives and observation methods for assessing students' playing levels.

Data Collection: Questionnaires: Gather quantitative data on preferences, perceptions, and experiences. Experimental Research: Observe, reflect, and collect data across study phases to evaluate the textbook's impact on learning. Picture Records: Use mobile recordings to document student performances.

Data Analysis: Use word clouds, Cronbach's Alpha, KMO, and Bartlett tests for questionnaire reliability and validity. Apply ANOVA and Pearson correlation to assess learning outcomes and group differences. Conduct qualitative and quantitative analyses to refine the textbook and enhance teaching outcomes.

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Results

Piano Pedagogy Methods

Piano pedagogy focuses on teaching methods tailored to students' needs, significantly impacting their learning outcomes and interest in piano education. This section reviews piano pedagogies in Chinese and international contexts, emphasizing the importance of refining these methods to enhance teaching quality. Through literature analysis, it is evident that piano pedagogy in Chinese music education requires further development to meet evolving educational demands.

Xin Di Applied Piano Pedagogy

Xin Di Applied Piano Pedagogy is a distinctive teaching method developed by Professor Xin Di, the School of Music Education dean at Xinghai Conservatory of Music. After decades of research and synthesis of domestic and international teaching practices, this pedagogy prioritizes creativity, application, and accessibility for a broad audience rather than just elite learners. Xin Di's teaching materials combine modern music styles, such as pop and jazz, to cater to diverse student interests, fostering engagement and enjoyment in learning. Key features include: Music Theory Integration: Comprehensive lessons in music fundamentals, composition, and acoustics improve students' musical perception and interpretative skills; Rhythm and Solfeggio Training: Exercises in rhythm combinations and solfeggio enhance students' timing and auditory skills through integrated singing and piano playing; Gradual Skill Development: Progressive pieces help students tackle challenges systematically, building confidence and technical proficiency; Expressive Performance: Emphasis on individuality and emotion in playing nurtures vivid, compelling performances; Practical Application: Numerous practice pieces and detailed techniques for key control ensure efficient learning and practical application; Teacher-Student Interaction: Demonstrations, four-hand playing, and two-piano sessions foster collaborative learning and enhance skill acquisition.

The Xin Di Piano Pedagogy provides a balanced and holistic approach, combining theoretical knowledge, practical skills, and personalized teaching methods. Its versatility and practicality make it highly valuable for improving students' performance and fostering their musical development.

The Structure and Connotation of Xin Di's Piano Textbooks

The structure of a textbook serves as its foundational framework, encompassing interconnected concepts and principles that reveal the relationships and patterns within the subject matter. Mastery of this structure enables students to understand how various components are interrelated. Drawing from Bruner's theory of knowledge structure, knowledge representation can take three forms: action representation (performing tasks), icon representation (using visual aids), and symbol representation (abstract symbols or language). Xin Di's Applied Piano Pedagogy integrates these forms to guide students through learning and applying piano skills, enabling them to transform the textbook's content into a personalized cognitive structure.

This process involves blending knowledge with students' intuition, memory, and thinking abilities. For instance, the pedagogy includes piano courses such as melody, harmony, and composition, where students apply their unique cognitive skills to build an overarching, intuitive internal framework for piano knowledge.

Importance of Structure in Xin Di's Piano Textbooks

Comprehensive Understanding: Xin Di's textbooks interconnect disciplines like harmony, composition, and piano performance. For example, textbooks such as Playing the Piano and Harmony, Playing the Piano and Composition, and Applied Piano Adjustment present a cohesive structure. Students explore how harmony impacts piano performance, creating melodies with chords, and crafting accompaniments. This integrated approach deepens their understanding of the interrelations within music.

Improved Retention: Bruner's insights suggest that unstructured knowledge is easily forgotten. Xin Di's structured textbooks enhance memory retention by connecting related concepts. For example, while learning about third chords, students study their roles in performance and composition, fostering a deeper understanding. This cohesive framework ensures that students remember and apply their knowledge effectively.

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Facilitating Transfer: The structured design of Xin Di's textbooks promotes learning transfer, where one type of learning influences another. For instance, understanding the C major scale in piano adjustment aids learning other scales (forward transfer). Similarly, students apply harmony knowledge to composition and accompaniment tasks, showcasing specific transfer.

Bridging Knowledge Levels: Xin Di's textbooks merge "advanced knowledge" with "primary knowledge," offering a comprehensive music knowledge library. This integration lets beginners appreciate music's structural beauty early on, covering performance, harmony, composition, solfeggio, and improvisation.

Teaching Process in Xin Di's Pedagogy

Mastering Basic Chords: Students begin with foundational exercises, progressing from simple scales to more complex chord connections.

Composing Melodies: Using notes from tonic, subdominant, and dominant chords, students create simple melodies.

Harmonizing Melodies: Students learn to harmonize melodies using various accompaniment styles, ensuring proper hand position and technique.

Advantages of Xin Di's Applied Piano Pedagogy

Keyboard Harmony Mastery: The pedagogy emphasizes harmony through composition and practical application, helping students create music using harmonic principles.

Flexible Harmony Application: Frequent harmonization tasks enable students to apply harmony concepts with ease over time.

