

The Impact of Cooperative Learning on Academic Performance of University Students' Perception in Jiangxi, China

Xiong Xiaowei^{1,2*}, Lily Muliana Mustafa²

¹ Jiangxi University of Technology, Jiangxi, China

² City University Malaysia, Selangor, Malaysia

*Corresponding Author: 540941450@qq.com

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Abstract: *This study examines the implementation and impact of cooperative academic performance in collective piano classes, focusing on undergraduate students at Jiangxi University of Technology. The research investigates how cooperative learning dynamics—encompassing group processing, positive interdependence, individual accountability, promotive interaction, and interpersonal skills—affect students' perceptions, academic performance, and skill development in piano education. A mixed-methods approach is utilized to provide a comprehensive analysis. Quantitative data, gathered through structured surveys and academic records, are analyzed using statistical methods, including reliability testing and regression analysis in SPSS, to measure the relationship between cooperative learning practices and academic outcomes. Qualitative data, collected through semi-structured interviews and focus groups, are examined using thematic analysis in NVivo to gain insights into students' and instructors' experiences with cooperative learning in piano education. The theoretical foundation of the study integrates Vygotsky's Sociocultural Theory, emphasizing the role of social interactions in learning, and Gardner's Theory of Multiple Intelligences, highlighting the diverse learning styles and capacities of students. These frameworks support the exploration of how cooperative learning facilitates both cognitive and social development in the context of music education. The findings reveal how group-based strategies enhance engagement, foster critical thinking, and build collaborative skills, while also addressing potential challenges such as unequal participation and balancing individual and group accountability. This research addresses a critical gap in the literature by focusing on cooperative learning in undergraduate piano classes—a domain with limited prior exploration. It offers significant implications for educators and curriculum designers aiming to improve the effectiveness of group instruction in higher education music programs. The study also provides practical strategies for fostering student engagement and optimizing learning outcomes in collective piano teaching, contributing to the broader field of innovative pedagogical practices in music education.*

Keywords: Collective Piano Classes, Preschool Education, Cooperative Learning, Music Education, Academic performance

1. Introduction

The impact of music instruction on students' personal, academic, and social growth is substantial (Váradi, 2022). In instance, taking piano lessons in a group is a great way to learn

new skills while also interacting with other people and forming a cohesive unit. Nevertheless, conventional approaches to music instruction sometimes fall short of capturing students' attention or making the most of the advantages that group dynamics can offer. The result is a surge in popularity for cooperative learning, a teaching strategy that encourages students to work together, provide one other with support, and take turns being responsible for different aspects of the lesson. Despite the obvious advantages, there is a dearth of studies examining the effects of cooperative learning on students' academic achievement, especially in collective piano lessons.

Innovative pedagogical practices that encourage students to learn independently and in groups are essential in today's classrooms. Students may not have enough chances to participate in meaningful peer relationships in typical teacher-centered piano lessons because of the emphasis on solo practice and instruction. Preparing kids for the ever-changing, collaborative contexts they will encounter in the real world is made much more difficult by this restriction (Meeder & Pawlowski, 2020). Therefore, it is becoming increasingly important to investigate different methods, including cooperative learning, to improve the quality of piano lessons and their students' performance in the classroom.

Many fields of study have begun to acknowledge the benefits of cooperative learning, which includes guided group projects and students' ability to rely on one another. All three of these skills—student engagement, critical thinking, and teamwork—are vital in today's classrooms and workplaces, and this teaching method is known to foster them. Its potential in music education, and the teaching of the piano in particular, has been little investigated despite its success in other domains (Chawke, 2023). Teachers and curriculum designers can benefit greatly from a better understanding of the effects of cooperative learning on students' academic achievement in this setting.

Complex abilities learned in piano lessons typically necessitate dedicated practice, constructive criticism, and intrinsic drive to succeed (Stapanukul, 2023). Through group interactions and shared experiences, cooperative learning provides an opportunity for students to learn from both their instructor and their classmates. Nevertheless, it remains debatable if this method facilitates the development of theoretical understanding and practical musical abilities or if it presents obstacles that might impede academic advancement. If we want to know if cooperative learning works in piano pedagogy, we need to fill this gap.

