

Curriculum Governance in Early Childhood Arts Education: Integrating Group Piano Instruction to Support Social Development

Wenjie Ding

Chakrabongse Bhuvanarth International College of Interdisciplinary Studies, Rajamangala University of Technology Tawan-ok, Thailand

ORCID iD: <https://orcid.org/0009-0004-9935-4155>, Email: wenjie.din@rmutto.ac.th

Narutt Suttachitt*

Chakrabongse Bhuvanarth International College of Interdisciplinary Studies, Rajamangala University of Technology Tawan-ok, Thailand

ORCID iD: <https://orcid.org/0009-0002-6446-9572>, Email: narutt_su@rmutto.ac.th

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Abstract: This study aimed to develop a group piano lesson program for early childhood students, focusing on enhancing social and piano skills. The objectives were to: (1) examine current challenges and needs for improving social skills in early childhood piano group lessons, (2) design teaching plans for this purpose, (3) evaluate the program's impact on piano skills, and (4) assess its effectiveness in fostering social skills. A mixed-methods approach was adopted, combining qualitative and quantitative techniques. Music education experts were interviewed, and data were analyzed using thematic analysis to understand teaching practices. Questionnaires were distributed to piano teachers to identify gaps in social skill development. Following expert evaluation, a 13-session teaching experiment was conducted with 30 students in Guangzhou, employing a pretest-posttest design analyzed through paired-sample t-tests. The findings showed statistically significant changes in the two dimensions: piano competencies and two key dimensions of social skills, such as cooperation, self-control, and participation ($p < 0.001$). These findings underscore the effectiveness of interactive group piano lessons in fostering both musical proficiency and essential social skills, demonstrating the value of structured music education for holistic early childhood development. The curriculum model is consistent with the Early Childhood Education policy focus on China on the holistic development and systematic social involvement, but provides a contrast to international SEL approaches by incorporating social competence into arts-based collective pedagogy. This research paper can add to the discussion on curriculum governance, as it shows how a well-planned and organized group teaching of piano may implement the national social-development objectives into the education of arts at the early childhood stage.

Keywords: Piano Group Teaching, Early Childhood, Social Skills, Piano Skills, Music Teaching.

1. Introduction

The Chinese government prioritizes early childhood education as part of its educational reforms, emphasizing holistic development. Policies such as the 2012 Guidelines for the Learning and Development of Children Aged 3-6 stress the importance of cultivating young children's social interaction skills. These guidelines advocate for active participation in group activities, fostering cooperation, sharing, and conflict resolution to promote social and emotional growth alongside academic skills. Social skills are crucial for a child's future success, forming the foundation for good peer relationships, academic achievement, and psychological well-being (Erol & Köksal, 2025). Research highlights the preschool years as a critical period for

developing cognitive, language, and social abilities (Nurhidayah, Salsabilla & Hastuti, 2026). Social skills enable children to adapt to social norms, engage positively with peers and family, and build a foundation for lifelong success (Hosokawa et al., 2024). Conversely, a lack of social skills can lead to developmental challenges, including conduct disorders and psychological issues such as depression and anxiety (Sun et al., 2022). Early education provides an optimal setting for targeted interventions to enhance these skills, making kindergarten an essential phase for their development (Ceccacci et al., 2024).

Music education, particularly piano learning, plays a significant role in early childhood development. Parents often view it as a means to enhance intelligence, cultivate aesthetics, and build character (Tao & Tao, 2024). Group piano lessons, widely adopted in children's music education, are effective in combining musical skill development with social growth. Unlike traditional one-on-one lessons, group lessons provide a collaborative environment that encourages interaction, cooperation, and mutual support among peers (Saks et al., 2025). This teaching format promotes an active and engaging learning atmosphere where children can gain confidence and develop teamwork skills (Zhou & Colomer, 2024). Study shows that group piano lessons help children recognize their roles within a group, learn conflict resolution, and control their behavior in social settings (Dong & Gedvilienė, 2025). Interactive activities such as collaborative piano performances and classroom demonstrations not only enhance musical skills but also foster self-esteem and motivation. Music educators highlight how this structured, interactive approach creates fertile ground for the growth of social skills (Bussu & Mangiarulo, 2024).

Despite these advantages, current teaching practices in group piano lessons often emphasize technical skill development over social skills. There is a lack of clear strategies to integrate social skills training into the curriculum, limiting its potential to cultivate well-rounded individuals (Kang, Meng & Su, 2024). Without intentional course design, opportunities for meaningful interaction and social skill development may be missed, reducing the curriculum's effectiveness in fostering holistic growth. By addressing these gaps, group piano lessons can become a powerful tool for advancing both musical and social skills, contributing to the all-round development of young learners. Collaboration between educators and parents is crucial to create a rich, interactive environment that nurtures these abilities.

Though the national policies of early childhood education in China focus on the holistic development and systematic social participation, it still lacks the instructions on how the social-skill goals are implemented in the context of arts-based curriculum. Practically, the implementation of curriculum is usually based on the acquisition of technical skills rather than the organized mechanisms of social development. This shows a lack of governance between the policy level of social development targets and the classroom target of curriculum design, especially in the collective music education situation. The early childhood systems of countries also lay stress on social-emotional learning, but the mechanisms that help arts curricula to transfer these objectives to the organized instructional design are not well theorized. This is because of the lack of a clear articulated transferable curriculum mechanisms, which restricts the cross-context policy learning and scalable implementation.

1.1. Research Questions

1. How can early childhood arts curricula operationalize national social-skill development goals through structured group piano instruction?
2. What curriculum design mechanisms enable the integration of musical and social competencies in collective learning settings?
3. Under what conditions can such curriculum models be implemented and transferred within early childhood education systems?
4. What governance implications emerge for aligning classroom practice with policy-level holistic development objectives?

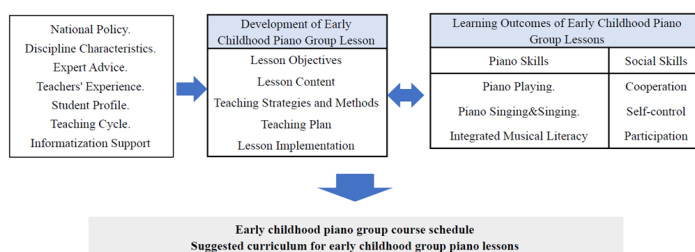
1.2. Conceptual Framework: Arts Education as a Curriculum Mechanism for Social Development

The perspective of curriculum adopted in this study is a comparative one, which incorporates arts education, social-emotional learning (SEL), sociocultural theory of learning, and objective-based curriculum presented by Tyler. As opposed to viewing social skills as consequential developmental by-products of learning music, this model views group piano teaching as an organized pedagogical process in terms of which national social-development goals can be translated into the classroom.

The social competencies provided by SEL programs in Western educational discourse tend to be taught as explicit behavioral instruction and those based on reflection. In comparison, arts education incorporates social interaction in group aesthetics generation. Group teaching of piano, then, constitutes a different implementation pathway of social-emotional development: social skills are modeled, rehearsed, and internalized in a coordinated musical action as opposed to being taught in an abstract way.

This paper establishes collective piano pedagogy as a governmental intervention between the macro-level policy objectives (holistic development, social participation) and the micro-level instructional design. Social competencies are built into examinable outcomes of the curriculum through mediated group work, collective performance targets, and scaffolded discourse and interaction in the course of artistic activity. Figure 1 represents the conceptual framework diagram.

Figure 1: Conceptual Framework.



Source: (Yusuf, Money & Daylamani-Zad, 2025)

1.3. Early Childhood Piano Education

In China, research on early childhood education, particularly among children aged

4-6, has gained considerable attention, focusing on psycho-cognitive development. This includes studies on cognitive abilities, social skills, emotional regulation, and language development, revealing critical insights into children's growth during this formative stage.

1.3.1. Cognitive Development

Cognitive development during early childhood encompasses memory, attention, logical thinking, and problem-solving skills. Children aged 4-6 show significant progress in memory and attention, demonstrating the ability to focus for longer durations on tasks. Visual and auditory memory skills also develop rapidly, with home education and school environments playing a pivotal role in enhancing these abilities (Shaheen, Ullah & Zafar, 2024). Additionally, children in this age group begin forming basic logical reasoning and problem-solving skills, understanding simple cause-and-effect relationships. Targeted educational games have been shown to significantly improve these abilities, as demonstrated in Giannakoulas and Xinogalos (2024) study, which highlighted the efficacy of structured interventions in boosting children's problem-solving capabilities.

1.3.2. Emotional and Social Development

Emotional regulation and social skills are critical for psychological development in early childhood. Children aged 4-6 begin acquiring emotional management skills, often by mimicking adult behaviors. Study indicates that they gradually learn to express emotions such as gratitude, anger, and sadness while using words or actions to regulate their emotional states (Gay et al., 2022). Furthermore, kindergarten group activities and play sessions are essential for fostering social interaction. Research by Bei et al. (2024) found that such activities significantly enhance cooperation, communication, and teamwork, enabling children to learn social norms like sharing and taking turns.

1.3.3. Language Development

Language development at this stage involves rapid vocabulary expansion and a deeper understanding of grammatical structures. Study reveals that children aged 4-6 can comprehend and use increasingly complex sentences, with bilingual environments offering further advantages in vocabulary retention and grammar application (Babayiğit et al., 2022). Additionally, narrative skills show significant improvement as children develop the ability to recount stories with logical coherence and descriptive detail. According to Zhou et al. (2023), this ability to structure narratives reflects their enhanced cognitive and linguistic skills.

1.3.4. Influence of Family and Environment

Family education and environmental factors significantly impact the psycho-cognitive development of children. Parenting styles, cultural background, and economic status play vital roles in shaping children's cognitive, emotional, and social growth. Supportive and engaged parenting is strongly linked to emotional stability, better social skills, and academic success (Lin & Faldowski, 2023). For instance, children

raised in nurturing environments with access to educational resources demonstrate higher cognitive adaptability and improved emotional regulation. Piano education in China has undergone a significant evolution since its introduction in the late 19th and early 20th centuries. Initially, the piano was not widely accepted among the Chinese population, but its use by foreign missionaries in churches gradually increased public familiarity and appreciation for the instrument (Li, Li & Zhu, 2024). A pivotal moment came in 1915 when musician Zhao Yuanren published *Peaceful March*, recognized as the first piece of Chinese piano music, marking the start of Chinese piano composition (Tang, 2022).

