A Case Study of Piano Teaching Strategies for Preschool Education Majors in Higher Vocational College

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Abstract

This exploratory case study focuses on the basic piano course in the preschool education program at L Vocational College. The research objectives were 1) to investigate the factors affecting piano learning among vocational students and 2) to explore teaching strategies to improve the current piano teaching model. The study conducted a two-semester teaching experiment with 50 second-year preschool education students, involving pre-test, teaching, strategy improvement, and post-test phases. Research tools included 1) 5-point Likert scale of student opinions on current teaching models, 2) student interview records, and 3) classroom observation of students' piano learning. We adopted a mixed-methods approach.

The results indicated that the current piano teaching model faces four key challenges: 1) the current teaching content of basic piano courses lacks, 2) students have weak piano playing skills, 3) lack of academic recognition of vocational education qualifications, and 4) lack of practical opportunities for students. To address these issues, the researchers implemented several innovative teaching strategies in the second semester, including 1) expansion of piano teaching materials, 2) career preparation and instructional integration, and 3) specific operations for the optimization of teaching methods. These strategies positively impact students' piano learning experiences, enhancing their engagement and learning efficiency.

Keywords: higher vocational education, piano education, preschool program, teaching strategies

1. Introduction

1.1 Higher Vocational Education in China

The development of higher vocational education in China dates back to the 1950s, when the government established numerous technical schools to support industrialization and cultivate skilled professionals. However, it was not until the founding of Tianjin Vocational University in 1980—China's first government-established higher vocational and technical institution—that vocational education gained formal recognition as a distinct part of the country's higher education system.

Since then, vocational education has become an important part of China's higher education**,** drawing increasing attention from educational researchers and policymakers**.** As industry demands shift, vocational education has played an increasingly significant role in skills training, employment competitiveness, and educational equity. In recent years, ongoing reforms in vocational education policies have aimed to enhance curriculum design and improve practical training quality, ensuring that graduates are better equipped for modern workforce demands (Xiong et al., 2022).

In China, the definition of higher vocational education is clear: it focuses on equipping students with specialized knowledge and advanced technical skills tailored to specific professions. This level, between secondary vocational and undergraduate education, emphasizes practical application and hands-on training. Its goal is to produce highly skilled professionals to meet the needs of the job market (Yuan & Wang, 2021). Higher vocational education colleges include public and private colleges, often maintaining close partnerships with industries and employers. These

colleges aim to offer programs that meet industry trends and workforce needs, ensuring that students learn the necessary expertise and competencies to succeed in their future careers (Tian, 2021).

At the end of 2016, China published the "National Demonstrative Higher Vocational Colleges Construction Plan" (Ministry of Education of China & Ministry of Finance of China, 2016). This initiative positioned higher vocational education as a key focus in developing higher education. It signified a shift in the development of China's higher vocational education from emphasizing "expansion in scale" to prioritizing "quality improvement" (Zhuang, 2018).

Additionally, several government documents, such as the *Outline of China's Medium—and Long-Term Education Reform and Development Plan (2010–2020)*, emphasize the central goal of enhancing teaching quality and establishing a comprehensive quality assurance system for higher vocational education. This reflects the Chinese government's strong commitment to advancing higher vocational education. Shi (2013) noted that while vocational education still faces challenges related to an underdeveloped curriculum system, ongoing reforms are steadily addressing these issues. Yuan and Wang (2021) analyzed key research findings on China's higher vocational education over the past five years and identified innovative teaching models as a significant research focus. The latest Ministry of Education of the People's Republic of China work report emphasized that government-led reforms have effectively enhanced the quality of vocational education, particularly by fostering stronger connections between educational institutions and industries.

1.2 Pre-school Education Program in Higher Vocational Colleges

The early childhood education major focuses on cultivating highly qualified preschool teachers with a solid foundation in early childhood education theory, practical skills, and innovative thinking. It emphasizes supporting children's cognitive, emotional, social, and physical development during preschool (Li & Chen, 2017). The curriculum typically includes educational psychology, child development, teaching methods, and practical training to meet the professional requirements of early childhood education (Zhu, 2010; Li & Chen, 2017; Hu & Szente, 2009). Furthermore, this major emphasizes the significance of practical teaching, motivating students to utilize their theoretical knowledge in authentic educational environments. This approach helps them develop teaching skills and professional competencies to support children's early growth and learning.