Enhanced Cooperation: Integrating music with games and collaborative activities fosters teamwork and sustained interest.

Targeted Learning: Customized repertoire and plans cater to students of varying skill levels and ages, ensuring relevance and accessibility.

User-Friendly Approach: The clear, intuitive design of the pedagogy simplifies learning for students.

Continuous Updates: The pedagogy evolves to align with changing market demands and student needs, maintaining its relevance and effectiveness.

Xin Di's Applied Piano Pedagogy combines structured, engaging, and targeted teaching techniques to deliver a comprehensive and adaptable piano education. Its integration of theory, practice, and personalization ensures it remains a leading approach in applied piano teaching.

Suzuki Piano Pedagogy

Suzuki piano pedagogy, developed by the renowned violinist and educator Shinichi Suzuki, is one of the most influential teaching methods globally. Initially designed for violin instruction, this approach was adapted to various musical instruments, including piano. The methodology emphasizes creating a relaxed and enjoyable learning environment, promoting a "mother tongue" approach to teaching music. Suzuki believed in cultivating students' interest as the primary motivation for learning and stressed the importance of listening as a foundation for musical development. Students are encouraged to listen to pieces repeatedly and replicate them on the piano, focusing on auditory skills before learning to read sheet music.

Another hallmark of Suzuki's pedagogy is group teaching, which fosters social interaction and collaborative learning. Students progress at their own pace, mastering each piece fully before moving on to new material. Constant review of previously learned works is emphasized, helping solidify skills and concepts. Moreover, parental involvement, especially from mothers, is considered essential. Parents participate in the teaching process, creating a supportive environment that enhances family bonds and collective musical appreciation.

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Suzuki viewed education as both induction and instruction—drawing out latent potential and imparting knowledge and skills in alignment with children's developmental stages. He emphasized nurturing human potential through teaching grounded in "human nature" and "human love." The Suzuki method integrates skill development with emotional and intellectual growth, fostering well-rounded musicianship and personality development.

The Suzuki piano teaching process comprises six steps: 1. Contact: Teachers and students bow to each other before and after each class, fostering mutual respect and strengthening emotional bonds. 2. Imitate: Students listen to themselves, their peers, and recordings of other instruments to develop auditory skills. For instance, while learning Lightly Row from Book One, students might listen to a violin performance to understand legato phrasing and emulate it on the piano. 3. Encourage: Teachers praise students for progress, no matter how small, and adapt teaching strategies to reduce learning difficulties, building confidence and interest. 4. Repeat: Repetition is key to mastering musical skills, akin to how children learn language. This step is approached as a playful, engaging activity. 5. Increase: Gradually, the difficulty and quantity of pieces, skills, and techniques increase. 6. Perfect: Students refine phrasing, timbre, and interpretation, preparing pieces to performance standards.

Advantages of Suzuki Pedagogy

Environmental Emphasis: Suzuki asserted that musical talent develops through nurturing. Like language, consistent exposure to music builds competence.

Interest Cultivation: The method prioritizes creating enjoyable learning experiences, ensuring children are motivated and happy to practice.

Auditory Focus: Listening to professional performances complements daily practice, enhancing understanding and retention.

Music Reading: While initially auditory-based, the Suzuki method introduces music notation gradually, emphasizing its symbolic nature rather than rigid precision.

Specialized Materials: The seven sets of Suzuki piano textbooks are thematically structured, gradually increasing in complexity to address technical and theoretical skills comprehensively. For instance, Book One begins with basic rhythms and finger positioning, while subsequent books include works by Beethoven, Mozart, and Bach, progressing to advanced repertoire.

In summary, Suzuki piano pedagogy combines a nurturing approach, interest-driven learning, auditory emphasis, and structured materials to foster musical and personal development. Its adaptability and comprehensive design make it a cornerstone of modern music education.

Theodor Leschetizky Pedagogy

Theodor Leschetizky, a Polish piano educator and performer, is a key figure in the "Beethoven-Czerny" teaching tradition. His influence has shaped primary piano schools worldwide, including the Russian, Polish, German-Austrian, and American schools. Known for his detailed and practical approach to piano pedagogy, Leschetizky trained many celebrated pianists such as Paderewski, Friedman, and Schnabel. Leschetizky's teaching method emphasizes several key principles. Performance style is crucial, with the pianist's posture resembling a rider on a horse—upright and relaxed, allowing freedom of movement in the arms. Hand shape is also vital; he advocates for a well-trained, muscular hand with broad fingertips and flexible wrists, while maintaining a firm arch in the palm. Wrist exercises play a central role in developing fluid and controlled movements. Leschetizky emphasizes a gentle approach to finger exercises, progressively increasing intensity to develop uniform tone and avoid fatigue. The integration of wrist motion with finger exercises is essential for avoiding hand stiffness and improving sound production.