The establishment of the National Conservatory of Music in Shanghai by Xiao Youmei in 1927 was a landmark event, representing the formal inception of Chinese piano education (Wang, 2022). Early educators like Shen Xingong and Li Shutong, who had studied abroad, played crucial roles in spreading piano education and influencing teaching styles. By the 1930s, Chinese musicians began integrating ethnic elements into piano compositions, creating works that reflected a unique Chinese style (Gao, 2025). After the founding of the People's Republic of China, piano education entered a new phase. In the 1950s, the government supported young pianists in international competitions, with Fu Cong achieving international recognition by placing third in the 1955 Chopin Competition. However, during the Cultural Revolution, classical music faced restrictions, though the piano was preserved for revolutionary compositions, with figures like Yin Chengzong adapting revolutionary works for the instrument (Liang, 2023). The reform and opening-up era of the 1980s marked a turning point for piano education, as economic development and improved living standards made piano instruction more accessible. Prominent educators like Zhou Guangren established private piano schools to popularize piano education, contributing to the growth of a robust piano learning network (Chang & Panicker, 2024). By the late 20th century, China had cultivated numerous pianists, and piano education became a hallmark of cultural enrichment (Liu, 2024).

Despite its achievements, challenges remain in China's piano education system. Traditional teaching methods have been criticized for their rigidity, as they often fail to engage students or fully develop their theoretical and practical skills (Amirova, 2025). Enhancing teaching quality and fostering student interest require updating primary piano education methods and integrating modern pedagogical practices (Gao, 2025). For early childhood piano education, researchers emphasize the importance of selecting appropriate content tailored to children's developmental needs. Theerapan (2025) advocates teaching children to read music scores independently, appreciate musical styles, and integrate music theory knowledge into their learning process. Ma et al. (2025) highlights the role of piano education in cultivating children's coordination, memory, and aesthetic abilities, laying a strong foundation for future learning. Woods (2024) further emphasizes the importance of teaching beginner learners essential skills such as recognizing pitch, rhythm, and keyboard layout.

In summary, piano education in China has continuously evolved, blending traditional and modern elements to meet the demands of quality education. By integrating cultural vision and advancing teaching practices, piano education aims to nurture artistic appreciation and comprehensive development in students, contributing to its sustainable growth (Zhang, 2025).

1.5. International Piano Education

1.5.1. United States

Head Start Act The Head Start program in the United States is a federally funded, comprehensive program of early education, health and social services for young children from low-income families. The program places a strong emphasis on social-emotional learning, believing that developing children's social skills is critical to their long-term success in school. Specifically, the program works to develop children's cooperation, empathy, and problem-solving skills through group activities, games, and other means. Documents and programs emphasize the importance of social skills, such as the Head Start Early Learning Outcomes Framework, which specifies learning goals for children in the emotional and social domains. (Office of Head Start)

Every Student Succeeds Act (ESSA) ESSA encourages schools to take a holistic approach to promoting students' academic and social-emotional development, especially in the early years. The Act emphasizes social-emotional learning (SEL) as a critical part of a child's overall success and encourages states and school districts to incorporate social skills development into early education programs. (U.S. Department of Education)

1.5.2. England

Early Years Foundation Stage (EYFS) The UK's Early Years Foundation Stage Framework (EYFS) provides mandatory standards for the education and care of children aged 0-5 years old, emphasizing the need for children to develop social skills through play, social interaction, and other means in early childhood education. The framework makes it clear that the social and emotional development of early childhood is an important part of their early learning and that providers should develop children's social skills through teamwork, role-play and other means.

The EYFS lists Personal, Social and Emotional Development (PSED) as one of seven areas of learning, which focuses on helping children to learn how to interact with others, form positive relationships and manage emotions. (UK Government Early Years Foundation Stage)

Children and Families Act 2014 The Act ensures that all children, particularly those with special educational needs, receive comprehensive support by providing for collaboration between education and social services. In early childhood, the Act emphasizes the importance of developing children's social and emotional skills, ensuring that they have the ability to interact socially and resolve conflict before entering school. (UK Legislation)

1.5.3. Germany

Child and Youth Welfare Act (Kinder- und Jugendhilfegesetz, SGB VIII) The German Child and Youth Welfare Act stipulates that all children should receive education and support aimed at promoting social, emotional and cognitive development in early education. The law specifically states that kindergartens and other early childhood institutions need to promote children's social skills through cooperative learning and team activities. (German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth)

The Framework for Quality Standards in Early Childhood Education (Qualitätsrahmen für die frühe Bildung), which aims to improve the quality of early childhood education in Germany, specifies that social skills are one of the key competencies that children should prioritize in kindergarten. Through interaction with peers and educators, children learn to share, communicate and solve problems, which are central goals of early education.

Early childhood education policy documents in these countries generally emphasize the importance of social skills and ensure, through laws and frameworks, that educational institutions integrate the development of these skills into the education system for early childhood. These policies not only promote the development of social skills in early childhood, but also lay the foundation for a well-rounded education.

1.5.4. Piano Education

Piano education is an important part of music education. Through centuries of development, it has not only cultivated countless outstanding pianists, but also pushed forward the progress of music education theory and practice. The form of piano education has evolved from the earliest private lessons in aristocratic families to today's popular and systematic teaching, involving the fusion and innovation of different cultures, countries and times.

At the beginning of the 20th century, piano education continued to expand in Europe and North America and gradually developed different schools and methods of teaching. The Suzuki Method, developed by Shinichi Suzuki in the mid-20th century, was one of the major reforms in modern piano teaching (Arko-Mensah & Agyeiwaah, 2023). The Suzuki Method is based on the theory of "mother-tongue" learning, emphasizes aural training and early musical initiation, and stresses learning music through the home environment and imitation (Di Paolo & Todino, 2025). This approach is particularly applicable to early childhood music education and is still widely used around the world.

Meanwhile, the diversity of piano teaching methods was further realized in the 20th century. The pedagogical concepts of Zoltán Kodály and Émile Jaques-Dalcroze, among others, introduced more perceptual and motor elements, especially Dalcroze's eurhythmics approach, which emphasized the understanding of music through bodily movement. In particular, Dalcroze's "eurhythmics" approach emphasizes the understanding of music through body movement, which provides a new way of thinking about the training of rhythm and musicality in piano teaching (Apaydın, 2023).

As globalization accelerated at the end of the twentieth century, the pedagogical methods of piano education began to merge in different countries and cultures. For example, the piano education systems of Russia, Germany, and the United States were distinctive, but they gradually borrowed and integrated with each other to form a rich global teaching resource (Ryskulov et al., 2026). While the Russian piano teaching tradition focuses on solid training in basic techniques, American piano education has incorporated more innovative and interactive teaching methods (Arshinova, 2022).

Since the 21st century, with the rapid development of information technology, emerging technologies such as online piano teaching and smart piano applications have been gradually integrated into the field of piano education. For example, smart sheet music and virtual piano teaching enable learners to schedule their study time

more flexibly and improve their learning efficiency through technological means (Zheng & Wang, 2024). The application of these new technologies has had a profound impact on the development of piano education, promoting the modernization and diversification of teaching methods.

1.5.5. Status of Early Childhood Piano Education

Early childhood piano education has become a prominent area of focus due to its significant benefits for children's cognitive, social, and emotional development. Research highlights various aspects of teaching methods, such as note-reading techniques for 4-6-year-olds, cognitive development theories in piano instruction and analysis of preschool piano teaching materials (Nishikawa et al., 2026). Study also emphasizes the importance of creative teaching, listening pedagogy, and fostering positive teacher-student relationships (Li, Bergin & Olsen, 2022). Moreover, the field has examined preschool piano education across countries, underscoring its role in musical and cognitive development (Adjepong, 2021). Piano lessons in early childhood enhance cognitive skills such as spatial-temporal reasoning and memory. For instance, Hernández-Campos et al. (2024) found that piano training improved spatial-temporal reasoning in preschool children, while demonstrated its positive impact on cognitive abilities. Toader et al. (2023) noted that while cognitive benefits may diminish over time, the immediate gains in musical skills and comprehension are valuable. Piano practice also facilitates auditory development and the maturation of brain structures (Liang, 2023). Beyond cognitive advantages, early piano education fosters fine motor skills, hand-eye coordination, and overall musical development (Apaydin, 2023).

Effective teaching strategies are crucial for engaging young learners. Play-based learning aligns with children's natural curiosity and promotes motivation (Apaydin, 2023). Group lessons encourage peer interactions and shared learning experiences, enhancing understanding and retention of musical concepts (Zhou & Colomer, 2024). Furthermore, technological tools, such as interactive apps, provide engaging and adaptive learning opportunities for young children (Shaheen et al., 2024). However, challenges such as maintaining motivation and accommodating individual differences must be addressed. Di Paolo and Todino (2025) recommend fostering a positive learning environment where achievements are celebrated to sustain children's enthusiasm for learning. Instructional materials also play a vital role in early childhood piano education. Notable methods include the John Thompson Piano Course, which emphasizes engaging content and structured skill development through progressive lesson books and interactive exercises. Thompson's approach integrates technical exercises, music theory, and diverse repertoires, promoting creativity and a love for music. Similarly, the Bastien Piano Basics, developed by Janet Bastien, is known for its colorful illustrations and progressive structure, helping children develop fundamental techniques in a fun manner. Another popular resource, Faber's My First Piano Book, incorporates storytelling and musical games to captivate children's interest and nurture foundational skills.

Despite their effectiveness, these Western-oriented materials may present challenges in Chinese contexts. Cultural adaptation, language barriers, and differences in teaching methodologies can affect students' understanding and application of the materials (Li et al., 2024). Additionally, the lack of localized content and limited teacher training may hinder learning experiences. Future research should explore localized content and

culturally responsive teaching practices to enhance early childhood piano education in diverse settings.

In conclusion, early piano education significantly contributes to children's overall development. By combining innovative teaching strategies, effective materials, and cultural adaptability, educators can ensure a meaningful and enjoyable learning experience for young piano learners.

1.5.6. Early Childhood Piano Repertoire

When compiling piano teaching materials for early childhood, the selection of music tests the compiler's comprehensive thinking. On the one hand, it requires consideration of difficulty; on the other hand, auditory preferences of young children; and thirdly, alignment with classroom activities. To address this, the author intends to conduct a literature study on music selection and explore the basic principles and methods of selecting music for early childhood piano teaching.

When choosing piano repertoire for young children, it's crucial to consider their age and developmental level. Research indicates that children between the ages of three and six are most receptive to learning, making this an ideal time to begin piano instruction (Kang et al., 2024). High-quality early childhood piano methods should incorporate several key elements essential for musical development, including playing instruments, singing, moving, creating, and developing aural skills (Hosokawa et al., 2024). Incorporating a variety of musical styles can enrich a child's musical experience. Notable composers such as Béla Bartók, Igor Stravinsky, Sergei Prokofiev, Dmitri Shostakovich, Aram Khachaturian, Aaron Copland, Anton Webern, and Rebecca Clarke have created piano works suitable for children (Giannakoulas & Xinogalos, 2024).