In China, the higher vocational early childhood education program is designed to train professional teachers for preschool children. Traditionally, regular secondary schools trained preschool teachers, with a secondary vocational diploma serving as the highest qualification. Since the 1990s, as the government has placed increasing emphasis on early childhood education and societal expectations for preschool teachers have risen, the traditional secondary vocational qualification for preschool teachers has become insufficient to meet national and social demands.

According to the Ministry of Education's published list of higher vocational programs, 957 higher vocational institutions in China offer early childhood education programs as of 2024. The primary objectives of this program include acquiring theoretical knowledge in early childhood education, covering subjects such as child health, psychology, and pedagogy. Additionally, students are expected to gain expertise in curriculum design for five major learning areas: health, social studies, language, science, and arts.

The program also emphasizes music theory and professional skills, requiring proficiency in piano performance, accompaniment, self-accompanied singing, vocal performance, painting, handicrafts, and dance. Furthermore, students are expected to develop basic skills in music appreciation and composition and the ability to organize artistic activities for preschool children (Yang & Li, 2018).

1.3 Higher Vocational Piano Education

In vocational colleges, piano education in early childhood education programs strongly focuses on practical skill training. Educators and colleges prioritize enhancing student's performance. For instance, students can intern at kindergartens and participate in piano performance competitions. The teaching approach is also diverse, aiming to accommodate different learning styles and optimize educational outcomes. Various instructional strategies, such as guest lectures, multimedia teaching, and online learning, are implemented to enhance the learning experience (Hange et al., 2024).

Researchers continuously innovate piano course content to keep pace with society's employment demands and ensure that students acquire up-to-date knowledge relevant to the job market. In particular, technology integration has become a significant trend in modern vocational piano education. Educators are encouraged to utilize hi-tech tools and teaching platforms to improve learning efficiency, enhancing students' professional skills and competitiveness (Li, 2022).

In the case study conducted at L College, the piano curriculum for early childhood education includes preschool children's music education, appreciation of children's musical works, music theory, sight-singing and ear training, fundamental piano skills, song accompaniment, and piano improvisation. Piano improvisation is both a key focus and a challenging aspect of the program.

On the one hand, this course integrates complex theoretical knowledge of harmony and music theory; on the other hand, it requires students to apply these concepts in their playing. Piano improvisation encourages students to develop creativity, as it involves a form of musical composition. A well-executed improvisation performance can effectively engage preschool children, expand their artistic exposure, and cultivate their musical appreciation (Wang, 2021). However, since this course requires a combination of multiple skills and most vocational students have not received formal professional piano training, it presents a significant challenge for them (Zou & Wang, 2023).

1.4 Traditional Piano Teaching Model

Currently, L Vocational College adopts the traditional transmission-reception teaching model. This teacher-centered approach emphasizes knowledge's systematic delivery. This model ensures the standardization and coherence of instructional content and remains the dominant teaching method in higher vocational music education in China today. Group classes are a major method in piano. Using the group classes in vocational education's traditional teaching model ensures that all students receive consistent teaching content, allowing for the efficient delivery of massive amounts of information. It is particularly suitable for teaching fundamental skills and theoretical knowledge while also helping instructors maintain control over the pacing and structure of classroom instruction (Wu et al., 2024).

However, this model may affect its overall effectiveness due to the single teaching method. Since vocational students often lack self-directed learning ability, the monotonous teaching approach may not adequately address their diverse learning needs. This shortage is particularly evident in some introductory theory courses. Teacher-centeredness in teaching certain complex concepts leads to the inability to receive timely feedback from students on their teaching, as it is difficult to adjust the teaching methodology promptly. Students are passive recipients of knowledge who tend to hide their real needs (Cheng & Ding, 2021). Under such circumstances, optimizing teaching resources alone may not fully compensate for these shortcomings (Boshuizen et al., 2010).

In a teacher-centered approach, students may also develop negative psychological responses due to the authoritative role of instructors. For instance, some students may feel anxiety in learning and fear mistakes or criticism from teachers, especially when required to perform publicly or answer questions. Prolonged exposure to such anxiety can diminish students' interest and confidence in learning. Additionally, since teachers dominate the classroom, students may become overly reliant on passive knowledge absorption, gradually losing their ability to engage in self-directed learning and independent thinking (Kassem, 2019). Undeniably, piano education should be centered on skill training that effectively develops students' fundamental performance abilities. However, as vocational education increasingly emphasizes comprehensive student development, relying solely on traditional teaching methods is no longer sufficient to meet modern vocational education goals (Lee et al., 2024). Vocational piano education should focus on performance skills, artistic aesthetics, and critical thinking.