Concerns about the effect on students' grades are common when thinking about using cooperative academic performance in piano lessons. Although this method promotes teamwork, it nonetheless stresses the importance of students taking responsibility for their own learning and achieving proficiency in music. Achieving a balance between group interdependence and individual skill development is crucial for students' academic performance, so it's necessary to study if cooperative learning helps with this (Millis, 2023). In response to these worries, this research will examine the effects of cooperative learning practices on piano students' progress and satisfaction with the subject.

In cooperative learning, the interplay between personal responsibility and group reliance is crucial. Each student must become an expert pianist, but they must also work together to achieve group goals. Studying the effects of these factors on students' educational experiences is crucial because of the exciting new possibilities and obstacles they bring to students' academic and personal development (Oliveira et al., 2021). Cooperative learning has several

important features that should be further investigated in the field of music education, including the promotion of positive contact and the development of interpersonal and small-group skills.

It is also important to weigh the pros and cons of cooperative learning as it pertains to piano lessons. The benefits of group activities, including increased engagement and better interpersonal skills, aren't without their potential drawbacks, such as uneven participation and higher time demands. The effectiveness of cooperative learning in piano classes can be better understood by taking into account the ways in which these dynamics influence students' perspectives and academic achievement (Xiaowei & Noordin, 2024).

Additionally, this study aims to investigate how much students' interpersonal and small-group skills are improved through cooperative learning in a music education context. Students' capacity to communicate clearly, settle disagreements, and divide up tasks within groups determines how successful cooperative learning is at building collaborative abilities (Millis, 2023). We can learn more about the impact these skills have on students' grades by examining their perspectives and experiences.

This project will fill a gap in the literature by examining the feasibility and efficacy of cooperative learning in piano lessons, an area where there is currently very little research. The study seeks to connect cooperative learning theory with its actual implementations by examining the perspectives of undergraduates at Nanchang Vocational University and Jiangxi University of Technology (Wu & Xu, 2024). This inquiry will ultimately help to the development of creative teaching practices that boost students' academic performance and participation in piano education.

In collective piano classes, students often lack a sense of collective responsibility, manifesting as passive participation, lack of collaborative awareness, and disregard for classroom discipline. This issue is linked to individualistic tendencies, insufficient course design, inadequate teacher guidance, and a lack of interactive classroom atmosphere. Such behavior undermines teaching effectiveness, hinders teamwork, and may diminish overall learning enthusiasm. To address this, strategies such as clarifying class objectives, designing collaborative activities, enhancing teacher guidance, establishing incentive mechanisms, and encouraging student reflection can help students understand the connection between individual effort and group success, fostering responsibility and teamwork while improving classroom outcomes and students' overall competencies. Additionally, students may struggle to see the connection between individual progress and collective success due to unclear goals or a lack of structured group activities.

Such behavior undermines teaching effectiveness, disrupts classroom harmony, hinders teamwork, and may diminish the motivation of both individuals and the group. Moreover, the absence of collective responsibility may impede students' development of important social skills, such as cooperation, accountability, and mutual respect, which are crucial for their future in broader team settings.

To address this, teachers can clarify class objectives by emphasizing the relationship between individual contributions and group achievements, design collaborative activities such as ensemble performances or team challenges, and create an engaging classroom atmosphere that values participation and interaction. Establishing incentive mechanisms, like rewards for group accomplishments, can further encourage teamwork. Regular reflection sessions can help students evaluate their roles and contributions, fostering self-awareness and accountability.

These strategies not only improve classroom outcomes but also cultivate students' responsibility, teamwork skills, and a sense of shared purpose, enriching both their musical and personal growth. The specific objectives for study are as follow:

RO1: To investigate students' perceptions on the advantages of cooperative learning in collective piano classes.

RO2: To examine the role of group processing in enhancing students' learning experience in collective piano classes.