Selecting appropriate repertoire requires careful consideration of multiple factors, including skill level, physical competence, musical interest, pedagogical value, and the emotional maturity of the student. Achieving this balance is crucial for choosing suitable repertoire (Gay et al., 2022). Adopting a creative and expressive teaching method can transform piano learning into a more meaningful and positive experience. This approach emphasizes listening pedagogy to make piano teaching more expressive, meaningful, and playful (Gao, 2025). Piano lesson frameworks for children under five should focus on exploration and overall musical development in an environment conducive to young children's learning. Informal settings can foster collaborative relationships between children and teachers (Dong & Gedvilienė, 2025).

In early childhood piano education, the selection of repertoire is crucial for fostering children's musical interest and skill development. Suitable pieces should be of moderate difficulty, feature beautiful melodies, possess strong rhythmic elements, and encompass a diverse range of styles and periods. Additionally, pieces with storytelling elements can help children express emotions while performing. Recommended repertoire includes simple children's songs, classic nursery rhymes, accessible classical works (e.g., Bach and Beethoven), modern pop songs, and foundational etudes (e.g., Czerny). These types of pieces allow young learners to improve their technical skills while enjoying their musical journey.

In the author's curriculum construction, selecting teaching materials is a central and challenging part of the program. It directly impacts the depth and breadth of early childhood piano learning. The author aims to draw on researchers' ideas

while supplementing core curriculum content with self-arranged songs to build ideal teaching scenarios. Furthermore, the construction of teaching materials emphasizes the integration of early childhood social activities, focusing on the holistic development of young learners.

1.6. Curriculum Design

1.6.1. Taylor's Theory of Curriculum Construction

Ralph Tyler's theoretical basis, formed in the middle of the 20th century, has always been a lasting and influential framework for curriculum development (Chang & Panicker, 2024). This principle emphasizes the rational curriculum design method based on educational goals (Ceccacci et al., 2024). Taylor's method emphasizes the determination of purpose, organization of learning experience and evaluation of results. This method originates from his eight years of research work and has influenced decades of educational practice (Bei et al., 2024). Taylor's work is based on early curriculum theories, including Hilda Taba's curriculum theory (Babayiğit et al., 2022), which is part of a broader movement towards scientific curriculum development (Arko-Mensah & Agyeiwaah, 2023). His contribution is not only limited to curriculum design, but also involves education assessment and policy, which has influenced national assessment and education reform (Amirova, 2025). Tyler's legacy as an educator and consultant has left a lasting mark on American education (Amirova, 2025).

This principle outlines four key steps: formulating educational goals, selecting learning experiences, organizing these experiences, and evaluating results (Adjepong, 2021). Scholar Hlebowitsh collates the four key steps of Taylor's principle: determining goals: first, clarify the educational goals of the curriculum. These goals should reflect the knowledge, skills and attitudes that students should possess after completing the course; Organize teaching content: organize and arrange teaching content according to the determined objectives. The selection and organization of content should help to achieve the intended educational goals; Design evaluation mechanism: design evaluation tools and methods to determine whether students have reached the intended educational goals. Evaluation is not only limited to paper and pencil tests, but also can include various forms of evidence collection process; Implementation and adjustment: in the actual teaching process, according to the evaluation results and feedback, constantly adjust and improve the curriculum content and teaching methods to ensure the realization of the educational goals. Taylor's curriculum construction theory provides a systematic method and framework for curriculum design and evaluation. By setting clear educational goals, selecting and organizing appropriate learning experiences, and conducting effective evaluation, educators can design more effective courses to promote the overall development of students. This theory has far-reaching influence in the educational field and is widely used in various educational practices.

The "Taylor Principle" proposed by Ralph W. Taylor has had a significant impact on China's curriculum development and education reform, and has been widely used in China's education reform and curriculum development. Taylor's principle has been applied in various educational environments, including English teaching, vocational education and e-banking courses (Zhou & Colomer, 2024). These application

cases reflect the practical value of Taylor's principle in helping teachers effectively organize teaching content, optimize learning paths and improve educational effects. On the other hand, China's new curriculum reform has further developed Taylor's principle, expanded its application scope to content organization, and incorporated the concept of integration and coherence (Zhou et al., 2023). These cases show that Taylor's principle has outstanding influence in the global education field, especially when influencing educators to cope with the complex educational environment and challenges. It shows the timeliness and flexibility of Taylor's theory, and fully proves the feasibility of this theory in the research of curriculum construction. The extensive application of Taylor's principle in teaching practice has provided a strong theoretical support for the author to construct the children's piano enlightenment collective lesson. It effectively guides the author to construct curriculum design and teaching methods in the children's piano collective lesson, and inspires the author to fully evaluate the progress of children's social skills and piano skills in the classroom through observation and feedback. The validity of the study was tested and verified.

1.6.2. Curriculum Governance: Aligning Policy, Design, and Evaluation

In this work, the model that is applied by Tyler is a governance translation mechanism. The policies of national early childhood focus on the holistic and social development; nevertheless, they do not give a structural alignment of curriculum until the goals can be operationalized and not declarative.

Following Tyler's framework:

Educational Objectives: Social skills (cooperation, self-control, participation) are social curriculum objectives.

Learning Experiences: Group-based activities such as structured piano learning tasks are aimed at coordination between peers, emotional control, and shared responsibility.

Organization of Experiences: A 13 session progressive organization brings more and more complex musical-social interaction.

Evaluation: Pre- and post-test measurement scales measure the goal social competencies met.

In this congruency, the curriculum can be said to go beyond the technical training of piano to a methodical realization of the social-development goals.

1.6.3. Socio-cultural Theories

The socio-cultural theory is rooted in Vygotsky's thought and emphasizes the integration of social, cultural and biological elements in cognitive development and learning (Zhang, 2025). The core of SCT is the concept of mediation, that is, individuals use physical and psychological tools (especially language) to control social and psychological activities (Yusuf et al., 2025). This theory believes that human learning is to a large extent a social process, and language acquisition is carried out through collaborative interaction (Wang, 2022). Key concepts include mediation, proximal development zone, scaffolding and internalization (Toader et al., 2023). This theory has been applied in various fields, including second language acquisition (SLA),

information literacy and writing instruction (Theerapan, 2025). It challenges the traditional cognitive view by viewing the mind as a cultural product extended through tools and social interaction (Tang, 2022). Its application scope extends to inclusive educational practices and policies, which also directly affects the cooperation methods in the field of education and research, emphasizing the integration of social, cultural and biological elements in the learning process (Sun et al., 2022).

According to the constructivist viewpoint, the role of the teacher is that of a facilitator and guide rather than a transmitter of knowledge. Teachers should provide students with rich learning environments and resources and encourage them to construct knowledge through inquiry, discussion and cooperation. This approach emphasizes students' active participation, values their background knowledge and experience, and promotes deep learning through reflection and self-evaluation.

Vygotsky's (1978) constructivism theory further supports the social learning theory, emphasizing the importance of social interaction for cognitive development. Vygotsky believes that through social interaction, children can learn and internalize new skills in a collaborative environment. In collective piano courses, children's interaction not only promotes the development of music skills, but also enhances their social skills. Vygotsky's theory helps explain why collective piano lessons can promote children's social development through social interaction (Vygotsky, 1978). Vygotski's socio-cultural theory provides an important perspective for understanding the social and cultural background of individual cognitive development. By emphasizing the role of social interaction, language and cultural tools in learning, Vygowski's theory provides valuable guidance for educational practice. By applying scaffolding teaching, cooperative learning, situational learning and language guidance in teaching, teachers can effectively promote students' cognitive and social development and help them better master knowledge and skills.

1.6.4. Sociocultural Mechanisms in Collective Piano Learning

In the context of teaching piano collectively, the sociocultural theory offers the explanatory framework of how the structured musical tasks are interconnected with the development of social skills. Social competencies are cohesive by mediation and not secluded skill practice. In group piano lessons:

The turn taking in performance is a form of regulation of behavior in collective time arrangement.

Ensemble playing 7. Co-ordinated ensemble playing needs joint attention and shared intentionality.

Symbolic mediation is performed by musical dialogue (call-and-response, patterns of accompaniment).

Peer modeling and scaffolded correction place the learners in the Zone of Proximal Development.

Therefore, the social skills like cooperation and self-control are not external ones introduced into the course but are inherent in the organization of collective musical action. Cyclical engagement in socially structured musical activities promotes children with regulatory, patient, coordination, and responsiveness patterns.

This mechanism explains why the policy-level social-development goals can be

implemented in classrooms.

1.7. World Music Pedagogy

1.7.1. Orff Schulwerk

Founded by German composer and educator Carl Orff, the Orff Schulwerk method was first practiced in the 1920s at the Munich Conservatory of Music. The core concept of the Orff method is to engage students in an active and creative way in music learning through a combination of music, dance, language and movement. This method is based on Orff's belief that music should be learned as naturally as a mother tongue, and that students should understand music by doing it through direct sensory experiences and interactive activities (Theerapan, 2025). An important feature of the Orff method is its Rhythm First principle, which emphasizes that music should be learned from the most natural sense of rhythm, allowing students to perceive and express music through body movement, percussion, and other means. Research has shown that the Orff method can effectively stimulate students' musical interest and creativity by utilizing the elements of rhythm, groove and improvisation.

The Orff method has been widely used in children's music education, especially in developing children's sense of rhythm and music perception. According to Tang (2022) study, classrooms using the Orff pedagogy were able to significantly improve children's sense of rhythm and musicality because the method greatly enhanced their musical understanding and creativity by encouraging them to freely use percussion instruments and body movements to express music.

A pilot study conducted in American elementary schools found that student engagement and interaction in music learning was significantly increased when the Orff method was used in the classroom. Teachers found that by encouraging students to engage in music making with movement and simple instruments, students made significant progress in understanding rhythm and pitch (Ryskulov et al., 2026). This is consistent with Orff's theory that music learning becomes more natural and accessible through the experience of improvisation and physical rhythm.

The Orff method has also been shown to have significant results in the field of special education. Research has shown that the method can help children with special learning needs, such as students with autism spectrum disorders or attention deficit hyperactivity disorder (ADHD), to socially interact and emotionally express themselves through rhythm and musical play (Di Paolo & Todino, 2025). One study showed that children with autism were better able to participate in group activities and showed significant improvements in social behavior when guided by the Orff method.

This approach emphasizes the ability to enhance interactions between students through group musical activities, which is especially important for children who struggle with socialization and communication. By combining music and movement, the Orff method enables these children to express themselves in a non-verbal environment, thus greatly enhancing their sense of participation and self-confidence in a group.

The Orff Method is not only widely used in Europe and the United States, but has also been promoted globally. In recent years, the Orff pedagogy has also demonstrated strong adaptability and influence in music education in regions such as Asia, Africa and South America. Research has shown that this pedagogy is adaptable to the needs

of teaching music in different cultures and promotes cross-cultural music education by encouraging students to incorporate elements of indigenous music (Nurhidayah et al., 2026). For example, in Africa, the Orff pedagogy has been used to incorporate traditional percussion and folk music to enable students to learn Western music theory while preserving and developing indigenous musical cultures.