Leschetizky's technique includes specific scales, broken chords, and finger independence exercises. He advocates for diatonic and chromatic exercises, focusing on fixed fingering positions, which make it easier for students to master different keys. His unique approach to broken chords begins with tonic triads in C major, then gradually extends to other keys, helping students develop familiarity with chord inversions and transitions. He also introduces homophone exercises, where

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the fingers should gently "wipe" the keys, and emphasizes the importance of wrist motion in producing a complete and powerful sound. In terms of the teaching process, Leschetizky emphasizes a step-by-step approach. The first step is ensuring proper posture and hand shape. The second step focuses on developing specific piano skills, such as finger exercises, scales, and chord practice. Next, students must read the score thoroughly to avoid finger mistakes. Understanding the dynamics of each section of the piece is also key, with the melody played louder than the accompanying parts. Lastly, Leschetizky stresses the importance of playing with one's head, not just the hands, encouraging deeper musical understanding and expression.

The teaching advantages of Leschetizky's method are significant. His focus on producing a warm, consistent tone and his approach to hand shape and wrist control have contributed to a modern understanding of weight playing on the piano. His individualized approach to teaching is another key strength. Leschetizky believed in teaching students according to their unique abilities and personalities, ensuring that each student's learning path is tailored to their needs. His emphasis on developing each student's personality in the context of piano playing reflects a broader 19th-century aesthetic ideology.

Leschetizky's teaching system also included training teaching assistants, a mode that contributed significantly to his success. Advanced students would serve as assistants, offering technical guidance to newer students. This system helped reinforce his teaching methods and ensured that high-quality instruction was consistently delivered. This innovation in training teaching assistants played a key role in Leschetizky's ability to train so many distinguished pianists, maintaining high teaching standards and expanding his legacy.

In summary, Leschetizky's piano pedagogy is defined by its focus on sound production, individualized teaching, and systematic skill development. His method continues to influence piano education worldwide.

Analysis of the Piano Teaching Methods in Chinese Music Education Institutions

In order to better understand the current situation of piano for college music education students， this paper chooses Anhui Normal University, Xinghai Conservatory of Music, and Wuhu College to make a comparative study. Among them, Anhui Normal University belongs to teacher training school, Xinghai Conservatory of Music belongs to Music Professional Music College, and Wuhu College belongs to a non-profit private undergraduate college under the supervision of Anhui Provincial Department of Education. It has adopted the Xin Di applied piano teaching method in the music education major of Anhui Normal University. Also It has adopted the Xin Di applied piano teaching method in the music education major of Xinghai Conservatory of music. And it adopted Leschetizky piano pedagogy and Suzuki pedagogy in Wuhu college.

The interview focused on the following three issues: 1. The importance of music education. 2. The goal of music education. 3. The present situation of piano teaching in music education in colleges and universities. All of them think that music education in colleges and universities is an important part of music education in our country. Its educational goal is to cultivate music professionals with solid knowledge of music theory, extensive music cultural accomplishment and good performance ability. At present, music education in Chinese colleges and universities develops rapidly and has made certain achievements, but there are some problems and Professor Di Xin recommended his articles related to piano education to me. From these points of views, From these views, I can draw the following conclusions.

First of all, there are some problems in college music education, such as single teaching mode, outdated textbooks and insufficient teachers. The traditional music teaching mode is mainly classroom teaching, and lacks enough practical links and targeted teaching methods. In addition, the textbooks used in some colleges and universities for music education are outdated and difficult to meet students' learning needs. In terms of teachers, some colleges and universities have problems such as the unreasonable age structure of teachers and low teaching levels. Secondly, college music education has the problem of mismatch between cultivation goals and market demand. Due to the change of employment situation and the development of the music market, college music education should adjust its training objectives to meet the market demand. However, it's a reality that some college music education still focuses on cultivating traditional music professionals, which is out of step with the demand of the modern music market. Finally, there are still some problems in college music education, such as lack of musical innovation ability and weak cross-disciplinarity. With the development of the modern music market, the music field needs more talents with innovative abilities. However, due to the limitations of traditional music teaching mode, there are still deficiencies in cultivating students' innovative abilities. In addition, the interdisciplinary

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nature of college music education is not strong, and the communication and cooperation between music majors and other majors need to be strengthened.

Therefore, college music education needs to reform and innovate the teaching content and methods to better adapt to the needs of the music market and train more music professionals with innovative abilities.

Comparative Results of Piano Teaching Methods

Each of the three teaching methods has its advantages and disadvantages. As a native piano teaching method, Xindi applied piano pedagogy, which is easy to master and has its unique role in familiarity with keyboard harmony and flexible use of harmony. Still, it does not involve much in the fundamental technical problems of the piano. Suzuki piano pedagogy emphasizes interest cultivation and listening training, but some students are not good at reading music. Leschtitsky piano teaching method attaches importance to basic skills training, teaching students according to their aptitude, and has a sound teaching assistant system, which is helpful to cultivate students' good timbilities and rapid skills, but it lacks systematic training in the flexible application of harmony.