RO3: To analyze the impact of positive interdependence on students' participation in collective piano classes.

RO4: To evaluate the influence of individual accountability on students' participation in collective piano activities.

RO5: To explore how interpersonal and small-group abilities contribute to students' collaborative learning in collective piano classes.

RO6: To assess the role of promotive interaction in improving students' learning outcomes in collective piano classes.

RO7: To identify the disadvantages of cooperative learning that may affect students' academic performance in collective piano classes.

2. Literature Review

The growth that has taken place in China's cultural and educational landscape throughout the course of the country's history is reflected in the long-standing practise of collective piano lessons that have been practised in the country for generations (Sun, 2022).

These lessons have been practised in China for a considerable amount of time. The history that lies behind these collective piano lessons is both exciting and complex, and it serves as a portrayal of the shifting socioeconomic aspirations, and cultural influences that have transpired in China over the course of time (Svyrydenko & Stovpets, 2020).

The history of these classes dates back to the Qing dynasty, which ruled China from the late 19th century to the mid-20th century. The Qing dynasty, which controlled China from the late 19th century to the middle of the 20th century, is the dynasty that is responsible for the history that lies behind these collective piano lessons. At the start of the 20th century, China started making steps to modernise its armed forces as well. During this time period, China had its first offerings of collective piano instruction that utilised an actual piano. These classes were held in Beijing (Zou & Wang, 2023).

The city of Beijing was the location of these classes. As soon as Chinese society was exposed to the influences of foreign missionaries and expatriates, Western music, and the piano in particular, began to have a greater impact on Chinese culture. When these people immigrated to China, they brought with them Western educational practises as well as musical instruments from the West (Quin, 2021). Because this was one of the considerations that went into their decision to move to China, we can say that this bears some responsibility for the situation.

Madame Chao-Ling Tung is credited with being one of the early pioneers who was responsible for developing collective piano tuition in China (Fu et al., 2021). Her contributions are appreciated to this day. She is widely regarded as one of the industry's early pioneers, and for good reason. She was a pianist and a teacher who was born in China but subsequently migrated to the United States in the early 20th century in order to complete her studies. Although she

was born in China, she was known for her work in both countries. Her place of birth was on the mainland of China. She was finally able to make it back to China after a long voyage, and it was there that she came to the conclusion that she would devote the rest of her life to bringing Western music instruction to the entirety of the country. She was a pioneer in the adoption of new educational practises at the Tung Ling School of Music, which she founded in Shanghai in 1925. This school was established in 1925. Collective piano instruction was one of the things that went on during these practises. Her company went on to become a model for music education in China and was a huge effect on the emergence of the piano as a preferred musical instrument. Her mission was to spread the joy of playing the piano to as many people as possible. In addition to this, she was an innovator in the field of music instruction. During the historical period in question, she was a groundbreaking figure in the field of music education (Reimer, 2022).

At the turn of the 20th century, people from China's urban middle class as well as the country's elites began to exhibit an interest in learning the skills necessary to play the piano. This interest was primarily driven by the country's increasing exposure to Western music. The growing size of the country's middle class was the primary factor behind this interest (Andreoni et al., 2021). The piano was first introduced into Chinese households in large part as a result of the efforts of Western missionaries, schools, and private tutors. Individual piano lessons, on the other hand, were frequently prohibitive and could only be obtained by a select number of individuals due to the limited availability of these lessons as well as the high cost that was connected with taking them.

The concept of collective piano classes began to gain popularity and become increasingly prevalent as a means of making piano education more approachable and cost-effective for a broader variety of people (Pαμαδαβίδης, 2023). This was accomplished by making the concept of collective piano classes (Yang, 2020). This goal was reached through the dissemination of information regarding the advantages of taking part in collective piano lessons. It was possible for a large number of students to learn together in lessons that were held in groups, which led to a reduction in the overall cost of tuition as a consequence of the increased effectiveness of the learning. One way that we were able to achieve this goal was by facilitating the education of several pupils at the same time.