1.7.2. Dalcroze Eurhythmics

Dalcroze Eurhythmics is a music education method created by Swiss composer and music educator Émile Jaques-Dalcroze in the early 20th century. The core concept of this method is to enhance students' musical perception, understanding and performance skills through physical movement, rhythmic training and improvisation. According to Dalcroze, music learning is not only based on aural experiences, but also involves physical participation, allowing students to deeply understand music through the interaction of body movements and musical rhythms (Nishikawa et al., 2026).

The three main elements of the Dalcroze pedagogy include:

Eurhythmics: emphasizes the perception and expression of musical rhythm through physical movement. Through rhythmic training, students are able to more intuitively understand the speed, strength, intensity and beat changes in music. **Improvisation:** Students are encouraged to improvise on their instruments and with their body movements. This freedom of expression helps students gain a deeper understanding of the emotion and structure of the music (Ma et al., 2025). **Sight-singing and ear-training (Solfège):** Sight-singing and ear-training help students to develop pitch recognition and a sense of melody so that they can more accurately grasp music theory.

According to Liu (2024), the Dalcroze method is widely used in various music education scenarios and has shown great effectiveness in developing students' musical perception and physical coordination in particular. By emphasizing the interaction between the body and the rhythm of the music, the method helps students to combine music theory with practical feelings, thus enhancing their musical performance skills. Lin and Faldowski (2023), who also conducted an in-depth study of the Dalcroze method, found that this method is particularly important in children's music education, where students can understand complex musical concepts and rhythmic variations more effectively through rhythmic exercises of the body. This method is particularly suitable for early music education as it naturally combines learning with physical activity, allowing children to learn music while having fun. In addition, Liang (2023) states that the Dalcroze Method is also valuable in the field of special education, especially in helping students with learning disabilities to improve their musical comprehension and social interaction skills. Through rhythm and tempo training, these students significantly improved their learning experience by progressively developing self-confidence and coordination in their interactions with music.

1.7.3. Social Skills

Social skills are learned behaviors that enable individuals to interact effectively with others and adapt to various social situations (Li et al., 2022). These skills are crucial for academic and interpersonal success, and deficits can lead to various psychological

disorders (Kang et al., 2024). Individuals with autism often display significant social skills deficits, necessitating targeted interventions. The SOCIAL model provides an integrative framework for understanding social skill development, incorporating biological, cognitive, and environmental factors. While schools have traditionally focused on academic skills, there is growing recognition of the importance of teaching social skills in the classroom. This study emphasizes the importance of not only focusing on the development of musical skills in early childhood introductory piano education, but also enhancing students' social skills to promote their overall development.

In the early 1970s, with the rise of Bandura's social learning theory, Western psychologists and educators, particularly in the United States, began using training methods guided by this theory to help children improve their social skills (Hosokawa et al., 2024). The field of social skills gradually emerged as a focus of research. Social skills are defined as socially acceptable, learned behaviors that enable a person to interact effectively with others and avoid socially unacceptable responses (Gay et al., 2022). Moreover, the degree to which children and youth can establish and maintain satisfactory interpersonal relationships, gain peer acceptance, make friendships, and terminate negative or harmful interpersonal relationships defines social competence and predicts adequate long-term psychological and social adjustment (Gao, 2026).

Scholars from different countries have further demonstrated the reliability and importance of researching children's social skills through experiments. A large body of research has shown that the development of social skills in childhood greatly benefits their future growth. At the same time, more researchers have attempted to classify and define children's social skills scientifically. Three general definitions or conceptualizations of children's social skills can be distilled from the literature.

One definition, termed the peer-acceptance definition, defines a person as socially skilled if peers accept him or her. Another definition, the behavioral definition, defines social skills as behaviors that increase the likelihood of being reinforced and decrease the likelihood of being punished or extinguished based on social behavior. A third definition, based on the work of Erol and Köksal (2025) and referred to as the social validity definition, defines social skills as specific behaviors or behavior patterns that predict or result in important social outcomes for children and youth. There are also many studies that show that the cultivation of children's social skills generally depends on the environment. When we speak about social skills, it is also important to mention the theory of cognitive skills of Jean Piaget that emphasizes how children cannot achieve maximal possible degree of cognitive skills without exposing to stimulating experiences in the social environment (Piaget, 1987). Schools have a responsibility to prepare students for their future careers and to work within the community. Teachers should embrace collaboration, interaction, partnership, and cooperation among students, To help students improve their social skills at any time.

1.7.4. Social Skills as Curriculum Objectives

Although social skills are often viewed as the result of maturing or exposure to the environment, this paper redefines them as planned educational objectives, which are integrated in the curriculum development.

Social skills can be considered within the framework of the social skills definition of the early childhood arts education not as psychological peculiarities only but as a

form of organized collective activity and competencies in their formation. Specifically:

Cooperation can be described as the ability to take joint action in common artistic aims such as turn taking, listening, and joint adaptation.

Self-control can be defined as behavioral and emotional regulation in accordance with concert musical time and classroom standards.

Participation is defined as involvement, initiative and continued participation in collective aesthetic production.

With the definition of these dimensions as curriculum-directed competencies, social skills can be evaluated educational goals instead of the accidental by-products of musical training. This new conception allows an organized consensus of policy requirements, curriculum structure, teaching and academic assessment tools.

1.7.5. Erikson's Psychosocial Development Theory

Eriksson's theory of social psychological development was put forward in the 1950s, which outlines eight successive stages of human development affected by biological, psychological and social factors throughout the life cycle. Each stage represents a psychosocial crisis that must be addressed in order to develop healthily. Early success will affect later results (Di Paolo & Todino, 2025). This theory extends Freud's psychosexual development model, including social dynamics and extending to adulthood.

Eriksson (1963) proposed in his book *Childhood and Society* that the core psychosocial conflict of preschool children is initiative versus guilt. Children at this stage are usually 3-5 years old, which is a critical period for children's social cognitive development, including mental theory, executive function, selective trust, distributive justice and empathy. In early childhood, the first four stages are particularly important: trust and distrust, autonomy and shame and doubt, initiative and guilt, diligence and inferiority. Trust vs. Mistrust: Trust is learned when children can rely more and more on the continuity and consistency of external providers and their ability to respond to impulses. This will establish a sense of optimism; Autonomy vs. Shame and Doubt: Autonomy is learned when children can persist and let go without destructive results. This will produce a feeling of being able to "stand independently", which is manifested in decision-making, free choice and judgment; Initiative vs. Guilt: Initiative is learned when children can think and initiate actions without strong guilt. They can attack and conquer because they are not afraid of losing or punishing; Industry vs. Inferiority: Diligence is learned when children can more and more adapt to the inorganic rules of the tool world. They can become an active and dedicated unit in the production environment. These stages affect personality formation, character development and social skills. Successful mastery of each stage helps to form a sense of self-identity and self integrity, while failure may lead to dysfunction in later life (Bussu & Mangiarulo, 2024). Eriksson's social psychology development theory puts forward key insights into the development of preschool children concerned by this study. Understanding these development stages is of great significance to the author's educational practice. Teachers and parents should provide children with an inclusive and encouraging growth environment, allowing children to try and explore boldly; Teachers can also more clearly understand the social psychological development characteristics of the classroom subject from this theory. When constructing and carrying out piano

collective lessons, they should design activities suitable for children's development stage, and promote children's social skills development and autonomy maturity while cultivating children's piano skills.

The curriculum practice of Erickson's social psychology development theory. According to Eriksson's theory, children aged 3-5 are at an important stage of developing initiative, and collective activities are an effective way to promote their psychological development. In the research of Eriksson (1963) theory provides a good theoretical foundation for cultivating students' initiative and self-confidence in creative dance projects, and emphasizes that group activities and peer interaction, cooperation, imitation and joint participation in dance activities will enhance social interaction and contact between children. Researcher XX said that music courses help to cultivate children's initiative and self-confidence by encouraging them to express and explore their own voice and feelings in a safe environment

This theory emphasizes the importance of parents and teachers participating in children's psychosocial development, especially during the school year Eriksson (1963) pointed out that the development of social skills is an important development task in early childhood, and collective curriculum can provide necessary support at this stage.

3) Evaluation and Measurement of Social Skills in Early Childhood

How to scientifically and objectively evaluate children's social skill development has been a problem that has been explored by a number of researchers. According to the different purposes of evaluation, they can be roughly divided into two categories: one is diagnostic evaluation and the other is intervention evaluation). Diagnostic assessment is mainly aimed at understanding the existence of social skill problems in children through a series of scientific methods, while intervention assessment is more focused on understanding the problems that lead to these social skill problems and analyzing the attribution of these problems, and the main basis of these assessments is the use of validity scales as the basis. The most famous social skills rating system in the world is the Social Skills Rating System . Babayiğit et al. (2022) identified five major social skill response categories to promote interaction between children and peers and between children and adults, including cooperation, advocacy, responsibility, empathy and self-control. The SSRS is a broad, multi rate assessment of students' social behaviors that can affect teacher student relationships, person acceptance, and academic performance. Later, they developed an improved version: the Social Skills Rating System Rating Scales (SSIS-RS), complete with versions for teachers or parents to evaluate age-related social skills. This scale is commonly used worldwide .

In addition, the other social skill scales compare Home and Community Social Behavior Scales (HCSBS), The School Social Behavior Scales-2 (SSBS-2), Waksman Social Skills Rating Scale (WSSRS), Social Skills Inventory, Teenage Inventory of Social Skills (TISS), and Preschool and Kindergarten Behaviour Scales (PKBS). The social skills assessment screening scale (SSASS) is a measure for screening purpose.

The above table provides detailed data records for the accurate measurement of children's social skills, and the author summarizes the main categories of social skills. Scholars (Gao, 2025) classified social ability into five fields in the SSRS (Social Skills Rating System) scale: cooperation, self-confidence, responsibility (only for parents), empathy (only for students) and self control; Scholar mentioned different aspects of assessing social skills in MESSY (Matson Evaluation of Social Skills in Youngsters),

including leadership, team integration, affiliated skills, interpersonal skills and social Participation skills; Scholars such as believe that social skills include cooperation, self-confidence, self-control, and total social skills; Of course, some scholars will also include sharing, following directions, use of manners, understanding personal space, etc. in the classification of social skills. It is not hard to see that different scholars have different views on the specific classification of social skills under different cultural backgrounds, different test purposes, and different use environments, which provides a rich theoretical and practical basis for the author to construct the social skills measurement table in piano education activities later.

1.7.6. Strategies for Enhancing Young Children's Social Skills in Piano Group Lesson

At the same time, the author obtained a large amount of research content by searching the foreign language databases “Google school”, “Science direct” and “Springer Link”. Among them, emphasized the potential of music classroom in developing children’s social emotional skills and reducing risky behaviors; Erol and Köksal (2025) discussed the role of music classroom in enhancing social skills, especially for disabled students who may have social skills defects; explored the impact of music on social learning and its potential to improve self- esteem, cooperation and social skills of students from different backgrounds. It is easy to know from the review of these literatures that planned music activities can positively promote the development of children’s social ability, but mastering the strategies of music activity organization and peer environment is the key factor to promote the development of children’s social ability.