1.5 Research Questions

1) The study addresses the following questions: What are the main factors influencing piano education in vocational colleges, and how do these factors affect students' learning outcomes?
2) How can innovative teaching strategies be used to optimize the traditional vocational piano education model?

2. Method

2.1 Research Objectives

1) to study the factors affecting piano learning in higher education students
2) to explore teaching strategies to enhance current piano models

2.2 Participants

The sample size of this study was based on power analysis to ensure sufficient statistical power to detect the impact of the new teaching strategy. The researchers referred to Cohen's (1988) standard classification of effect sizes (Graziano et al., 2025) and, considering the typical effect size in higher vocational music education research, selected a moderate effect size (Cohen's d = 0.5) as the benchmark.

Using G*Power 3.1, the researchers calculated that with a statistical power of 0.80 (80%)， the significance level of $\alpha = 0.05$, the minimum required sample size was 44 participants. To account for potential data loss, 50 students were recruited to ensure adequate statistical power. This research used stratified random sampling to select 50 students from a population of 312 second-year students in the early childhood education program at L Vocational College. To accurately reflect the overall distribution of academic performance, students were categorized into three groups based on standardized test scores: high-achieving (above 80), average (60–79), and underperforming (below 60).

A statistical analysis of the previous semester's standardized test results was conducted. Students were randomly selected in proportion to their representation in the overall student population: 15 students (30%) from the high-achieving group, 25 students (50%) from the average group, and 10 students (20%) from the underperforming group. This sampling method enhances the sample's representativeness to ensure that the research data accurately reflects the learning status of the Early Childhood Education students at College L.

2.3 Research Tools

1) 5-point Likert scale of student opinions on current teaching models

2) Student interview records

3) Classroom observation of students' piano learning

2.4 Research Design

This study adopted an exploratory case study approach and applied a mixed methods research design to assess the new teaching strategy's impact on students' learning experiences. The research was conducted over two academic semesters in the fundamental piano course at L Vocational College. Informed consent was submitted by all participants before the start of the study, and the study was approved by the Ethics Committee of Mahidol University (Approval No. MU-IRB-2023/156.1409), which ensured that the process of data collection and analysis complied with ethical standards.

2.5 Research Process

The research process was divided into four phases, covering Pre-test - Teaching - Strategy Improvement - Post-test.

2.5.1 Pre-test

During the first semester, the researcher administered a 5-point Likert scale to the participants for the pre-study test, followed the existing teaching model, and collected data through interviews and observations of the students.

2.5.2 Teaching

The researcher summarizes the teaching model's shortcomings and develops strategies for improvement based on the qualitative data analysis (interview + observation) in the first semester.

2.5.3 Strategy Improvement

The researcher introduced new teaching strategies based on the original teaching model (developed based on the analysis of the first semester).

2.5.4 Post-test

The 5-point Likert scale was again used to evaluate students' learning experience after the new teaching strategy. Afterward, the quantitative data from the pre-test and post-test and the qualitative data from the interviews and observations were combined to evaluate the effectiveness of the teaching strategies and propose further optimization.

2.6 Data Collection

2.6.1 Qualitative Data Collection

The study took place from February 21, 2023, to January 30, 2024, and covered two consecutive semesters of a basic piano course. The course was required for preschool majors and had one and a half hours of class time per week for 31 lessons in the first semester and 32 lessons in the second semester. The researcher documented student participation and progress in piano lessons through structured observations and conducted four semi-structured interviews with participants, focusing on students' piano learning experiences in the traditional teaching model. All interview data were recorded in audio format and transcribed into text files using transcription software.

2.6.2 Quantitative Data Collection

This study adopted a 5-point Likert scale questionnaire for quantitative data collection to measure students' learning experiences and assess changes following adjustments to the teaching strategy. The questionnaire was administered

at the beginning of the first semester (pre-test) and the end of the second semester (post-test). The measured variables included students' learning interests, classroom participation, and levels of learning anxiety.