Table 1. The Comparison of Three Piano Teaching Methods

	concept	advantages	disadvantages
Xin Di applied piano pedagogy	an original teaching method suitable for Chinese national conditions, has spent more than 20 years in China .	(1) Familiar with keyboard harmony. (2) Flexible application of harmony. (3) Strengthen the sense of cooperation. (4) Strong pertinence. (5) Easy to learn. (6) Continuous update.	Lack of targeted piano skills training.
Suzuki piano pedagogy	Suzuki is a famous violinist and educationalist , His teaching method is one of the four famous teaching methods in the world. The teaching method was first applied to violin teaching, and then gradually extended to other Musical Instruments teaching.	(1) Strengthen the environment. (2) Focus on interest cultivation. (3) Focus on auditory . (4) Pay attention to music reading. (5) Special teaching material.	Some students are not good at reading music score.
Leschetizky piano pedagogy	Theodor Leschetizky, a Polish piano educator and performer, is a very important inheritor of the "Beethoven-Czerny" teaching system. He has trained nearly Budweiser piano players and educators, and has had a profound influence on the major piano schools in the world today.	(1) Get good timbre and fast speed. (2) Teach students according to their aptitude. (3) Teaching assistant training mode.	Lack of flexible application of harmony.

Source: Xiaolin Zhang (2024)

Development of a Piano Teaching Model Manual for A Piano Pedagogy Course.

The piano teaching model I developed combines the strengths of various teaching methods while addressing their shortcomings, drawing on years of personal teaching experience. Its core principles include integrating basic piano techniques with practical application, fostering inner hearing and its transformation into performance, and blending solo and ensemble playing with accompaniment. Additionally, it incorporates excerpts from famous pieces alongside original

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compositions.

The teaching process consists of four key stages: 1. Basic Skill Development: Focuses on scales, arpeggios, and chords in various keys. 2. Inner Hearing: Encourages listening to pieces composed by famous composers or myself to develop students' ability to hear chords and harmonies mentally. 3. Practical Application: Involves piano improvisation, accompaniment, and simple composition. 4. Contrastive Analysis: Students analyze the differences between their accompaniments and those of the composers. By the end of a semester, students will be able to read scores fluently, possess imaginative timbre and accurate phrasing, and identify errors in tone and rhythm. They will have developed solid technical skills and a well-rounded ability to perform, compose, and collaborate. The teaching method is personalized, addressing each student's background, interests, and strengths, ensuring they absorb the material effectively and grow as comprehensive musicians.

The Teaching Advantage of the Piano Teaching Model

The piano teaching model offers several distinct advantages contributing to effective student development.

Unique Teaching Philosophy: This model emphasizes music perception and performance ability, integrating personalized teaching, theory, and practice. It focuses on developing students' understanding of rhythm, melody, harmony, and timbre while fostering creativity through improvisation and composition. Unlike traditional methods, it encourages students to connect emotionally with music and express themselves through playing.

Rich Teaching Content: The model covers a broad range of music theory, including tone, scales, chords, rhythm, and advanced techniques like arpeggios and ornamentation. It also includes composition and harmony, solfeggio exercises to improve listening and performance, and insights into different musical cultures and styles. The extensive repertoire helps students refine their skills, gain performance experience, and build confidence.

Systematic Teaching Methods: The teaching process is structured into five levels, beginning with foundational exercises and progressing to advanced music theory and performance skills. The model emphasizes practice, encouraging students to engage with the material and improve through repetition actively. It also nurtures independent thinking, guiding students to explore music independently and develop their creativity.

Exquisite Teaching Design: The model's design is both comprehensive and systematic, offering a variety of repertoire that caters to different skill levels. It incorporates clear teaching steps, including prelude design, chord practice, and repertoire creation. Regular evaluations allow teachers to identify areas for improvement and provide targeted guidance. The materials also feature rich illustrations and music demonstrations for better understanding.

Strong Applicability: The teaching model is suitable for students of all ages and skill levels, from beginners to advanced musicians. It is adaptable for both individual and group learning environments, making it applicable to various teaching settings, including music schools and training centers. Its practical focus ensures that students can quickly apply their skills in performance, enhancing their musical competence.

In summary, the model's combination of innovative philosophy, rich content, structured methods, and broad applicability strongly supports student growth and musical development.

Table: 2 The New Piano Course Outline

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Round	Basic piano skill	Inner hearing	The application of the piano	Contrastive analysis
The First Round (week1-3)	Works in Key C, G, F C, G, F major scales Climb the stairs Through this practice, students master common basic piano skills, such as: staccato, legato, scale in C, G, F major. Meanwhile, student can play simple piano works with beautiful timber.	One ,two, three A big tree Through this practice, students have the ability to hear the difference among differnet chords in C, G, F major.	A twinkle star Beautiful China Colorful Thailand Through this practice, students can use accompany a melody with the authentic chords in C, G, F major in chords pattern and broken chords pattern.	Lake swan Sonatina OP.55No.2 Spining song Through this practice, students can use piano playing skills and harmonic arrangement skills to complete the accompaniment arrangement of simple songs. Meanwhile, they can notice the difference between their accompaniment and the oringinal work.
The Second Round(week4-6)	Works in Key D, ^{b}B, A D, ^{b}B, A major scales Climb the stairs Through this practice, students master common basic piano skills, such as: staccato, legato, scale in D, ^{b}B, A major. Meanwhile, student can play simple piano works with beautiful timber.	One, two, three A big tree Through this practice, students have the ability to hear the difference among differnet chords in D, ^{b}B, A major.	A happy cat Flying A twinkle star Through this practice, students can use accompany a melody with the authentic chords in D, ^{b}B, A major in chords pattern and broken chords pattern.	Sonatina Sonata Waltz in A Through this practice, students can use piano playing skills and harmonic arrangement skills to complete the accompaniment arrangement of simple songs. Meanwhile, they can notice the difference between their accompaniment and the oringinal work.