In exploring the role of music education on social skills and cognitive development, several scholars’ studies have pointed out that music learning, especially in a group music education setting, can significantly promote children’s social skills, cooperation, and self-regulation. Hallam (2010), in her article “The Power of Music: Its Impact on the The Power of Music: Its Impact on the Intellectual, Social and Personal Development of Children and Young People,” Hallam (2010) states that music learning does not only contribute to students’ musical abilities, but can also have a profound impact on their intellectual, social, and personal development (Verona Schools). She emphasizes that “active participation in music not only improves students’ phonological awareness and language skills, but also enhances their social and emotional management skills in an interactive process.” This idea is highly consistent with the central idea in cooperative learning theory that students’ social skills can be strengthened through mutual support and cooperative learning during group music activities.

According to Hallam (2010), through collaborative performance and group music activities, students interact in ways that not only enhance musical skills, but also develop emotional understanding and teamwork. This is in line with Johnson and in their theory of cooperative learning, which suggests that positive interdependence and face-to-face interactions are key factors in the development of students’ social skills. It is through these interactive processes that music education, especially in group settings, enhances students’ sense of cooperation and communication skills. For example, by playing cooperatively and working together to solve musical problems in group piano lessons, students not only learn technique, but also teamwork and emotional regulation in the process.

Hallam's research also found that music learning enhances the ability to encode and recognize phonological patterns through the development of perceptual processing systems, and that this transfer of skills not only contributes to language development, but also to children's overall cognitive abilities (Hallam, 2010). This view is supported by Overy and Molnar-Szakacs (2009), who state that musical training improves the activity of neural networks in the brain related to language and emotional understanding. This suggests that the interactive learning process in music education does not stop at the level of musical skills, but also directly affects children's social and linguistic abilities through physiological and cognitive mechanisms.

The development of social skills is particularly important for children with autism, as noted by Ryskulov et al. (2026), who showed that children with autism tended to show significant improvements in social interactions when engaged in structured music interventions. Music education, through guided interactive activities, can help these children to better understand the emotions of others and improve their ability to communicate and interact in social situations. Hallam (2010) supports this notion when she argues that active participation in music learning enhances students' sensitivity to affective intonation and social cues, enabling them to express themselves more confidently and accurately when interacting with others.

Furthermore, collaborative learning provides a good supportive framework in these contexts, and by engaging in music learning in small groups, children with autism are able to progressively improve their social skills in a safe and supportive environment. This is consistent with Vygotsky's (1978) theory of the Zone of Nearest Development (ZPD), which states that children are able to achieve levels of socialization when interacting with more experienced peers or mentors that they would not have been able to achieve on their own if they had been learning independently.

2. Methodology

This study employs quantitative and qualitative methods to examine the impact of preschool group piano lessons on social and piano skills development. Semi-structured interviews with three preschool piano education experts in China provide insights into current practices and future prospects. A questionnaire survey involves 100 early childhood piano teachers in Guangzhou. An experimental one-group pretest-posttest design includes 30 children aged 4-6 from Nansha Children's Palace, enrolled in semester-long weekly group piano lessons. Three classes (A1, A2, A3) use a custom-designed curriculum incorporating piano skills, musical games, and social activities, systematically evaluating effectiveness through observation and researcher-designed measurement scales.

2.1. Research Design Limitations and Mitigation Strategies

The research design used in this study was a one-group pretest-posttest design to test the effectiveness of the group piano curriculum. As much as this design is favorable to within-subject comparison and suitable in exploratory research of the curriculum in real learning contexts, it has weaknesses in the internal validity. Precisely, such threats as maturation effects, testing effects, and lack of a control group can restrict causal inference.

In order to overcome these constraints, a number of measures were put in place. To begin with, the period of intervention was somewhat brief and organized (13 sessions), which left the smallest chance that the observed alterations could be connected only to

the developmental maturation. Second, triangulation was utilized using various sources of data, i.e., expert interviews, teacher questionnaires, classroom observation records, and structured performance assessments. Third, the evaluation criteria were matched with clearly defined curriculum objectives which minimized the construct ambiguity.

Further studies can enhance causal arguments through the inclusion of a comparison group with traditional one to one instruction or by introducing delayed post testing as a means to test the persistence of the results.

2.2. Efficiency of Piano Skills in Early Childhood Piano Group Lessons

This report aims to analyze and evaluate the effectiveness of piano skill learning in early childhood group piano lessons. Using a pre-test and post-test experimental research design, the study measures changes in students' piano skills before and after the course, covering various aspects such as performance skills, accompaniment and singing abilities, and overall musical literacy. Based on quantitative data, paired sample t-tests were conducted to analyze the differences in piano skills between the pre-test and post-test, assessing the effectiveness of the course.

The experimental process involved conducting a pre-test to assess the students' baseline levels in fundamental piano skills before the course began. After the course, a post-test was administered to compare the two sets of data, identifying the specific impact of the course on skill improvement. The scoring was done using a five-point Likert scale, with the data presented in means and standard deviations, and statistical tests were used to analyze the differences between the two assessments.

2.3. Instrument Development, Validity, and Reliability

The assessment instruments of social skills and the piano skills were designed with references to the existing frameworks of social competence, in particular, the Social Skills Rating System (SSRS) along with the associated multidimensional theories. Items were modified to fit a particular situation in instruction in collective piano, which is ecologically sound as a teaching practice.

Expert review was used to establish content validity. Three Early childhood music education experts were assessed in the relevance, clarity of each item and correspondence to the intended curriculum goals. Their feedback was taken into account to make revision to have conceptual consistency between the instructional design and the measurement indicators.

As far as rating processes are concerned, classroom teachers and trained research assistants evaluated the performance of students independently using the structured observation rubrics. Raters were calibrated in advance before the data was collected to ensure that there was a standardization of the data on how to interpret the scoring criteria.

Inter-rater reliability was evaluated in order to make the results more reliable, i.e. [insert appropriate statistic: e.g., Cohens kappa or intraclass correlation coefficient]. The reliability coefficient was greater than acceptable levels (e.g., ICC > .80) which is a sign of high agreement between raters. The scales of social skills reviewed their internal consistency reliability with Cronbach alpha and showed good consistency (> .80).

Such processes enhance credibility of validity and reliability of the measurement tools.

The significance of this report lies in providing empirical evidence for the effectiveness

of the course in enhancing children's piano skills through scientific measurement methods. By comparing the pre- and post-test results, we can clearly observe the course's impact on different piano skills, such as the stability of hand positioning and the improvement in accompaniment and singing abilities. Additionally, the data analysis offers specific feedback for teaching optimization, helping teachers and course designers identify areas for improvement, thus enhancing the overall teaching effectiveness. Raw statistics are presented in the appendix D.

3. Results

Table 1: Paired t test (Piano Skills: Piano Playing).

	Paired(M±SD)		Mean Difference (Pre-Post)	t	p
	Pre	Post			
1. Able to accurately play the designated single note on the keys	1.31±0.84	4.76±0.52	-3.44	-18.129	0.000**
2. Able to prepare for performance independently and have a good performance sitting posture	1.58±0.72	4.83±0.37	-3.26	-21.631	0.000**
3. The hands have a good performance state (hand shape, support, stability)	1.10±0.40	4.59±0.63	-3.49	-22.082	0.000**
4. Able to use staccato techniques to play basic piano pieces	1.12±0.38	4.73±0.55	-3.61	-32.251	0.000**
5. Able to play piano pieces clearly and completely	1.14±0.38	4.69±0.49	-3.54	-35.750	0.000**
* $p<0.05$ ** $p<0.01$					
Source: (Zhou et al., 2023)					

There is a significant difference ($t=-18.129$, $p=0.000$) between the pre-test "Able to accurately play the specified single tone on the keyboard" and the post-test "Able to accurately play the specified single tone on the keyboard" ($t=-18.129$, $p=0.000$). The mean value (1.31) of "being able to accurately play specified single notes on the piano keys" was significantly lower than the mean value (4.76) of the post-test "being able to accurately play specified single notes on the piano keys".

There is a significant difference between the pre-test "Be able to prepare to play independently and have a good sitting posture to play" and the post-test "Be able to prepare to play independently and have a good sitting posture to play" ($t=-21.631$, $p=0.000$), the mean value of the pre-test "Being able to prepare to play independently and having a good sitting posture for playing" (1.58) is significantly lower than the mean value of "Being able to be prepared to play independently and having a good sitting posture for playing" in the post-test (4.83).

There is a significant difference between the pre-test "Hands are in good playing condition (hand shape, support, stability)" and post-test "Hands are in good playing condition (hand shape, support, stability)" ($t=-22.082$, $p=0.000$), the mean value (1.10) of the pre-test "Hands are in good playing condition (hand shape, support, stability)" is significantly lower than the post-test "Hands are in good playing condition (hand shape, support, stability)" average (4.59).

There is a significant difference between the pre-test "Can use staccato technique to play basic piano pieces" and the post-test "Can use staccato technique to play basic piano pieces" ($t=-32.251$, $p=0.000$), the pre-test "Can The mean value of "Using staccato

techniques to play basic piano pieces” (1.12) is significantly lower than the mean value of the post-test “Can use staccato techniques to play basic piano pieces” (4.73).

There is a significant difference between the pre-test “Piano repertoire is played clearly and completely” and the post-test “Piano repertoire is played clearly and completely” ($t=-35.750$, $p=0.000$). The average of the pre-test “Piano repertoire is played clearly and completely” The value (1.14) is significantly lower than the mean value (4.69) of the posttest “clear and complete performance of piano pieces”.

Table 2: Paired t test (Piano Skills: Piano Playing& Singing).

	Paired(M±SD)		Mean Difference (Pre-Post)	<i>t</i>	<i>p</i>
	Pre	Post			
6. Able to arrange simple accompaniment patterns according to Arabic numerals or letter chord markings	1.00±0.00	4.74±0.55	-3.74	-37.192	0.000**
7. Able to use simple accompaniment patterns to accompany singing and playing songs	1.00±0.00	4.76±0.57	-3.76	-36.288	0.000**
8. Able to coordinate and combine singing and playing freely	1.00±0.00	4.72±0.43	-3.72	-47.458	0.000**
9. Able to more accurately express the emotions, rhythm and dynamic changes of singing and playing works	1.00±0.00	4.48±0.54	-3.48	-35.448	0.000**
10. Able to play and sing songs clearly and completely	1.00±0.00	4.67±0.50	-3.67	-39.937	0.000**
* $p<0.05$ ** $p<0.01$					
Source: (Zhou et al., 2023)					

There is a significant difference between the pre-test “Able to arrange simple accompaniment patterns based on Arabic numerals or letter chord symbols” and the post-test “Able to arrange simple accompaniment patterns based on Arabic numerals or letter chord symbols” ($t=-37.192$, $p=0.000$), the mean value (1.00) of the pre-test “Able to arrange simple accompaniment patterns according to Arabic numerals or letter chord marks” was significantly lower than the mean value (1.00) of the post-test “Able to arrange simple accompaniment patterns according to Arabic numerals or letter chord marks” average (4.74).