The 5-point Likert scale used in this study was adapted from a learning experience measurement scale developed by Yan, Yu, and Tang (2024) for doctoral music students. To better align the scale with the study's content and objectives, the researchers invited three senior piano instructors and two academic administrators from L Vocational College to refine the scale. Using the Delphi method, they incorporated their teaching experience and the background characteristics of L College students to modify the existing scale. The final version consisted of a 12-item, 5-point Likert scale.

In February 2023, this study distributed paper-based questionnaires to 50 student participants, all of whom voluntarily took part in the survey. A total of 50 questionnaires were distributed, and 44 valid responses were collected, resulting in a response rate of 88%.

To improve the response rate, the research team sent reminder emails after the initial distribution, encouraging participants who had not completed the questionnaire to respond. The sample size was deliberately selected based on power analysis to ensure a statistical power of 0.80 for a moderate effect size. This study did not implement any interim analyses or stopping rules to maintain consistency between the collected sample size and the original plan.

2.7 Data Analysis

2.7.1 Qualitative Data Analysis

This study explored key factors affecting students' piano learning within the traditional teaching model through interviews and observation records. By systematically organizing and analyzing the collected data, the researchers applied the six-step thematic analysis method proposed by Braun and Clarke (2006) to identify themes related to teaching models and student learning.

Interview and observation data were managed and analyzed using MAXQDA software. During the analysis, the researchers conducted an in-depth interpretation of the textual content through open coding, identifying several major themes related to the learning environment, classroom behavior, and adjustments in teaching methods. Identifying these themes was not only based on the intrinsic logic of the data but also integrated relevant educational theoretical frameworks.

2.7.2 Quantitative Data Analysis

This study employed SPSS 28.0 for quantitative data analysis, primarily utilizing mean (M), standard deviation (SD), frequency, and percentage to describe overall trends and reveal changes in research variables between the pretest and posttest. Before conducting hypothesis testing, The Shapiro-Wilk test was used to determine whether the data conformed to a normal distribution. The Shapiro-Wilk test is suitable for studies with small sample sizes and provides a more accurate normality assessment than the Kolmogorov-Smirnov test. If the data followed normal distribution ($p > 0.05$), A paired sample t-test was used to analyze mean differences and assess the statistical significance of the variation between the pretest and posttest. If the data did not follow a normal distribution ($p \leq 0.05$), the Wilcoxon signed-rank test was used as a non-parametric alternative to ensure the robustness of statistical results. The analysis showed that the normality test results indicated a normal distribution; therefore, this study adopted the paired sample t-test for subsequent analysis to evaluate score differences between the pretest and posttest.

2.7.3 Data Integration

Finally, the researchers employed a parallel data integration approach to cross-analyze the Likert scale data results with themes from qualitative interviews and classroom observations, aiming to explore the impact of teaching strategies on students' learning experiences.

3. Results

3.1 Qualitative Data Results

3.1.1 The Current Teaching Content of Basic Piano Courses Lacks

The goal of preschool education programs is to train qualified kindergarten teachers; therefore, the curriculum should be closely aligned with the actual needs of kindergartens. For a long time, L vocational colleges have primarily used piano textbooks such as *Czerny 599* and other piano etude collections, which do not include content suitable for accompanying children's songs. In interviews, many students mentioned that the textbook content is significantly

different from nursery rhymes, highlighting the importance of incorporating kindergarten music materials into piano courses. Additionally, traditional nursery rhyme instruction mainly focuses on classic songs, but in recent years, many newly composed children's songs have gained popularity among young children yet have not been promptly included in teaching materials. Therefore, the researchers believe that improvisational accompaniment of children's songs should be regarded as an essential component of piano fundamentals courses.

Through classroom observations, the researchers found that improvisational accompaniment and singing while playing nursery rhymes are often taught as similar skills. However, there are significant differences between the two in practical application. While students performed well during solo playing, coordination issues arose when lyrics were added to the same piece, and they were required to sing and play simultaneously, making it difficult for them to perform the piece entirely. Furthermore, because of introverted personalities, some students hesitated to showcase their singing and playing skills in class, which might impact their practical teaching abilities in the future (Lorig, 2024).