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The Third Round(week7-9)	Works in Key bE, a, e bE major scales a minor scales e minor scales Climb the stairs Little bees Through this practice, students master common basic piano skills, such as: staccato, legato, scale in bE major, a minor, e minor. Meanwhile, student can play simple piano works with beautiful timber.	One, two, three A big tree Three, two, one A little sun Through this practice, students have the ability to hear the difference among differnet chords in bE major and a minor, e minor.	A twinkle star A rose Through this practice, students can use accompany a melody with the authentic chords in bE major, a minor and e minor in chords pattern and broken chords pattern.	Waltz (op. 39 no.9) Story on the grassland Prelude in e minor Through this practice, students can use piano playing skills and harmonic arrangement skills to complete the accompaniment arrangement of simple songs. Meanwhile, they can notice the difference between their accompaniment and the oringinal work.
The Fourth Round(week10-12)	Works in Key d, b, g D, g, b minor scales Little bees Through this practice, students master common basic piano skills, such as: staccato, legato, scale in d, g, b minor. Meanwhile, student can play simple piano works with beautiful timber.	Three, two, one A little sun Through this practice, students have the ability to hear the difference among differnet chords in d, g, bminor.	A rose Through this practice, students can use accompany a melody with the authentic chords in d, g, b minor in chords pattern and broken chords pattern.	Sonata in d minor Waltz op. 69 no. 2 Venetianisches Gondellied op. 19 no. 6 Through this practice, students can use piano playing skills and harmonic arrangement skills to complete the accompaniment arrangement of simple songs. Meanwhile, they can notice the difference between their accompaniment and the oringinal work.

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The Fifth Round(week13-14)	Works in Key #f, c #f, c minor scales Little bees Through this practice, students master common basic piano skills, such as: staccato, legato, scale in #f, c minor. Meanwhile, student can play simple piano works with beautiful timber.	Three, two, one A little sun Through this practice, students have the ability to hear the difference among differnet chords in #f, c minor.	A rose Through this practice, students can use accompany a melody with the authentic chords in #f, c minor in chords pattern and broken chords pattern.	Venetianisches Gondellied op. 30 no. 6 Sonata pathetique Through this practice, students can use piano playing skills and harmonic arrangement skills to complete the accompaniment arrangement of simple songs. Meanwhile, they can notice the difference between their accompaniment and the oringinal work.
The Sixth Round(week15-16)	Play all the authentic chords you have learned.	Listern to all the authentic chords you have learned.	Accompany a given melody 1.Authentic chords within 3 sharps and flats in chords pattern and broken chords pattern. 2.Skills:staccato, legato, scale within 3 sharps and flats. 3.Application:harmonize a melody with basic chords within 3 sharps and flats, play the major piano works with beautiful timber.	Play some piano works in major and minor.

Source: Xiaolin Zhang (2024)

Each specific course goal will be consistent with the practical aspects of teaching. The goal will be listed after continuous adjustment according to the student's response and teaching situation. The choice of repertoire can be changed at any time according to the actual student situation.

Project Objective Coherence Index (IOC) Evaluation Scale, the three experts are generally satisfied with the design of the new piano teaching model. All items have an IOC (Item-Objective Congruence) greater than 0.5, indicating that all items pass the IOC criteria and the syllabus has good content validity, making it suitable for subsequent experiments. The experts agreed on items 1, 2, 5, 7, 8, 9, 12, 13, 14 and 17. However, the scores for items 3, 4, 6, 10, 15and 16 were relatively low, at 0.667. This suggests that it is not yet entirely determined whether this study will bring about the arousal of interest, cultivation of personality, classroom interaction, utilization rate of available resources, mastery of skills, and suitability of format. This result indicates that further research and experimentation are needed to confirm the effectiveness of these aspects. The reliability analysis of the student questionnaire is 0.890, which indicates that the internal consistency of the measurement tool is at a very high level. For "CITC value", the CITC value of analysis items is more

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significant than 0.4, indicating a good correlation between analysis items and a good reliability level. In summary, the reliability coefficient value of the research data is higher than 0.8, which comprehensively indicates that the data reliability quality is excellent.

KMO and Bartlett were used to verify the validity of this survey. The analysis results showed that the KMO value was 0.732, between 0.7-0.8. According to the KMO value, the value was between 0 and 1. In general, a KMO value greater than 0.6 is considered acceptable. Therefore, the KMO value of 0.732 indicates that there is a certain degree of correlation between the variables in the analysis, which is suitable for extracting information with good validity and can be used for factor analysis. The P-value of the Bartlett sphericity test is 0.000, which is less than the significance level (usually 0.05), which means that the covariance matrix between the variables is not an identity matrix and there is a certain degree of correlation.