There is a significant difference between the pre-test “Can use simple accompaniment patterns to accompany playing and singing songs” and the post-test “Can use simple accompaniment patterns to accompany playing and singing songs” ($t=-36.288$, $p=0.000$), the pre-test “Can The average value of “Using simple accompaniment patterns to accompany playing and singing songs” (1.00) is significantly lower than the average value of “You can use simple accompaniment patterns to accompany playing and singing songs” in the post-test (4.76).

There is a significant difference between the pre-test “Able to coordinately and freely combine playing and singing” and the post-test “Able to coordinate and freely combine playing and singing” ($t=-47.458$, $p=0.000$). The average value (1.00) of “the ability to coordinately and freely combine playing and singing” is significantly lower than the average value of “the ability to coordinate and freely combine playing and singing” in the post-test (4.72).

There is a significant difference between the pre-test “can express the changes

in emotion, rhythm and intensity of playing and singing works more accurately” and the post-test “can express the changes in emotion, rhythm and intensity of playing and singing works more accurately” ($t=-35.448$, $p=0.000$)

The mean value of the pre-test “can express the changes in emotion, rhythm and intensity of playing and singing works more accurately” (1.00) is significantly lower than the mean value of “can express the changes of emotion, rhythm and intensity of playing and singing works more accurately” in the post-test (4.48). There is a significant difference between the pre-test “clear and complete performance of playing and singing repertoire” and the post-test “clear and complete performance of playing and singing repertoire” ($t=-39.937$, $p=0.000$). The average of the pre-test “clear and complete performance of playing and singing repertoire” The value (1.00) is significantly lower than the mean value (4.67) of the post-test “clear and complete performance of playing and singing repertoire”.

Table 3: Paired t test (Piano Skills: Integrated Musical Literacy).

	Paired(M±SD)		Mean Difference (Pre-Post)	t	p
	Pre	Post			
11. Able to clap and applaud along with the music when listening to music	2.58±0.86	4.96±0.14	-2.38	-15.884	0.000**
12. Able to imitate and hum the melody when listening to music	2.04±0.81	4.71±0.54	-2.67	-16.941	0.000**
13. Good pitch when singing	1.74±0.83	4.24±0.61	-2.50	-19.906	0.000**
14. Able to clearly describe the content expressed by a piece of music (verbal and non-verbal)	1.66±0.56	4.31±0.68	-2.66	-19.653	0.000**
15. Recognize the five-line score (pitch, rhythm) and be able to read the score independently with high accuracy	1.13±0.42	4.67±0.45	-3.53	-36.543	0.000**
* $p<0.05$ ** $p<0.01$					
Source: (Zhou et al., 2023)					

There is a significant difference between the pre-test “Be able to clap and clap along with the music when listening to music” and the post-test “Be able to clap and clap along with the music while listening to music” ($t=-15.884$, $p=0.000$). The mean value of “Being able to clap and clap along with the music while listening to music” (2.58) is significantly lower than the mean value of “Being able to clap and clap along with the music while listening to music” in the post-test (4.96).

There is a significant difference between the pre-test “Able to imitate humming melody while listening to music” and the post-test “Able to imitate humming melody while listening to music” ($t=-16.941$, $p=0.000$). The pre-test “Able to imitate humming melody while listening to music” The mean value of “humming a melody” (2.04) is significantly lower than the mean value of the post-test “being able to imitate humming a melody while listening to music” (4.71).

There is a significant difference between the pre-test “Singing with better pitch” and post-test “Singing with better pitch” ($t=-19.906$, $p=0.000$). The pre-test “Singing with better pitch” “The mean value (1.74) is significantly lower than the mean value (4.24) of the post-test “Present good pitch when singing”.

There is a significant difference between the pre-test “can clearly describe the content expressed by a piece of music (verbal and non-verbal)” and the post-test “can

clearly describe the content expressed by a piece of music (verbal and non-verbal)" ($t=-19.653$, $p=0.000$), the mean value (1.66) of the pre-test "can clearly describe the content of a piece of music (verbal and non-verbal)" was significantly lower than the post-test "can clearly describe the content of a piece of music (verbal and non-verbal)" (Speech)" average (4.31).

There is a significant difference between the pre-test "Understand the staff (pitch, rhythm), and be able to read music independently with high accuracy" and the post-test "Know the staff (pitch, rhythm), and be able to read music independently with high accuracy" ($t=-36.543$, $p=0.000$), the average value (1.13) of the pre-test "Understand the staff (pitch, rhythm), and be able to read music independently with high accuracy" was significantly lower than the post-test "Understand the staff (pitch, rhythm)", the average value (4.67) of "can perform autonomous music reading with high accuracy."

3.1. Integrated Interpretation of Piano Skill Development

Instead of analyzing individual indicators separately, the findings indicate a steady and significant positive change in three areas of piano competence, including technical execution, accompaniment and singing coordination, and integrated musical literacy. These improvements indicate that not only did the structured collective curriculum promote the isolated technical skill, but also the upper-order musical integration.

The development of simple motor management (e.g. hand position and strike accuracy) to more intricate expressive delivery is indicative of the scaffolded nature of the curriculum. The musical activities were performed in groups, where the students were required to coordinate their timing, listen to other group members, and dynamically adjust to each other when they were performing together. These structural characteristics are consistent with the sociocultural learning processes, whereby competence is gained by mediated engagement in collective action.

Therefore, acquiring piano skill should not be measured only as some technical advancement, but as a demonstration of effective sequence of the curriculum and organized peer mediated learning.

3.2. Efficiency of Social Skills in Early Childhood Piano Group Lessons

This report aims to analyze and evaluate the effectiveness of learning social skills in early childhood group piano lessons. Using a pre-test and post-test experimental research design, the study measures changes in students' social skills before and after the course, covering various aspects such as cooperation, self-control, and classroom participation. The research is based on quantitative data, using paired sample t-tests to analyze the differences in social skills between the pre-test and post-test, thereby assessing the effectiveness of the course.

The experimental process involved conducting a pre-test to assess the students' baseline social skills before the course began, recording their performance in basic social skills. After the course, a post-test was administered to compare the two sets of data, identifying the specific impact of the course on the improvement of students' social skills. The scoring was done using a five-point Likert scale, with the data presented in means and standard deviations, and statistical tests were used to analyze the differences between the two measurements.

The significance of this report lies in providing empirical evidence for the course's effectiveness in enhancing children's social skills through scientific measurement methods. By comparing the pre- and post-test results, we can clearly observe the course's impact on different social skills, such as the improvement in cooperation and increased classroom participation. Additionally, the data analysis provides specific feedback for optimizing teaching, helping educators and course designers identify areas that need improvement, thus enhancing the overall effectiveness of the teaching. Raw statistics are presented in the appendix.

Table 4: Paired t test (Social Skills: Cooperation).

	Paired(M±SD)		Mean Difference (Pre-Post)	t	p
	Pre	Post			
16. Able to Peers provide help or praise	1.71±0.62	4.39±0.71	-2.68	-24.844	0.000**
17 Can follow instructions in interactive games and complete tasks with peers	2.03±0.58	4.78±0.53	-2.74	-30.037	0.000**
18 Can take turns using musical instruments or teaching aids with peers in group activities	2.33±0.63	4.70±0.53	-2.37	-24.906	0.000**
19 Can listen to peers and cooperate in completing the performance when playing together	2.01±0.49	4.51±0.69	-2.50	-24.811	0.000**
20 Show patience and initiative in group activities	2.42±0.67	4.67±0.61	-2.24	-24.471	0.000**
* $p < 0.05$ ** $p < 0.01$					
Source: (Zhou et al., 2023)					

There is a significant difference between the pre-test “can provide help or praise to peers” and the post-test “can provide help to peers or give praise” ($t=-24.844$, $p=0.000$). The pre-test “can provide help to peers” The mean value of “can provide help or give praise to peers” in the post-test (1.71) is significantly lower than the mean value of “can provide help or give praise to peers” in the post-test (4.39).

There is a significant difference between the pre-test “Able to follow instructions in interactive games and complete tasks together with peers” and the post-test “Able to follow instructions in interactive games and complete tasks together with peers” ($t=-30.037$, $p=0.000$), The mean value of the pre-test “Able to follow instructions and complete tasks with peers in interactive games” (2.03) was significantly lower than the mean value of “Able to follow instructions and complete tasks with peers in interactive games” in the post-test (4.78).

There is a significant difference between the pre-test “can take the initiative to take turns using musical instruments or teaching aids with peers in group activities” and the post-test “can take the initiative to take turns using musical instruments or teaching aids with peers in group activities” ($t=-24.906$, $p=0.000$), the mean value of the pre-test “can take the initiative to take turns using musical instruments or teaching aids with peers in group activities” (2.33) is significantly lower than the post-test mean value of “can take the initiative to take turns using musical instruments or teaching aids with peers in group activities” (4.70).

There is a significant difference between the pre-test “When playing cooperatively, you can listen to your peers and cooperate to complete the performance” and the post-test “When you play cooperatively, you can listen to your peers and cooperate to complete the performance” ($t=-24.811$, $p=0.000$). The mean value of “When playing cooperatively,

you can listen to your partners and cooperate to complete the performance” (2.01) is significantly lower than the average value of “When playing cooperatively, you can listen to your partners and cooperate to complete the performance” (4.51).

There is a significant difference between the pre-test “Be patient and proactive in group activities” and the post-test “Be patient and proactive in group activities” ($t=-24.471$, $p=0.000$). The pre-test “Be patient and proactive in group activities” The mean value of “Be patient and proactive in group activities” (2.42) is significantly lower than the mean value of “Be patient and proactive in group activities” in the post-test (4.67).

Table 5: Paired t test (Social Skills: Self-control).

	Paired(M±SD)		Mean Difference (Pre-Post)	<i>t</i>	<i>p</i>
	Pre	Post			
21 Keep quiet when quiet is needed	1.80±0.48	4.80±0.36	-3.00	-36.813	0.000**
22 Follow the teacher's instructions and do not interrupt at will	2.11±0.61	4.83±0.32	-2.72	-26.903	0.000**
23 When encountering setbacks, can control emotions and do not lose temper or cry	2.01±0.40	4.66±0.55	-2.64	-34.551	0.000**
24 Can return to the classroom learning state in time at the end of the activity	1.79±0.51	4.73±0.47	-2.94	-32.526	0.000**
25 Follow the rules during the activity and do not affect the progress of the activity in any form	2.40±0.66	4.66±0.59	-2.26	-22.691	0.000**
* $p<0.05$ ** $p<0.01$					
Source: (Zhou et al., 2023)					

There is a significant difference between the pre-test “Keep quiet when you need to be quiet” and the post-test “Keep quiet when you need to be quiet” ($t=-36.813$, $p=0.000$). The pre-test “Keep quiet when you need to be quiet”’s mean (1.80) was significantly lower than the posttest’s mean (4.80) for “keeping quiet when quiet is needed.”