Fundamental knowledge of music theory plays a crucial role in the development of students in preschool education programs, particularly as most vocational college students have not received formal music training before enrollment. The current piano course focuses too much on performance. It trivializes the teaching of basic music theory. Still, the lack of a systematic approach is of little help to students with a weak foundation in music, thus hindering their progress.

3.1.2 Students Have Weak Piano Playing Skills

Acquiring piano performance skills is a systematic and long-term process requiring extended professional training to achieve proficiency (Zhang et al., 2024). In vocational colleges, the academic program is relatively short. Although the basic piano course is a compulsory subject for preschool education students, most students fail to meet the desired teaching standards by graduation, piano performance is commonly regarded as the most challenging aspect of their studies. Based on observations of students' learning states during performance skill training and interviews, students identified three main areas of piano skill development as highly challenging: finger dexterity training, practicing different playing techniques, and exercises involving scales, arpeggios, and chords.

3.1.3 Lack of Academic Recognition of Vocational Education Qualifications

Based on an analysis of interview content, the researchers found that one reason students in this study perceive piano learning as challenging is their lack of motivation, primarily from concerns about academic recognition. Numerous studies have shown that academic recognition significantly influences students' learning attitudes. Academic recognition refers to the value and acceptance of a student's educational background in the job market. When academic qualifications are perceived as having low recognition in contemporary society and professional markets, students often experience increased anxiety and pressure, fearing that their education may be insufficient to secure ideal career opportunities (Latorre-Cosculluela et al., 2025).

For preschool education students at L Vocational College, employment prospects prompt them to reconsider their academic pursuits. In China, vocational education is categorized as secondary-tier higher education, which means that in a highly competitive job market, vocational students are at a disadvantage compared to those from teacher-training universities and specialized music conservatories. As a result, the challenges students face in piano learning further exacerbate their concerns about career advancement after graduation.

3.1.4 Lack of Practical Opportunities for Students

A well-structured practicum placement can help students adapt more quickly to the kindergarten work environment (Hassan et al., 2025). Based on interview feedback, students expressed that the practical opportunities provided by the college were insufficient. The preschool education program offers two internship opportunities annually, scheduled at the end of each semester. Students are assigned to local public or private kindergartens, with placements chosen by the students themselves or arranged by the college. The internships typically last for two weeks, during which students are exempt from attending classes at the college.

Through interviews with students who participated in the first semester's final internship, the researcher learned that these students took on the job description of organizing children's music activities and accompanying nursery rhymes on the piano. However, students reported difficulties applying their acquired knowledge to actual work, particularly in performing impromptu accompaniments for nursery rhymes. During practical activities involving piano accompaniment, some children were uncooperative, and in the face of chaotic situations, students lacked effective classroom management strategies. This gap between piano performance skills and preschool education organizations reflects the inability of vocational students to bridge theory with practice. The two-week internship duration was

insufficient for students to make necessary adjustments, and some students, by the latter half of their internship, were relegated to assisting full-time kindergarten teachers in a supporting role.

3.2 Quantitative Data Results

This study utilized a 5-point Likert scale and employed a pretest-posttest design. It distributed and collected questionnaires from 50 students at the beginning of the first semester and the end of the second semester. A total of 44 valid responses were received. Below are the survey results from both semesters.

Table 1. Pre-Test Results

	Statement	Score(pretest)	
		$\bar{x}$	SD
1	I feel confident in my ability to excel in piano studies.	3.2	0.85
2	I often feel unprepared when learning new piano pieces.	2.8	1.14
3	My teacher provides clear and easy-to-understand explanations in class.	3.5	0.92
4	The music theory in this course is easy to understand and apply.	4.2	0.78
5	I think the piano course does not provide enough support for my future career.	3.0	1.05
6	Improvisation and accompaniment training effectively help me organize children's musical activities during my internship.	2.9	0.88
7	I am highly interested in the piano learning materials used in this course.	3.1	0.75
8	I find piano playing skills to be the biggest challenge in my piano learning process.	4.0	1.12
9	My teacher provides sufficient support to help me adapt to the internship environment.	3.4	0.95
10	I have easy access to instructional resources and guidance during my piano studies.	2.7	1.08
11	I frequently experience anxiety during my piano learning process.	3.9	0.73
12	I feel a strong sense of progress and achievement in overcoming challenges in piano learning.	3.3	0.81

Likert Scale: 1. Strongly disagree; 2. Disagree; 3. Neither agree nor disagree; 4. Agree; 5. Strongly agree.