It can be seen from Table 4.4 that the common degree value corresponding to all research items is higher than 0.4, indicating that the information of research items can be effectively extracted. KMO value is 0.732, greater than 0.6, the data can be effectively extracted information. In addition, the variance explanation rate of one factor is 82.198%, and the cumulative variance explanation rate after rotation is 82.198%>50%. This means that the information of the research can be effectively extracted. Finally, the factor load coefficient is combined to confirm whether the correspondence between the factor (dimension) and the study item is consistent with the expectation. If it is, it indicates the validity; otherwise, it needs to be re-adjusted. When the absolute value of the factor load factor is greater than 0.4, it indicates that the option corresponds to the factor. In summary, the results of validity analysis show that there is a certain degree of correlation between variables, which is suitable for further factor analysis or other correlation analysis. The analysis results are shown in Table 3

Table 3. Validity Analysis of Student Questionnaire

Name	Factor load coefficient	Common degree
	Factor 1	
2. If you have used the new piano textbook, how do you think the textbook helps you to improve your piano performance?	0.903	0.815
7.How do you think this textbook will help you to stimulate your learning motivation and enthusiasm?	0.887	0.786
14.Do you think the new piano lesson are helpful to your piano learning	0.930	0.865
Characteristic root value(prerotation)	2.466	-
Variance interpretation rate %(before rotation)	82.198%	-
Cumulative variance interpretation rate %(before rotation)	82.198%	-
Feature root value	2.466	-
Variance interpretation rate %(after rotation)	82.198%	-
Cumulative variance explanation rate %(after rotation)	82.198%	-
KMO	0.732	-

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Barth spherical value	174.322	-
df	3	-
p	0.000	-

Note: If the numbers in the table have colors: blue indicates that the absolute value of the load factor is greater than 0.4, and red indicates that the common degree (common factor variance) is less than 0.4.

Correlation Analysis

Table 4.6 Correlation Analysis of Student Questionnaires

		2.New pedagogy to improve the piano performance of the help	7.New pedagogy help to stimulate learning motivation and enthusiasm	14.New pedagogy help to piano learning
10.The number of years of learning piano	Correlation coefficient	-0.100	-0.055	-0.072
	p-value	0.320	0.586	0.476
	Sample size	100	100	100

Source: Xiaolin Zhang (2024)

As can be seen from the above table, correlation analysis was used to study the correlation between the new teaching method for improving piano playing level, stimulating learning motivation and enthusiasm, the help of piano learning and the years of piano learning, and Pearson correlation coefficient was used to express the strength of the correlation. Specific analysis shows that there is no significant difference between the help of the new teaching materials to improve the piano playing level and the number of years of learning the piano. The correlation values are -0.100 respectively, all of which are close to 0, and the P-values are all greater than 0.05, which means that there is no correlation between the two items. There is no significant correlation between the help of teaching materials to stimulate learning motivation and enthusiasm and the number of years of learning piano. The correlation values are -0.055 respectively, all of which are close to 0, and the P-values are all greater than 0.05, indicating that there is no correlation. There is no significant relationship between the help of teaching materials for piano learning and the number of years of piano learning. The correlation values are -0.072, all of which are close to 0, and all of the P-values are greater than 0.05, showing no correlation.

Descriptive Statistics

For questions 1, 2, 5, 7, 8, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, their mean is close to 1, and the standard deviation is relatively small, indicating that most respondents' answers on these questions are focused on a high rating level. Indicate that the new teaching materials are helpful to the interviewees in these aspects. For question 10 (years of piano learning), its mean value is 3.180 and standard deviation is 1.329, indicating that respondents have great differences in years of piano learning. In question 25, a large number of samples chose "Yes", with a mean value of 1.010 and a standard deviation of 0.100, indicating that most respondents think the teaching materials are helpful for music experience. Based on the above analysis, combined with the mean value, standard deviation and other descriptive statistical indicators, we can conclude that the teaching materials are helpful to the interviewees in improving their piano playing level, stimulating their learning motivation and enthusiasm, practicality and operability. At the same time, there are some differences between the years of learning piano and the respondents' views on the practice repertoire, music understanding and performance ability in the textbooks.

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Conclusion

The following conclusions can be drawn from the analysis of students' questionnaire results:

Students' evaluation of the teaching materials of the new piano teaching method is relatively high.

Among the students who participated in the questionnaire, 97% of the students believed that the new piano teaching materials were helpful to their learning, and 62% of the students strongly agreed. At the same time, 85% of students believe that the new piano teaching method has made them enjoy learning the piano more, including 63% who say they like it very much. This shows that students welcome the new piano teaching method, and it can improve students' learning interest and learning effect.

The results of the student questionnaire show that most students highly evaluate the new piano teaching materials. Specifically, more than 80% of the students believe that the content of the textbook is highly practical and targeted, which can help them better master their piano playing skills. At the same time, about 75% of students think that the language of the textbook is simple and easy to understand, clear logic, and easy to understand and master.

In addition, students generally believe that the teaching materials of the new piano teaching method have a positive effect on cultivating their musical literacy and aesthetic ability. More than 60% of students believe that the content of the textbook is novel and unique, which can enhance their understanding and appreciation of music. At the same time, more than 50% of the students said they felt good learning results after using these materials, and were able to play the piano more smoothly and freely. All these results show that the new piano teaching materials have high teaching value and application prospect in college music education.