This strategy was in line with the bigger educational developments that were going place at the same time in China. At the time, educators in China were looking for ways to modernise teaching methods and make education available to a wider audience. This strategy was consistent with those goals, as it helped educators achieve both of those objectives. When the statement was first published, China was in the process of implementing bigger educational reforms at the same time (Lo, 2021). This technique was consistent with those reforms, thus it fit in well with them.

This was owing to the fact that music and instruments from the Western world were regarded as being of lower quality (Nikolsky et al., 2020). Because of the rigorous rules that were placed on a substantial number of the institutions that were responsible for teaching music and education in the Western fashion, the playing of the piano, which at the time was thought to be a reflection of Western culture, was outlawed. This came about as a result of the fact that the playing of the piano was seen as a reflection of Western culture. This transpired as a consequence of the fact that these establishments were governed by a number of stringent restrictions.

The piano has maintained its place as a treasured instrument in the realm of music instruction as well as in the performing arts in China because of its versatility and widespread acceptance (Chen et al., 2023). As a consequence of this, it has preserved its reputation as an extremely valuable instrument throughout the course of many years.

There was a meteoric rise in the number of music academies, conservatories, and private music schools that were formed in China between the years of 1980 and 1990 (Sullivan & Liu-Sullivan, 2021). This pattern carried over into the new century and continued throughout the 2000s. As a result of the growing demand for educational opportunities in the field of music, a number of these educational institutions have started providing collective piano lessons. The significance of music to parents as a resource for their children's general development and as a potential route to improved academic performance is growing. Parents increasingly view music as a means by which their children can improve their academic performance. This is something that especially applies to younger generations. The value that music holds in the lives of children is gaining an increasing amount of recognition among the adults who raise them.

The structure of collective piano teaching in China frequently takes the form of small groups of students working on their piano abilities in the same room at the same time under the leadership of an experienced piano instructor (Zheng & Leung, 2021).

Beginning with students who have never picked up a piano before and progressing all the way up to those who are more experienced, these courses are designed to accommodate students of all ages as well as skill levels. Benefits that can be acquired from this arrangement include the ability to play in ensembles, a reduction in financial outlay, and greater chances for social interaction. All of these benefits can be obtained simultaneously. The possibility of taking part in performances given by groups or ensembles counts as one of the added benefits (Chatzimparmpas et al., 2020).

2.1 Theoretical Framework

2.1.1 Sociocultural theory of learning

Collective piano classes as a means of instruction have recently garnered a lot of attention in the field of early childhood education. Vygotsky's sociocultural theory of learning is the first to be taken into account here. This theory, created by Russian psychologist Lev Vygotsky, regards social interactions and cultural influences as crucial to the learning process (Vasileva & Balyasnikova, 2019). Vygotsky's theory, when applied to the context of collective piano lessons, implies that children considerably benefit from the social interactions that occur during this type of instruction. Students can effectively "scaffold" their learning by working together in small groups and interacting with the teacher to build upon one another's knowledge and skills. Children's cognitive growth is facilitated in collective piano sessions due to the children's ability to observe and learn from each other's progress.

2.1.2 Theory of Multiple Intelligences

Howard Gardner's Theory of Multiple Intelligences is worth considering (Cavas & Cavas, 2020). Gardner's thesis questions the common understanding of intelligence by positing numerous forms of brilliance outside IQ tests. This approach emphasises the significance of understanding and accommodating the various intelligences of young students in the context of Learning piano to preschoolers. Collective piano lessons are a great way to cater to students of varying IQs.

Some students, for instance, may have a remarkable aptitude for music and demonstrate an instinctive ability to pick out patterns in melodies and rhythms. While some students may struggle to get along with their peers, there are those who thrive at social relations and group dynamics. Children who take piano lessons often see improvements in their fine motor skills and hand-eye coordination, two skills that contribute to their overall development of kinesthetic intelligence. Collective piano sessions can appeal to a larger spectrum of students and foster overall development by combining activities that tap into these many intelligences. Furthermore, Gardner's theory motivates educators to be adaptable and innovative in their methods of Learning. Teachers providing collective piano lessons have more leeway to accommodate students' varying learning styles by incorporating visual aids, kinesthetic activities, and group projects into their lesson plans. This multidimensional strategy not only improves the learning environment, but also gives kids the chance to find and cultivate their own personal skills and passions (Roberson, 2020).