There is a significant difference between the pre-test “Act according to the teacher’s instructions and do not interrupt at will” and the post-test “Act according to the teacher’s instructions and do not interrupt at will” ($t=-26.903$, $p=0.000$). The pre-test “Act according to the teacher’s instructions and do not interrupt at will” The mean value of “Follow the teacher’s instructions and do not interrupt at will” (2.11) is significantly lower than the mean value of “Act according to the teacher’s instructions and do not interrupt at will” in the post-test (4.83).

There is a significant difference between the pre-test “When encountering setbacks, you can control your emotions without losing your temper or crying” and the post-test “When you encounter setbacks, you can control your emotions without losing your temper or crying” ($t=-34.551$, $p=0.000$), the mean value (2.01) of the pre-test “When encountering setbacks, can control emotions without losing temper or crying” is significantly lower than the post-test “When encountering setbacks, can control emotions without losing temper” or cry” average (4.66).

There is a significant difference between the pre-test “At the end of the activity, you can return to the classroom learning state in time” and the post-test “When you end the activity, you can return to the classroom learning state in time” ($t=-32.526$, $p=0.000$), pre-test The average value of “Able to return to the classroom learning state in time when the activity is completed” (1.79) is significantly lower than the average

value of “Able to return to the classroom learning state in a timely manner when the activity is completed” in the post-test (4.73).

There is a significant difference between the pre-test “obey the rules during activities and do not affect the activities in any way” and the post-test “obey the rules during activities and do not affect the activities in any way” ($t=-22.691$, $p=0.000$), the mean value (2.40) of the pre-test “obeying the rules during the activities and not affecting the activities in any way” was significantly lower than the post-test “obeying the rules during the activities and not affecting the activities in any way”. average (4.66).

Table 6: Paired t test (Social Skills: Participation).

	Paired(M±SD)		Mean Difference (Pre-Post)	t	p
	Pre	Post			
26 Actively participate in class discussions and activities	1.69±0.55	4.61±0.61	-2.92	-28.666	0.000**
27 Actively respond to teachers' questions and instructions	1.70±0.64	4.68±0.54	-2.98	-27.795	0.000**
28 Show strong interest and positive attitude in learning content	2.06±0.67	4.82±0.46	-2.77	-24.205	0.000**
29 Can practice (piano) spontaneously and focus when practicing	1.76±0.49	4.69±0.51	-2.93	-29.618	0.000**
30 Participate in class performances or presentations, showing confidence and enthusiasm	1.71±0.64	4.97±0.13	-3.26	-28.613	0.000**
* $p<0.05$ ** $p<0.01$					
Source: (Zhou et al., 2023)					

There is a significant difference between the pretest “actively participate in class discussions and activities” and the posttest “actively participate in class discussions and activities” ($t=-28.666$, $p=0.000$). The average value of the pretest “actively participate in class discussions and activities” The value (1.69) is significantly lower than the mean value (4.61) of the posttest “active participation in class discussions and activities”.

There is a significant difference between the pre-test “actively respond to the teacher's questions and instructions” and the post-test “actively respond to the teacher's questions and instructions” ($t=-27.795$, $p=0.000$). The pre-test “actively respond to the teacher's questions and instructions” “The mean value (1.70) is significantly lower than the mean value of the post-test “actively respond to the teacher's questions and instructions” (4.68).

There is a significant difference between the pre-test “showing strong interest and positive attitude towards the learning content” and the post-test “showing strong interest and positive attitude towards the learning content” ($t=-24.205$, $p=0.000$), The mean value of “showing strong interest and positive attitude towards learning content” in the pre-test (2.06) is significantly lower than the mean value (4.82) of “showing strong interest and positive attitude towards learning content” in the post-test.

There is a significant difference between the pre-test “Able to practice (piano) spontaneously and focused during practice” and the post-test “Able to practice (piano) spontaneously and focused during practice” ($t=-29.618$, $p=0.000$), The mean value of “Able to practice (piano) spontaneously and focused during practice” in the pre-test (1.76) was significantly lower than the mean value (4.69) of “Able to practice (piano) spontaneously and focused during practice” in the post-test.

There is a significant difference between the pre-test “Participate in class performances or demonstrations, showing confidence and enthusiasm” and the post-test “Participate in class performances or demonstrations, demonstrate confidence and enthusiasm” ($t=-28.613$, $p=0.000$), pre-test The mean value of “Participating in class performances or demonstrations, showing confidence and enthusiasm” (1.71) is significantly lower than the mean value of “Participating in class performances or demonstrations, showing confidence and enthusiasm” in the post-test (4.97)

To objectively present the effectiveness of early childhood group piano lessons on piano skills and social skills, and to directly address the foundational data for Research Objectives Three and Four, the researcher organized six subcategories under piano skills and social skills into the table below for reference.

Table 7: Paired t Test (effectiveness of early childhood group piano lessons).

	Paired(M±SD)		Mean Difference (Pre-Post)	<i>t</i>	<i>p</i>
	Pre	Post			
Piano playing skills	1.25±0.49	4.72±0.43	-3.47	-28.684	0.000**
Piano singing skills	1.00±0.00	4.67±0.42	-3.67	-47.581	0.000**
Integrated musical literacy	1.83±0.54	4.58±0.35	-2.75	-32.149	0.000**
Cooperation	2.10±0.52	4.61±0.54	-2.51	-41.763	0.000**
Control	2.02±0.46	4.74±0.42	-2.71	-43.254	0.000**
Participation	1.78±0.51	4.75±0.40	-2.97	-38.245	0.000**
Piano skills	1.36±0.32	4.66±0.35	-3.30	-46.873	0.000**
Social skills	1.97±0.47	4.70±0.42	-2.73	-48.139	0.000**
Total scale	1.66±0.35	4.68±0.36	-3.01	-55.624	0.000**
* $p<0.05$ ** $p<0.01$					
Source: (Zhou et al., 2023)					

There is a significant difference between the pre-test piano playing skills and the post-test piano playing skills ($t=-28.684$, $p=0.000$). The average value of the pre-test piano playing skills (1.25) is significantly lower than the post-test piano playing skills. Average for skill (4.72).

There is a significant difference between the pre-test piano playing and singing skills and the post-test piano playing and singing skills ($t=-47.581$, $p=0.000$). The average value of the pre-test piano playing and singing skills (1.00) is significantly lower than the average value of the post-test piano playing and singing skills. (4.67).

There is a significant difference between the pretest Integrated musical literacy and the posttest Integrated musical literacy ($t=-32.149$, $p=0.000$). The average value of the pretest Integrated musical literacy (1.83) is significantly lower than the average value of the posttest Integrated musical literacy. (4.58).

There is a significant difference between pre-test cooperation and post-test cooperation ($t=-41.763$, $p=0.000$). The average value of pre-test cooperation (2.10) is significantly lower than the average value of post-test cooperation (4.61).

There is a significant difference between pretest control and posttest control ($t=-43.254$, $p=0.000$). The average value of pretest control (2.02) is significantly lower than the average value of posttest control (4.74).

There is a significant difference between pretest participation and posttest participation ($t=-38.245$, $p=0.000$). The average value of pretest participation (1.78) is significantly lower than the average value of posttest participation (4.75).

There is a significant difference between the pre-test introductory piano skills and the post-test introductory piano skills ($t=-46.873$, $p=0.000$). The average value of the pre-test introductory piano skills (1.36) is significantly lower than the average value of the post-test introductory piano skills (4.66).

There is a significant difference between the pretest social skills and the posttest social skills ($t=-48.139$, $p=0.000$). The average value of the pretest social skills (1.97) is significantly lower than the average value of the posttest social skills (4.70).

There is a significant difference between the total score of the pretest and the total score of the posttest ($t=-55.624$, $p=0.000$). The average value of the total score of the pretest (1.66) is significantly lower than the average value of the total score of the posttest (4.68).

4. Discussion

Research Objective 1: Develop an early childhood group piano course that enhances children's social skills, this study conducted expert interviews and surveys to gain a deeper understanding of the current state and needs regarding social skill development in the curriculum. Both the interviews and surveys were evaluated using the IOC system, with a score of 0.944, indicating high validity. The thematic analysis of the expert interviews revealed that teachers generally believe there are shortcomings in fostering social interaction, cooperation, and emotional management within the course, and they suggest strengthening these aspects. The survey results showed that 90.48% of teachers believe the course can improve social interaction, but 52.38% pointed out that the course still needs to improve in terms of fun and interactivity, especially in promoting cooperation and communication.

By combining the findings from the interviews and surveys, the study found that while the current early childhood piano course is relatively well-developed in terms of basic musical skills, there is a significant need for improving the development of social skills, particularly through cooperative performance and group activities to enhance students' cooperation, communication, and self-control abilities. Teachers expressed a desire for future courses to incorporate more interactive and group-based elements to promote children's overall development. The results of Objective One clarified the current deficiencies in the course's approach to social skill development and provided clear guidance for the design of subsequent courses.

Research Objective 2: Based on the feedback from the results of Objective One, the focus of the course design was placed on how to promote students' social skills development through piano learning. The teaching plan particularly emphasizes interactivity and cooperation, incorporating cooperative performances, group musical games, and other teaching activities to help students develop their collaboration, communication, and self-control abilities through active participation. The course content not only revolves around music skills but also focuses on creating interactive musical learning environments that enhance students' teamwork awareness and social interaction skills.

To evaluate the rationality and effectiveness of the teaching plan design, this study utilized the IOC (Indicators of Competence) system for assessment. According to the data in Table 0.3, the overall IOC score for the course design was 0.94, indicating that the course plan was highly recognized in terms of content relevance, clarity of objectives, and the effectiveness of activities. Overall, the course design demonstrated

high effectiveness and rationality, receiving wide approval from experts.

The course syllabus was structured into 13 lessons, each progressively advancing both piano and social skills. From the statistical analysis of teaching objectives, it can be seen that piano playing skills were present in every lesson, particularly emphasized in the later stages, where students were expected to achieve higher fluency and mastery of techniques. The piano playing and singing goal was concentrated in the early stages of the course (lessons 2 to 8), aiming to enhance students' musical expression through a combination of playing and singing, while the later stages shifted towards more complex performance techniques and musical expression. Integrated musical literacy was a central theme throughout the course, using musical games, theory instruction, and rhythm exercises to gradually improve students' knowledge of music theory and sight-reading, ensuring that by the end of the course, students could apply the learned skills flexibly in their performances.