Of course, there are also some shortcomings in the results of the questionnaire. For example, a few students think that the content of the textbook is relatively simple and lacks certain interest, which needs to be further improved and perfected. But in general, the students' feedback on these textbooks is positive, which provides an important reference for the improvement and development of piano education in colleges and universities.

Students' evaluation of teaching methods is different.

In the student questionnaire, some students expressed different opinions on the specific teaching methods of the new piano teaching method. For example, some students think that the content is somewhat difficult or requires more practice to understand. At the same time, some students said that the teachers' explanations were not clear enough or there was a lack of personalized teaching methods.

On the other hand, students' evaluation of the new piano teaching method is not the same. In the questionnaire, some students expressed satisfaction with the new piano teaching method, believing that the teaching method is helpful to improve learning efficiency and interest. Among them, some students think that the content of the textbook is novel and interesting, and the teaching method is close to the reality of students' life, which is conducive to students' better understanding and memorizing knowledge points.

However, some students have raised some questions and criticisms about the teaching method. They think that the new piano teaching method is too simple and boring, and lacks enough challenge and creativity. In addition, they also believe that the teaching method does not sufficiently consider the individual needs and learning habits of different students, and lacks personalized teaching methods and contents.

We need to take these comments seriously and make a reasonable analysis. First of all, there are some shortcomings in the implementation of the teaching method, such as insufficient difficulty and depth of the teaching materials, and insufficient consideration of the individual needs and habits of different students. These problems need further improvement and optimization to improve the teaching effect and students' satisfaction.

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However, we also need to note that different students' evaluation of teaching methods is different, and this part of students' questioning and criticism of teaching methods also need to arouse our attention. Therefore, in the process of teaching design and implementation, we need to pay more attention to the individual needs and differences of students, and adopt different teaching methods and strategies to meet the needs of different students.

In general, students' evaluation of the teaching materials of the new piano teaching method is relatively high, but there are also some shortcomings. We need to take students' evaluation seriously, carry out reasonable analysis and improvement, so as to improve the teaching effect and students' learning satisfaction.

Students' Evaluation of Teachers is Relatively High.

In the student questionnaire, the vast majority of students are satisfied with the teachers of the new piano teaching method. Among them, 90% of the students think that the teachers give students proper guidance on piano skills, and 82% of the students think that the teachers give them enough support and encouragement in teaching.

According to the results of the questionnaire, the students' evaluation of the teaching materials of the new piano teaching method is relatively high, but the evaluation of the teaching method is different. However, students generally hold a higher evaluation of their teachers.

In the evaluation of the teaching materials, most students think that the content of the materials is full and helpful to understand and master the piano skills. At the same time, many students find the material's rich and varied music selection helpful in expanding their musical horizons and understanding. In addition, many students also said that the difficulty of the textbooks is moderate, and even beginners can easily learn to use them, which helps them build confidence and interest.

However, the students' opinions on the evaluation of the new piano teaching method were less consistent. Some students believe that this method of teaching helps them to learn techniques and music more quickly, and it is also easier to understand and memorize. But some students say the pedagogy is too simplistic and not challenging enough to really improve their game. In addition, some students also said that the teaching method attaches too much importance to practice and ignores the emotional expression and artistry of music, which makes them feel a little monotonous and boring.

In the evaluation of teachers, students generally believe that teachers have a deep understanding and mastery of piano skills and music knowledge, and can give them effective guidance and help. At the same time, many students said that the teacher's teaching attitude was very serious and responsible, patiently answering questions and uploading enthusiasm and motivation to them in class. In addition, many students also appreciated the teacher's teaching method, saying that the teacher paid attention to detail and technical training, and was able to give them deeper guidance from a musical perspective.

Overall, although the students' evaluation of the new piano teaching method is different, the evaluation of teaching materials and teachers is generally high. This shows that in music education, in addition to the choice of teaching methods, the quality of teaching materials and teachers are also very important. Therefore, in the future music education, we should pay attention to the choice of teaching materials and teaching methods, which is crucial to the effect of music education teaching. Teachers should choose suitable teaching materials and teaching methods according to the actual situation and needs of students, and pay attention to cultivating students' learning interest and ability. At the same time, teachers should constantly reflect on their own teaching methods and effects in order to continuously improve the quality of teaching.

To sum up, the application of the new piano teaching method in college music education is good. students have high evaluation on the teaching material, and think that the content of the teaching material is rich and practical, which can help students improve their playing skills and music expression. At the same time,

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and students have different evaluation of teaching methods. Students pay more attention to the guidance and encouragement of teachers, while teachers pay more attention to the scientific and effective teaching methods. Therefore, teachers should pay attention to the selection of appropriate teaching materials and teaching methods, and constantly reflect on and improve their own teaching methods to improve the teaching effect. Finally, it is necessary to pay attention to the selection of educational materials and teaching methods to ensure the continuous improvement of teaching quality and effect.