2.1.3 Social Constructivism Theory

Social Constructivism Theory emphasizes that learning is a process of social interaction in which knowledge is co-constructed through continuous engagement between learners, their environment, peers, and instructors. In the context of collective piano classes, this theory is particularly relevant, as students are not merely passive recipients of information but active participants and collaborators in the learning process. Through cooperative learning, students engage in practical performance, peer discussions, and feedback exchanges, which foster deeper understanding and help internalize musical skills. Instructors serve as facilitators rather than sole knowledge providers, supporting and guiding student collaboration. This approach aligns with the concept of the "zone of proximal development," where students achieve outcomes with peer support that they may not reach independently. Therefore, integrating Social Constructivism Theory into collective piano teaching enhances students' cognitive growth, social interaction, and musical expression, ultimately contributing to improved academic performance.

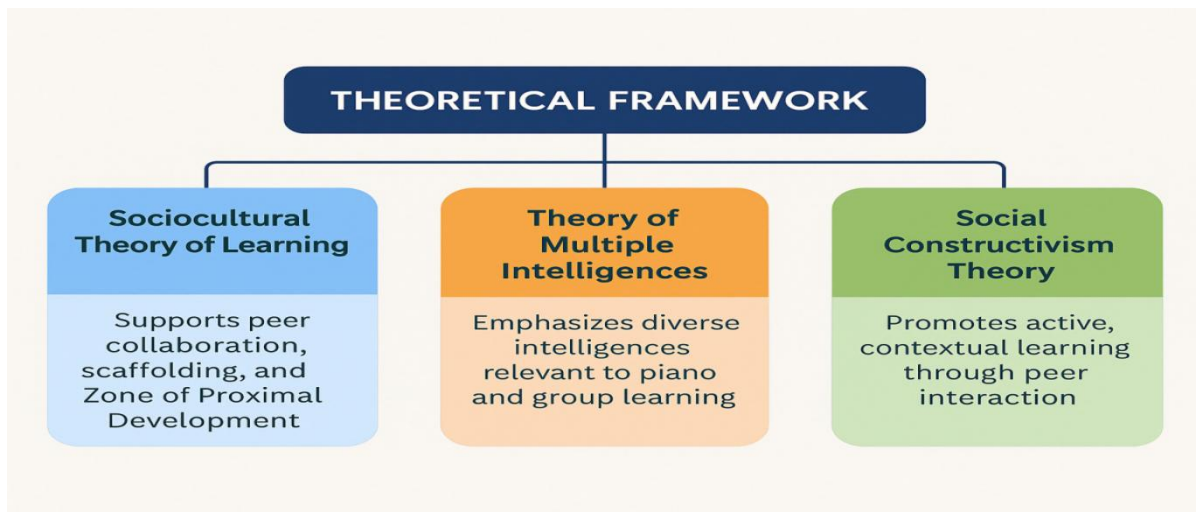


Figure 1: Theoretical Framework

2.2 Conceptual Framework

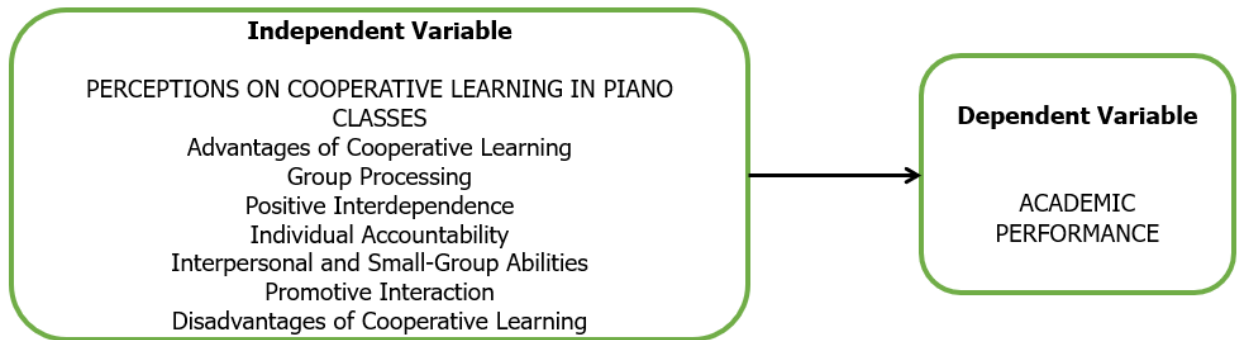