Table2. Post-Test Results

	Statement	Score(posttest)	
		$\bar{x}$	SD
1	I feel confident in my ability to excel in piano studies.	4.3	0.65
2	I often feel unprepared when learning new piano pieces.	3.7	0.72
3	My teacher provides clear and easy-to-understand explanations in class.	4.4	0.84
4	The music theory in this course is easy to understand and apply.	3.6	0.75
5	I think the piano course does not provide enough support for my future career.	4.1	0.68
6	Improvisation and accompaniment training effectively help me organize children's musical activities during my internship.	4.3	1.03
7	I am highly interested in the piano learning materials used in this course.	4.2	0.64
8	I find piano playing skills to be the biggest challenge in my piano learning process.	3.5	0.95
9	My teacher provides sufficient support to help me adapt to the internship environment.	4.2	0.61
10	I have easy access to instructional resources and guidance during my piano studies.	3.7	0.87
11	I frequently experience anxiety during my piano learning process.	3.1	0.62
12	I feel a strong sense of progress and achievement in overcoming challenges in piano learning.	4.3	0.73

Likert Scale: 1. Strongly disagree; 2. Disagree; 3. Neither agree nor disagree; 4. Agree; 5. Strongly agree.

The quantitative data in this study were measured using a 5-point Likert scale. The same questionnaire was administered for both the pretest and posttest, facilitating data comparison. The mean ($\bar{x}$) was used as the primary

metric for statistical analysis to obtain the overall scores for each indicator in the pretest and posttest. The standard deviation (SD) was also computed to measure the data's dispersion, reflecting the variability in students' responses to each indicator under different teaching strategies.

The table shows that the SD ranged from 0.61 to 1.14. These results are in line with previous research findings that standard deviations for Likert scales generally range from 0.5 to 1.5 (South et al., 2022). These values indicate that the student's responses displayed appropriate variability, reflecting a balanced distribution of opinions. The researcher then analyzed the pre-test and post-test data comparatively.

Table 3. Comparison of Students' Piano Learning Experience Level Before and After the Implementation of New Teaching Measure

Test	Scores (n=44)	Mean ($\bar{x}$)	Standard Deviation (SD)	t-value	df	p-value 2-tailed	Cohen's d
Pretest	44	3.25	0.90	2.50	43	0.013	0.534
Posttest	44	3.70	0.77	-	-	-	

The researchers observed the improvement in students' post-test questionnaire scores by comparing the data. The pretest mean score was 3.25 (SD = 0.90), while the post-test mean score rose to 3.70 (SD = 0.77). This improvement was statistically significant, with a t-value of 2.50, degrees of freedom (df) of 43, and a p-value of 0.013, confirming statistical significance. Moreover, the effect size (Cohen's d) was 0.534, reflecting a moderate impact level. It shows that the new teaching strategies positively influenced students' piano learning.

4. Discussion

The findings of this study indicate that the new teaching strategies implemented during the second semester positively impacted students' piano learning experience. These measures enhanced students' engagement with piano learning and improved their overall learning efficiency.

4.1 Expansion of Piano Teaching Materials

The researcher observed that the selection and use of piano teaching materials lagged behind the needs of contemporary piano education (Zeng et al., 2024). At L College, the piano teaching materials used in the early childhood education program had been used for over a decade. In the second semester, the researcher collected feedback from the students and expanded the repertoire of children's songs; some new piano adaptations of movie and television music were also included. These new additions sparked students' interest and helped them better understand modern music.

The researcher implemented innovative teaching strategies to teach these newly added songs, such as breaking down musical pieces to guide students in analyzing harmonic structures, rhythmic features, and tonal relationships, followed by integrated performance training. This approach enabled students to learn specific pieces more quickly and accurately while expanding their theoretical music knowledge.

Introducing new teaching materials to incorporate piano sight-reading into the curriculum has effectively improved students' improvisational accompaniment skills. Sight-reading refers to the ability to play a new piano piece while reading the sheet music simultaneously (Du, 2024). This skill requires the brain to process musical information very fast and relies on extensive piano-playing experience and a solid foundation in music theory. Developing strong sight-reading skills is essential to piano education, but traditional piano textbooks do not include training. Many students tend to annotate sheet music with numbered notation, and most report facing challenges when learning new scores (Chang, 2022). To address this issue, the researchers selected appropriate teaching materials to provide specialized training in sight-reading, which received positive feedback from students.