Analysis of Experimental Test Results

The researchers experimented on 80 students for a semester and assigned them a numerical code. Students 1-40 were the experimental group and 41-80 were the control group. Both groups were given aptitude tests at the beginning and end of the semester. The ability test consists of three parts: musical performance, essential technical, and flexible application ability. Each section is scored on the following scale:90-100 points, 80-89 points, 70-79 points, 60-69 points, and below 60 points. During the intervention, the experimental group used my new piano teaching method to learn piano, and the control group used other teaching materials. Pre-test refers to the test of piano ability before using the new piano teaching method, including basic skills, music expression and piano application. The experimental group and the control group pre-tested the same school learning background, that is, one year of basic piano training. The experimental group's post-test refers to the test of piano ability after using the new piano teaching method, which includes three aspects: basic skills, music expression, and piano application. The post-test of the control group is a test of piano ability after using the traditional piano teaching method, including three aspects: basic skills, music expression and piano application. The result of pre-test come from the final exams of the second term and the result of post-test come from the final exams of final exam of the third term. The methods of test involve playing a piano piece and improvising according to a given melody.

Through statistical processing of the results and analysis of relevant data, it is understood that the relevant situation of music education students is to evaluate the application effect of the new piano pedagogy in college music education majors through the performance of students' basic technical ability, musical expression and flexible application ability before and after the experiment.

As can be seen from Table 4 before the experiment, the basic technical scores of the experimental group and the control group were similar, with average values of 77.55 and 76.45 respectively. After the experiment, the basic technical scores of the students using the new piano teaching materials changed greatly before and after the experiment, ranging from 77.55 to 81.10, with P less than 0.05, indicating that the basic technical scores of the students in the experimental group were significantly different before and after the experiment. While the control group used other teaching materials to study, their basic technical scores improved, with the average value ranging from 76.45 to 77.23, indicating that there was no significant difference in the basic skills of students in the control group before and after the experiment. It can be seen that the new piano teaching materials have a good effect on the improvement of students' basic technical ability.

Table 4 Comparison of The Basic Techniques of The Experimental Class and The Control Class in Pre-Test and Post-Test for Sample T-Test

ID group		No.	average	Standerd deviation	SE mean	t	P
Experiment class	Pre-test	40	77.55	6.28	0.99	-2.733	0.008
	Post-test	40	81.10	5.30	0.84		

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Control class	Pre-test	40	76.45	6.55	1.04	-0.522	0.603
	Post-test	40	77.23	6.72	1.06		

Source: Xiaolin Zhang (2024)

As can be seen from Table 5, before the experiment, the average musical expression scores of the students in the experimental group and the control group before using the new piano teaching materials were 77.45 and 76.73, respectively. After the experiment, the learning motivation of the experimental group increased greatly, from 77.45 to 81.70, P< 0.05, indicating that the musical expression of the experimental group was significantly different. However, the students in the control group did not use the new piano teaching materials to learn music education, and their music performance decreased slightly, with the mean value decreasing from 76.73 to 76.55. Still, P>0.05 showed no statistical significance. The research shows that students in the experimental group who use the new piano pedagogy have stronger musical performance than students in the control group. The musical performance is affected by the teaching pedagogy. At the same time, the students in the control group have no significant change in their musical performance in using other teaching pedagogy, and some students even have a decline in their musical performance.

Table 5. Comparison of Music Expression of Experimental Class and Control Class in Pre-Test and Post-Test Pair T-Test

ID group		number	average	Standerd deviation	SE mean	t	P
Experiment class	Pre-test	40	77.45	8.18	1.29	-2.606	0.011
	Post-test	40	81.70	6.28	0.99		
Control class	Pre-test	40	76.73	7.71	1.22	0.101	0.920
	Post-test	40	76.55	7.80	1.23		

Source: Xiaolin Zhang (2024)

Table 6 shows that the t value of the pre-test and post-test results of the experimental group is -5.413, and the corresponding P<0.05, indicating that there are significant differences between the pre-test and post-test results of the experimental group. The pre-test mean of the experimental group was 72.20, and the post-test mean was 80.83, which was significantly higher than that of the pre-test, indicating that the experimental group's scores had been significantly improved. The test results of the pre-test and post-test of the control group were t=0.045, corresponding P = 0.964, P>0.05, indicating that there was no significant difference between the pre-test and post-test scores of the control group. The results of the pre-experiment test showed that the mean values of the experimental group and the control group were 72.20 and 72.75, respectively, indicating that there was little difference between the two groups before the experiment. After the experiment, the mean values were 80.83 and 72.68, respectively, and the experimental group t=-5.413, P<0.005, while the control group t=0.045, P>0.05, fully indicating that the use of different teaching methods for learning, the experimental class has greatly improved the application of piano.

Table 6. Comparison of the Piano Application of Experimental Class and Control Class in Pre-Test And Post-Test Pair T-Test Of Samples

ID group		number	Average	Standerd deviation	SE mean	t	P
Experiment class	Pre-test	40	72.20	8.01	1.27	-5.413	0.000

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	Post-test	40	80.83	6.11	0.97		
Control class	Pre-test	40	72.75	7.35	1.16	0.045	0.964
	Post-test	40	72.68	7.42	1.17		

Author Contributions

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