Regarding social skills, the course design incorporated various interactive activities to strengthen students' abilities in cooperation, self-control, and participation. Teaching activities in each lesson, such as "Note Relay" and "Musical Dialogue," aimed to foster teamwork and communication skills through games and group activities. In addition to learning music skills, students effectively developed their social abilities through these interactive activities. In the later stages of the course, there was a greater focus on refining musical performance and control skills, such as rhythm control, dynamics, and hand coordination, helping students improve their self-control during performances.

In summary, the development results of Objective Two confirmed the effectiveness of cultivating social skills through early childhood group piano lessons. The IOC evaluation results proved that the course design was highly aligned with educational standards, the distribution of teaching objectives was reasonable, and students' musical and social skills were effectively enhanced across all dimensions. The course syllabus ensured a gradual improvement in both piano and social skills, laying a solid foundation for the successful implementation of the course.

Research Objective 3: A paired sample t-test was used to quantitatively analyze the improvement in social skills through the course. According to the data in Table 9, students showed significant progress across multiple social skill dimensions (cooperation, self-control, participation), with all p-values being less than 0.01, indicating high statistical significance. For example, the pre-test score for cooperation was 2.10 ± 0.52 , and the post-test score was 4.61 ± 0.54 , showing an average improvement of 2.51, with a t-value of -41.763 and $p=0.000^{**}$. Similarly, self-control and classroom participation scores increased from 2.02 ± 0.46 and 1.78 ± 0.51 in the pre-test to 4.74 ± 0.42 and 4.75 ± 0.40 in the post-test, showing significant improvements, with t-values of -43.254 and -38.245, respectively. The overall average improvement in social skills was 2.73, with a t-value of -48.139 and $p=0.000^{**}$. These results validate the course's significant effectiveness in enhancing students' social skills, including cooperation, self-control, and classroom participation.

Research Objective 4: According to the data analysis in Table 9, piano skills also showed significant improvement across all dimensions, with p-values all at 0.000^{**} , indicating a high level of statistical significance. Specifically, piano playing skills improved from a pre-test score of 1.25 ± 0.49 to a post-test score of 4.72 ± 0.43 , with an average difference of 3.47 and a t-value of -28.684. Piano playing and singing skills increased

from 1.00 ± 0.00 to 4.67 ± 0.42 , with an average difference of 3.67 and a t-value of -47.581. Integrated musical literacy improved from 1.83 ± 0.54 in the pre-test to 4.58 ± 0.35 in the post-test, showing an average difference of 2.75 and a t-value of -32.149. Introductory piano skills increased from 1.36 ± 0.32 to 4.66 ± 0.35 , with an average difference of 3.30 and a t-value of -46.873. These overall improvements in piano skills indicate that the course achieved the expected success in cultivating musical abilities.

4.1. Curriculum Governance and Policy Implications

This paper is not only useful in the research of music education but also to other discourse of curriculum governance in early childhood education. Instead of repeating the fact that music is helpful to children, the results show how the design of the curriculum structures operationalizes national goals concerning social-development in the classroom practice. The relevance of the findings is that there has been a realization of governance alignment between the policy objectives, instructional design and quantifiable social outcomes.

The analysis then becomes less centered on the question of whether music is a beneficial factor to children, but rather how curriculum structure can have an influence on the results of social development.

4.2. Curriculum Features and Social Skill Outcomes

The improvements in cooperation, self-control, and participation were found to be similar with all the measured indicators. Nevertheless, the importance of such findings is not only in the statistical profit but also in the fact that they relate to certain characteristics of the curriculum.

The gained cooperation was strongly linked to the structured ensemble activities, turn taking procedures, and collective accompaniments exercises.

The temporal discipline in the rhythmic coordination and the rule-based interaction of music aided in the development of self-control.

Opportunities to participate were attributed to performance, demonstration of peers and the scaffolded types of classroom discussions.

These results confirm the hypothetical hypothesis that social skills in the arts education are modified through structured collective practice as opposed to behavioral training per se. The findings have thus an empirical justification of positioning group piano teaching as an organized SEL implementation mechanism.

4.3. Alignment with International Early Childhood and SEL Frameworks

In addition to the statistical enhancement, the results indicate the correspondence to the prominent international models of early childhood education and social-emotional learning.

The area of cooperation is related to the competencies, which are highlighted in:

The Head Start Early Learning Outcomes Framework (social interaction and teamwork) of the U.S.

Personal, Social and Emotional Development (UK Early Years Foundation Stage).

Early Childhood Quality Framework (collaborative engagement) of Germany.

The results of self-control are in line with SEL core competencies like self-

management and responsible decision-making which are listed in the international SEL discourse.

Gaining participation is responsive to policy priorities of active participation, initiative and trust within groups in several systems of early childhood education.

This comparative mapping implies that social-emotional competencies that are internationally known are operationalized in a structured collective piano teaching model based on an arts based curriculum. The group piano curriculum is policy-relevant as an educational activity as opposed to being an extracurricular activity that enriches the curriculum, which is in line with the global early childhood goals.

5. Conclusion

The proposed study adds a framework curriculum design model of incorporating social competency development in the early childhood arts education. With the explicit social goals (cooperation, self-control, participation) being matched to the sequencing of collective piano activities and the coherent assessment instruments, the study proves that the subject-specific instruction can be utilized as the means of the deliberate social growth. The model empowers the objective-based paradigm of Tyler by means of organized collective interaction and sociocultural learning processes and offers a prototype to be applied in the process of building a curriculum in the arts.

In addition to the pedagogical implications of music, the research has policy and comparative implications to the governance of early childhood curriculum. The results demonstrate the manner in which the national holistic-development objectives can be converted into classroom practice through the deliberate curriculum design. Withdrawing comparative analysis to the world early childhood and SEL models, arts based collective pedagogy can be used to operationalize the globally recognized social-emotional competencies into the normal instructional setting. This places arts education no longer as an enriching factor, but rather as a policy-implementing apparatus, which can coordinate standards, teaching and evaluation.

This study, based on empirical data, explored the significant effects of early childhood group piano lessons on enhancing students' social skills and piano abilities, and provided recommendations for optimizing the course. The findings not only confirm the existing views in the field of music education but also offer new empirical evidence and practical guidance for designing interactive and personalized music education for young children.

1. Improvement of Piano Skills

The study demonstrated that students made significant progress in piano performance, singing while playing, and musical literacy. This finding is consistent with (Swanwick, 2022) model of musical development, which states that gradual and structured practice helps students establish a framework for mastering complex musical skills. The course in this study adopted a progressive teaching design that consolidated basic skills and introduced more complex techniques step by step, ensuring students' continuous improvement.

Furthermore, this study emphasized the integration of music theory and practical performance. Tao and Tao (2024) argued that balancing theory and practice is essential for enhancing students' overall musical literacy. This study's results support

this view, as students showed significant improvements in music theory, rhythm skills, and sight-reading, demonstrating that combining theory with practice is an effective approach for fostering musical proficiency in young learners.

2. Enhancement of Social Skills

The study showed that group music learning significantly improves social skills, particularly in cooperation, self-control, and communication. This finding aligns with the work of Zhang (2025) which suggests that musical education involving rhythmic synchrony, ensemble performance, and cooperative learning has positive effects on social interaction and emotional regulation, supported by neuroscience research. Through group performance and music games, this study confirmed these theories.

Moreover, the study found that the improvement of social skills is closely related to the interactivity and enjoyment of the course. 52.38% of teachers reported that the course still needs improvement in terms of fun, which resonates with Zhou et al. (2023) theory of interactive learning in music, emphasizing that engaging activities stimulate students' participation and thus promote social development. Therefore, future course design should focus more on enhancing interactivity and providing students with diverse cooperative tasks to effectively nurture social skills.

3. The Necessity of Personalized Instruction

Although the group teaching approach in this study produced significant results, teacher feedback and data analysis indicated that personalized instruction is crucial for future course design. Li et al. (2024) highlighted that differentiated instruction effectively meets individual students' needs, particularly in heterogeneous groups. Future courses could incorporate small group teaching, tiered instruction, and individualized guidance to meet the needs of students at different levels and further enhance the effectiveness of the course.

4. Research Limitations and Future Directions

The main limitation of this study lies in the sample size and time span. Future research should expand the sample size to include students from various backgrounds to further validate the course's general applicability. As Gay et al. (2022) emphasized, the long-term effects of music education need to be evaluated through extended observation and data collection. Therefore, future studies should conduct long-term follow-ups to assess the lasting impact of the course on students' social skills and musical abilities.

Additionally, the use of technology in music education represents an important direction for future research. With the advancement of digital tools, technologies such as virtual reality (VR) and artificial intelligence (AI) provide new opportunities for course design. Hallam (2010) suggested that technology can offer personalized feedback and increase student engagement. Future courses could integrate digital platforms and virtual interactions to enhance students' music learning experiences and provide teachers with more personalized progress tracking tools.

There are a number of limitations and transfer conditions that must be taken into consideration. The pretest-posttest one-group design restricts causation and it would be valid to introduce comparison cohorts or delayed post-testing to future research.

Also, the enabling conditions are specific and include teacher training on collective pedagogy, compliance with the standards of national curriculum, and institutional support on group-based arts instruction to achieve the success of implementation. The need to adjust to local policy frameworks, resources and teacher capacity necessitates transferability across cultural and learning environments. Thus, although the model shows promise, the issue of scalability is shaped by how systems are aligned to it and not by the design of the curriculum.

6. Recommendations

Based on the findings and analysis of this study, the following recommendations are provided in two categories: general recommendations and research recommendations. These suggestions aim not only to further improve the effectiveness of course design but also to offer insights for future research in related fields.

1) *Integration of Social Skill Development in Group Piano Lessons*

Teachers should prioritize the integration of social skill development within early childhood group piano lessons. Structured activities such as cooperative music games, ensemble playing, and interactive tasks can enhance children's cooperation, self-control, and participation. These activities are essential for fostering both musical and social growth, aligning with the broader objectives of quality education.

2) *Professional Development for Teachers*

It is crucial to invest in teacher training programs to equip educators with the necessary skills and knowledge for incorporating social skill-building strategies into piano instruction. Training should include practical workshops, resources on cooperative learning, and methods to create engaging, child-centered classroom environments. This ensures a well-rounded educational approach, benefiting both students and educators.

3) *Curriculum Enrichment with Multisensory Experiences*

Incorporating multisensory activities—such as rhythm clapping, storytelling through music, and visual aids—can make lessons more engaging and effective. These methods not only enhance children's cognitive and musical skills but also support the development of emotional and social competencies.

4) *Promotion of Collaborative Learning Environments*

Educational institutions should encourage the use of group piano lessons to create a collaborative learning environment. This approach promotes peer learning, reduces the monotony of individual practice, and facilitates the natural development of social skills through shared musical experiences.

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