4.2 Career Preparation and Instructional Integration

Beyond developing performance skills, students' professional preparedness is another key factor influencing piano instruction. Students' frustrations with their identification as early childhood educators partly stem from concerns about the academic recognition of vocational education, as vocational colleges in China face specific challenges in terms of academic credibility (Zhang et al., 2022). Vocational college students typically come from general high

schools or secondary vocational schools. After three years of study at a vocational college, students who wish to obtain a bachelor's degree must continue their studies for two more years at a general university. As a result, the educational qualifications of vocational graduates differ from those of regular bachelor's degree holders.

Consequently, some argue that vocational students are weaker in foundational theoretical disciplines than their counterparts in regular undergraduate programs (Zhan et al., 2023). Finally, limited research funding for vocational colleges restricts their ability to build educational infrastructure. For example, College L often postpones piano maintenance and the frequency of routine care, and the decline in piano quality can directly impact a student's piano experience (Khairullina et al., 2024).

The gap in academic recognition caused by societal perceptions cannot be addressed in a short time through any single institution or teaching model. However, the researchers believe that strengthening school-enterprise cooperation to expand students' employment opportunities can effectively reduce the negative impact of degree anxiety on piano learning (Wang & Li, 2024). Through more frequent and diverse exchange activities, students can better understand the value and potential of their studies, which significantly enhances their motivation for piano learning.

The researchers further proposed that L Vocational College should establish long-term cooperation mechanisms with kindergartens and set up targeted training programs in addition to regular internships. Under such programs, colleges sign agreements with specific enterprises to train students jointly. Students enrolled in these programs sign contracts with employers before admission, whereby the enterprises cover their tuition fees and guarantee employment after graduation. In return, students must work for the designated employer for a fixed period (Qiao et al., 2023).

The researcher adopted a phased internship model during the internship period to help students better adapt to the kindergarten teaching environment. By analyzing the internship content of preschool education students, the researchers structured the internship into three distinct stages.

In the first stage (3 days), students engage in short-term observation to gain a preliminary understanding of kindergarten daily routines and teaching methods. They then return to the classroom for discussions to prepare for the following stages. The second stage (7 days) requires students to actively participate in some kindergarten teaching activities while observing and learning the teaching methods of preschool teachers. After this, they return to the school to summarize and discuss their experiences. In the third phase (7 days), students will take on teaching tasks independently, practicing teaching skills in a real work environment. Once completed, they return to school for a final internship summary.

This segmented and progressive internship arrangement received widespread praise from students and was considered helpful in facilitating a smoother transition from the role of a student to that of a preschool teacher. During the internship, researchers increased the time and intensity of improvisational accompaniment training and employed simulated classroom teaching methods such as role-playing and scenario-based exercises. Students practiced singing and accompanying children’s songs, improvisational accompaniment, and organizing children’s music games within the class. This approach significantly improved their ability to teach singing and accompanying children’s songs in a short time and effectively alleviated their anxiety before and during the internship.

4.3 Specific Operations for the Optimization of Teaching Methods

In new teaching methods, the researchers introduced a phased singing and playing training approach, where students first practiced playing and singing separately before gradually attempting to synchronize the two. This method improved students' ability to coordinate singing and playing, a critical vocational skill for preschool education majors in vocational colleges. Related studies have demonstrated that breaking down teaching content into smaller steps helps students understand and acquire skills (Vlachopoulos & Christodoulidou, 2024). Similarly, dividing complex skill-based teaching into smaller segments also helps reduce students' learning anxiety (Singh et al., 2024). The researchers carefully selected and reorganized the content to incorporate specific music theory into the teaching of the piano repertoire, encouraging students to notate the music in the score for easy review and reinforcement of memorization after the lesson.

This study reinforced single-skill training in piano performance to address students' weaknesses in piano techniques. Like the measures taken for singing and playing, the learning content was broken down into smaller learning objectives to help students master skills more effectively. During the second semester, the researchers allocated more time to single-skill training. Clear evaluation criteria were established for each small objective in this process, including classroom tests, in-class performances, and group questioning sessions.