Figure 2: Conceptual Framework

3. Methodology

This study, conducted at Nanchang Vocational University and Jiangxi University of Technology, employs a mixed-methods research strategy to examine the impact and correlation of learning styles in collective piano lessons for preschoolers. By integrating qualitative and quantitative data collection techniques, this approach ensures a comprehensive investigation of the relationship between various learning styles and the outcomes of preschool music education in collective piano sessions. The primary objective is to analyze the effects of different instructional strategies on teacher efficacy and student engagement during these sessions.

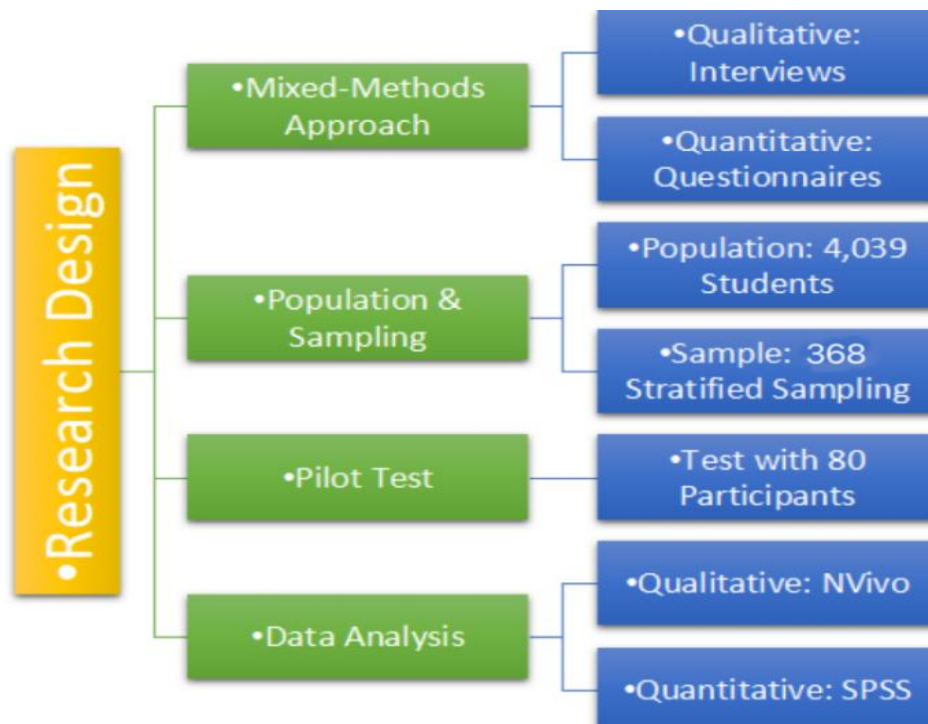


Figure 3: Research Design

The population for this study comprises students from Nanchang Vocational University and Jiangxi Institute of Science and Technology who are enrolled in piano courses as part of their preschool education programs. This population includes a total of 4,039 students, with 1,529 from Nanchang Vocational University and 2,510 from Jiangxi Institute of Science and

Technology. Most of these students had not studied piano before entering college and began learning the instrument as part of their curriculum.

