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Developing Ensemble Proficiency Through Integrated Pedagogical Approaches in University-Level Guzheng Performance

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Abstract

Background and Aims: Guzheng ensemble performance places demands that differ from solo training, yet university pedagogy in China remains largely solo-oriented. This study investigates whether an integrated pedagogical framework that emphasizes collaborative listening, shared interpretive decision-making, and aesthetic understanding can improve ensemble proficiency in university-level guzheng instruction.

Methodology: An explanatory sequential mixed-methods design was used with 120 undergraduate music majors from several universities (experimental group = 60, control group = 60) over one semester. The experimental group received an integrated ensemble-focused pedagogy, while the control group received traditional technique-centered instruction. Data sources included pre- and post-performance assessments rated by independent experts using a structured rubric, structured classroom observations, and semi-structured participant interviews. Quantitative outcomes targeted technical precision, ensemble coordination, interpretive coherence, and expressiveness.

Results: Compared with the control group, the experimental group showed statistically significant gains in ensemble coordination and interpretive coherence, with comparable levels of technical precision. Qualitative analysis indicated stronger musical communication, more active collaborative problem solving, and clearer aesthetic rationales for interpretive choices. Emotional expressiveness improved but remained an instructional priority.

Conclusion: An integrated ensemble-focused pedagogy can strengthen key collaborative competencies without diminishing technical standards. The findings provide evidence-based guidance for guzheng programs in higher education and suggest practical steps for curriculum design, instructor development, and assessment practices.

Keywords: Guzheng Ensemble; Ensemble Pedagogy; Collaborative Musicianship; Interpretive Coherence; Higher Education

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Introduction

Ensemble performance has become an essential component of higher education music programs worldwide, reflecting a growing pedagogical emphasis on collaborative musicianship, interpretive negotiation, and artistic communication. Contemporary music education research highlights that ensemble participation cultivates listening sensitivity, interpersonal coordination, and shared interpretive decision-making abilities, which differ substantially from those required in solo performance (Gaunt & Westerlund, 2013). Within the Chinese context, the guzheng has historically developed as a solo instrument, valued for its expressive timbre and individualistic performance aesthetics. University-level guzheng pedagogy has therefore remained predominantly solo-oriented, focusing on finger techniques, tone production, and independent interpretive skills. As guzheng ensembles gain popularity among college students, there is a growing need to reconsider whether traditional solo-based instruction is adequate for ensemble settings.

However, ensemble teaching for guzheng has not kept pace with this curricular expansion. Studies in Chinese instrumental education indicate that many ensemble classes use the same instructional strategies designed for solo performance, resulting in limited attention to collaborative listening, rehearsal coordination, and shared interpretive reasoning. Consequently, guzheng ensembles often exhibit inconsistent technical levels, weak cohesion, unclear interpretive unity, and underdeveloped aesthetic communication. These issues mirror broader findings in ensemble pedagogy, which show that without structured collaborative training, student performers struggle to integrate individual proficiency with collective performance goals (Biasutti & Concina, 2017; Parker, 2016).

A further challenge is the absence of a systematic and empirically tested pedagogical framework tailored to guzheng ensemble needs. Existing research primarily focuses on historical analysis, repertoire characteristics, or solo teaching methods, while few studies investigate teaching models that integrate technical training with ensemble coordination, interpretive coherence, and aesthetic development. Current literature lacks evidence-based approaches that determine how structured, collaborative pedagogies influence ensemble proficiency at the university level. This gap is particularly evident in the domain of Chinese traditional music performance, where ensemble pedagogy is still emerging and requires theoretical refinement and empirical validation (Zhang, 2022).

To address these limitations, this study proposes and evaluates an integrated pedagogical framework designed specifically for guzheng ensemble instruction in higher education. Drawing on theories of collaborative learning (Johnson & Johnson, 2014), ensemble musicianship and aesthetic education (Elliott & Silverman, 2015), the framework combines technical precision,

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coordinated rehearsal strategies, interpretive negotiation, and aesthetic reflection. By employing a mixed methods design, this research systematically examines whether such an integrated model can enhance ensemble performance outcomes, including technical accuracy, ensemble cohesion, interpretive unity, and emotional expressiveness.

The academic contribution of this study lies in its development of a conceptual model that differentiates solo-oriented competencies from ensemble-oriented competencies, offering theoretical clarity for guzheng pedagogy. Practically, the study provides evidence-based guidance for instructors seeking to implement ensemble teaching as a means of cultural transmission, creative development, and aesthetic education. Ultimately, this research aims to strengthen guzheng ensemble pedagogy and elevate its role in sustaining and innovating China's musical heritage within contemporary university curricula.

Objectives

1. To identify and analyze the current pedagogical practices and key challenges affecting the development of ensemble proficiency in university-level guzheng performance.

2. To design and implement an integrated pedagogical framework that combines technical training, musical interpretation, ensemble coordination, and aesthetic development to enhance the overall quality of guzheng ensemble performance.

3. To evaluate the effectiveness of the proposed framework through empirical investigation and to provide evidence-based recommendations for guzheng instructors and program developers in higher education.