The researcher also innovatively adapted existing piano textbooks by selecting pieces of similar difficulty from

different sources, organizing them into "piece groups" with comparable challenges for student practice, and emphasizing focused and repetitive training of these technically uniform excerpts, significantly enhancing the students' performance skills. Besides that, to help students to overcome their fear of public performance, the researchers introduced performance training aimed at improving students' self-confidence and mental ability to learn the piano. In the process, the researcher helped students cope with the challenges they might encounter when performing in public.

Furthermore, to prevent students' memory lapse during the piano performance due to nervousness or being distracted by the noise of the scene, the researcher instructed the students to learn to adjust their breathing to reduce their nervousness. Through this training, students shared their pre-performance anxiety with their peers, exchanged experiences, and supported each other in group discussions. The researcher administered structured rhythmic training, such as a rhythmic variation relay game, among students to improve their performance stability under stress. In another study, organized rhythmic training was also shown to improve students' performance under stress and contribute to their overall music performance skills (Nwokenna et al., 2022).

5. Conclusion

This study suggests that a more targeted teaching strategy in the piano program for pre-school students in vocational colleges can significantly enhance their learning experience. The current vocational piano education faces challenges such as insufficient teaching content, weak piano performance skills, low academic recognition, and limited practical opportunities. To address these issues, optimizing teaching methods, strengthening career development training, and expanding teaching resources can effectively improve the current state of piano education. The findings reveal that current vocational piano education faces challenges such as insufficient teaching content, weak piano performance skills, low academic recognition, and limited practical opportunities. To address these issues, optimizing teaching methods, strengthening career development training, and expanding teaching resources can effectively improve the current state of piano education.

A targeted teaching strategy implemented in a piano program for preschool students in a vocational college can markedly improve their learning experience. The findings indicate that current vocational piano education faces challenges such as insufficient teaching content, weak piano performance skills, low academic recognition, and limited practical opportunities. These challenges can be addressed by optimizing teaching methods, strengthening career development training, and expanding teaching resources.

In the revised teaching process, the researchers introduced phased singing and playing training to improve students' coordination skills and employed structured piano performance training to strengthen their technical proficiency. Performance training also can help students reduce anxiety about public performances, and enhanced school-enterprise collaboration could enhance students' employment opportunities and reduce their academic concerns. A phased internship model can facilitate a smoother transition for students into the real kindergarten teaching environment. Furthermore, the study expanded the content of the piano textbook to improve the program's relevance by incorporating updated musical compositions.

6. Recommendations for Future Research

Vocational piano education requires multifaceted support. Beyond the innovative measures researchers implement in specific teaching processes, it is essential to comprehensively strengthen teacher training in vocational colleges to enhance teaching capabilities. Regular professional development activities can help educators stay updated on the latest teaching concepts and methods and optimizing the structure of vocational piano courses and adopting new teaching approaches, such as integrating more frequent interactions during instruction—through methods like group discussions and case analyses—has been proven to effectively increase student engagement and deepen the application of theoretical knowledge in practice (Wang, 2021). Teachers should use Internet teaching resources, such as educational applications, e-learning platforms, and other modern technologies, to provide students with flexible and diversified learning resources to learn more easily and happily. (Moorhouse, 2023).

Providing personalized learning support is another key to the teaching process. Teachers need to identify different students' learning habits and need to provide targeted assistance (Xu, 2024). Building an evaluation system that incorporates various elements, including self-evaluation, peer evaluation, and feedback on teaching and learning, is also helpful to ensure that students are aware of their own learning stage in time. Such evaluation can enable teachers to implement personalized teaching strategies more efficiently (Huang et al., 2023). In addition, the researcher has

found that encouraging students to engage in interdisciplinary learning, such as combining music with psychology, education, and other social sciences, broadens their intellectual horizons and develops their overall musical literacy. (Zhang et al., 2023).

7. Limitations

Although this study has garnered widespread attention from various researchers and educators in higher vocational education, the research sample is limited to a purposive stratified sampling of second-year students in the preschool education department at L Vocational College, and the findings apply solely to piano education.

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Authors contributions

Wang Qian was responsible for research design, methodology, data collection, drafting the manuscript, writing and revision. Asst. Prof. Dr. Ni-on Tayrattanachai was accountable for methodology and revision. Asst. Prof. Dr. Dhanyaporn Phothikawin revised. All authors read and approved the final manuscript.

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