The Krejcie and Morgan table was used to determine the appropriate sample size for this study. Based on the total population of 4,039 students, a sample size of 368 students was calculated to ensure the reliability and representativeness of the findings. The calculation of sample size is given below:

a. Sample of Questionnaires/Surveys

The sample for the survey was selected based on Krejcie and Morgan’s formula and table for determining sample size. Krejcie and Morgan’s method is widely accepted for educational and social science research because it establishes a statistically reliable sample size based on total population, with a 5% margin of error and a 95% confidence level.

$$yN = 1,529 \text{ (Nanchang Vocational University)} + 2,510 \text{ (Jiangxi Institute of Science and Technology)} = 4,039$$

$$S_i = (N_i / N) \times S$$

For Nanchang Vocational University ($N_1 = 1,529$):

$$S_1 = (1,529 / 4,039) \times 368$$

$$S_1 \approx 139 \text{ (rounded to the nearest whole number)}$$

For Jiangxi Institute of Science and Technology ($N_2 = 2,510$):

$$S_2 = (2,510 / 4,039) \times 368$$

$$S_2 \approx 229 \text{ (rounded to the nearest whole number)}$$

$$S_1 + S_2 = 139 + 229 = 368$$

By combining cross-sectional survey methodology with qualitative inquiry, the study constructs a comprehensive, multidimensional research framework. It offers both empirical evidence and theoretical grounding to support the practical application of cooperative learning in music education, especially within the context of group piano classes at Jiangxi University of Technology and Nanchang Vocational University. This design is instrumental in examining how learning strategies vary across student levels and how they influence both instructional quality and student academic engagement in collective music settings.

University	Population	Sample
Nanchang Vocational University	1,529	150
Jiangxi Institute of Science and Technology	2,510	218
Total	4,039	368

4. Results and Discussion

Variable	Item	N	Mean	Std. Deviation
Advantages of Cooperative Learning	I feel like cooperative learning helps me to learn playing piano easier.	368	3.92	0.753
	Learning cooperatively helps me to acquire knowledge of playing piano through teamwork.	368	4.01	0.717
	I think interaction can improve piano skill more than just learning from teachers.	368	3.63	0.888
	The process of playing piano becomes more interesting with this approach.	368	4.01	0.706

	I feel confident to express ideas in the group while learning to play piano.	368	3.77	0.843
Group Processing	I like playing piano with a group.	368	3.92	0.838
	Collective piano class helps me understand the working process.	368	3.90	0.703
	This approach enables me to participate in sharing, decision-making, and problem-solving.	368	3.98	0.715
	I prefer more group activities rather than individual study.	368	3.77	0.877
Positive Interdependence	The help of classmates is important to complete piano activities.	368	4.02	0.672
	Group members relate and interact during piano practice tasks.	368	4.10	0.660
	Everyone's success is prioritized, promoting engagement in piano practices.	368	3.90	0.704
Individual Accountability	I willingly participate in collective piano activities.	368	3.89	0.792
	I feel actively involved in all piano activities through this approach.	368	3.83	0.803
Interpersonal and Small-Group Abilities	Each group member puts effort into collective piano activities.	368	3.93	0.708
	Group members participate even if they don't like the task.	368	3.69	0.804
	Interaction among group classmates is necessary to carry out piano activities.	368	3.92	0.765
	We debate ideas among group members during activities.	368	3.82	0.717
	We put forward and defend ideas during collective activities.	368	3.84	0.725
	We listen to our classmates' opinions and viewpoints.	368	4.09	0.613
	We reach agreements when faced with differing opinions.	368	3.98	0.662
	This approach trains me to be a good leader and follower.	368	3.90	0.697
	This approach creates good relationships among group members.	368	4.04	0.688
	We share information so the group knows what is being done.	368	3.99	0.648
Promotive Interaction	Sharing learning materials and information is important for tasks.	368	4.11	0.611
	We help friends struggling to understand the learning material.	368	4.09	0.615
	We motivate each other to practice piano.	368	4.17	0.628
	Not everyone in the group is participating.	368	3.39	0.898
	Everyone participates, but not equally.	368	3.33	1.006
	Grading is unfair; non-participants get the same marks.	368	3.33	1.012
	Classroom becomes noisy during cooperative learning.	368	3.41	0.932
	Students sometimes lack responsibility, collaboration, and discipline.	368	3.52	0.907
Disadvantages of Cooperative Learning	It is hard to adapt when pairs are not personally close.	368	3.58	0.886
	Cooperative learning takes more time due to group-making.	368	3.84	0.707

The data presented here investigates how people see cooperative learning in piano lessons, drawing attention to the pros and cons of this approach. While there are clear obstacles, the results show that participants generally have a positive impression of cooperative learning.

The participants' positive attitudes toward learning through interaction and teamwork were indicated by their high mean ratings, which suggest that cooperative learning made the acquisition of piano-playing abilities simpler. Among the most important statements, the one on how teamwork helps with knowledge acquisition, had a mean score of 4.01. Similarly, a high mean score of 4.01 reflects the perception that learning to play the piano was more interesting with cooperative learning. With a mean score of 3.63, interaction was considered an important but somewhat less consequential component. Additionally, students' confidence in presenting their views in a group context was highly regarded, with an average score of 3.77, demonstrating the encouraging character of these types of classrooms.

Participants also gave good marks to group processing, especially when it came to exercises where they could play the piano together. With mean scores of 3.92 and 3.90, respectively, statements about the advantages of collective class procedures and the enjoyment of group settings consistently scored well. With an average score of 3.98, the method was praised for its capacity to encourage involvement in decision-making, information exchange, and problem-solving. The somewhat lower mean score of 3.77, however, reflects moderate support for a preference for social activities over individual study.

As a strength, positive interdependence stood out, with participants highlighting the significance of classmates' help in finishing assignments. The average score was 4.02, reflecting this. Group dynamics were also highly regarded, with an average score of 4.10 for interactions and 3.90 for relationships. These results highlight the importance of a growth attitude in piano lessons that emphasize group work and cooperation.

The participants' reported levels of individual accountability ranged from 3.83 to 3.93, indicating that they were actively involved in group activities. A slightly lower mean score of 3.69 reflected the fact that some participants saw that group members engaged even when disinterested, but efforts by group members to contribute meaningfully were emphasized.

Capabilities in working in small groups and interacting with others were also highly valued. The importance of group discussion and interaction was deemed crucial when it came to piano assignments, with scores ranging from 3.82 to 3.92 on average. A noteworthy mean of 4.09 for listening to peers' thoughts and 3.98 for encouraging agreement when presented with conflicting viewpoints indicate how highly appreciated these skills are. Moreover, the method was lauded for its ability to foster group leadership and harmonious relationships.

Participants emphasized the need of exchanging knowledge and materials, which led to the emergence of constructive contact as a strong component. The most inspiring results were those that reflected the impact of positive peer pressure, with mean scores ranging from 3.99 to 4.17. The importance of cooperative learning in fostering an atmosphere of mutual support is emphasized by this.

Despite these benefits, participants did note a few difficulties. The average score was about 3.33, and people were complaining about things like unfair grading and uneven participation. Mean scores of 3.41 for noise levels and 3.52 for lack of responsibility indicated moderate concerns. The time needed to organize a group and the difficulty of adjusting to new group

dynamics were both mentioned, with scores of 3.84 and 3.58, respectively. Based on these results, the study may make some recommendations to make cooperative learning even better.

5. Conclusion

The findings of this study underscore the transformative potential of cooperative learning in collective piano classes, while also shedding light on its challenges. Cooperative learning fosters engagement, skill development, and interpersonal growth, yet requires careful planning to address issues such as uneven participation and group dynamics. By grounding the findings in the Sociocultural Theory of Learning and the Theory of Multiple Intelligences, the study confirms the value of collaboration and diversity in educational settings. The discussion highlights the importance of balancing group and individual learning needs, fostering inclusivity, and employing fair assessment practices. These insights provide actionable recommendations for educators and institutions aiming to leverage cooperative learning effectively.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this study.

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