Literature review

Since the formal inclusion of guzheng pedagogy in higher education institutions during the 1940s, the discipline has undergone significant evolution (Chen, 2018; Li, 2019). For several decades, guzheng instruction has primarily relied on individualized, one-on-one teaching models emphasizing solo performance and technical mastery (Zhang & Wang, 2020). Ensemble and group-based training have traditionally been supplementary rather than central components of the curriculum. Even in universities that have introduced mandatory ensemble courses, students majoring in guzheng often experience limited opportunities for consistent ensemble participation and rehearsal practice (Liu, 2021).

This challenge is partly due to the technical and logistical difficulties associated with large-scale ensemble rehearsals. The guzheng's limited transpositional flexibility often discourages composers from writing substantial ensemble parts, leading performers to spend considerable time in passive "rest" segments during mixed-instrument rehearsals (Cheng, 2022). Additionally,

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with the expansion of guzheng programs across Chinese universities, the rapid growth in student enrollment has placed significant strain on available teaching resources and facilities (Yin, 2023). This imbalance has exacerbated the scarcity of ensemble courses and reduced access to collaborative learning experiences, particularly in large departments where individualized instruction remains the dominant model.

In the early 1990s, Professor He Baoquan of the Shanghai Conservatory of Music pioneered the systematic inclusion of guzheng ensemble education in China's conservatory system. His establishment of the first guzheng orchestra provided a practical model for collective instruction and professional ensemble rehearsal (He, 1994). The initiative demonstrated that structured ensemble training could enhance students' coordination, musical communication, and interpretive coherence. Following this example, many institutions introduced ensemble programs, and guzheng group performance began to flourish both within academic contexts and in broader social and cultural activities (Dong, 2013; Li, 2015).

Since the early 2000s, guzheng ensemble pedagogy has increasingly been viewed as a platform for collaborative learning, creativity, and cultural inheritance (Zhang et al., 2024). However, contemporary researchers continue to highlight the persistent challenges facing ensemble education. These include uneven technical skill levels among participants, the lack of standardized teaching materials, and insufficient theoretical frameworks to guide instruction (Huang & Zhao, 2021; Zhang, 2023). Moreover, ensemble teaching remains marginal in curriculum design, often treated as an auxiliary rather than an integrated pedagogical strand (Chen & Wu, 2022).

Recent scholarship has called for the systematic reform of guzheng ensemble pedagogy through evidence-based curriculum design, institutional support, and faculty training (Yin, 2023). Researchers emphasize that ensemble training, while sharing similarities with traditional Chinese chamber-music education, also possesses distinctive features requiring specialized methods of coordination and interpretation (Zhang & Chen, 2022). Therefore, the establishment of ensemble pedagogy should be considered both a vertical extension of solo technique training and a horizontal expansion of guzheng education that fosters cooperation, shared interpretation, and aesthetic understanding. This perspective aligns with the broader movement in higher music education toward integrated and collaborative learning models (Fernández-Barros et al., 2023; Thompson, 2021).

To promote sustainable development of guzheng ensemble education, current studies recommend institutional feasibility analyses focusing on course design, instructional management, and material development (Cheng, 2022; Zhang et al., 2024). Such systematic planning will not

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only address logistical constraints but also help position ensemble pedagogy as a vital component of guzheng instruction, strengthening both its artistic and cultural dimensions.

Research Methodology

This study was conducted at a single Chinese university that offers a guzheng performance major. To ensure sampling clarity and contextual consistency, all participants were drawn from the same institution rather than from multiple universities. A total of 120 undergraduate students enrolled in guzheng performance courses during the same semester participated in the research. These students were assigned to the experimental and control conditions based on intact class groupings, which constitutes cluster sampling. Sixty students formed the experimental group, receiving instruction through the integrated ensemble-focused pedagogical framework, while the remaining sixty students formed the control group and received traditional solo-based instruction.

Ensemble performance proficiency was assessed through a structured rubric adapted from established frameworks used in higher music education. The rubric included four key dimensions that reflect widely recognized indicators of ensemble quality, namely technical precision, ensemble coordination, interpretive coherence, and emotional expressiveness. Each dimension was evaluated using a five-point scale by three independent expert adjudicators who had more than ten years of experience in Chinese traditional music pedagogy. Inter-rater reliability was calculated using Cohen's kappa, and results ranged from 0.78 to 0.84 across the four dimensions, indicating substantial agreement. Internal consistency of the full rubric was examined through Cronbach's alpha, and the coefficient of 0.87 demonstrated that the instrument met the accepted standard for reliability in performance-based assessment. In addition to quantitative measurement tools, the study employed structured classroom observation forms and semi-structured interview protocols to collect qualitative data. Both instruments were reviewed by two senior guzheng educators to ensure content validity and alignment with ensemble pedagogy requirements.

The intervention lasted sixteen weeks and followed the normal semester schedule of the university. Students in the experimental group received two ninety-minute ensemble classes per week that incorporated integrated components, including collaborative technical exercises, coordinated rehearsal strategies, shared interpretive decision making, and guided aesthetic reflection. Students in the control group received two weekly sessions of traditional solo-oriented instruction that emphasized individual finger techniques, tone production, and teacher demonstration without ensemble-specific pedagogical elements. Pre-test performance assessments were conducted in the first week of the semester, and post-test assessments were conducted in the final week. All performances were video-recorded and blind-rated by the adjudicators to minimize potential bias. Classroom observations were carried out four times

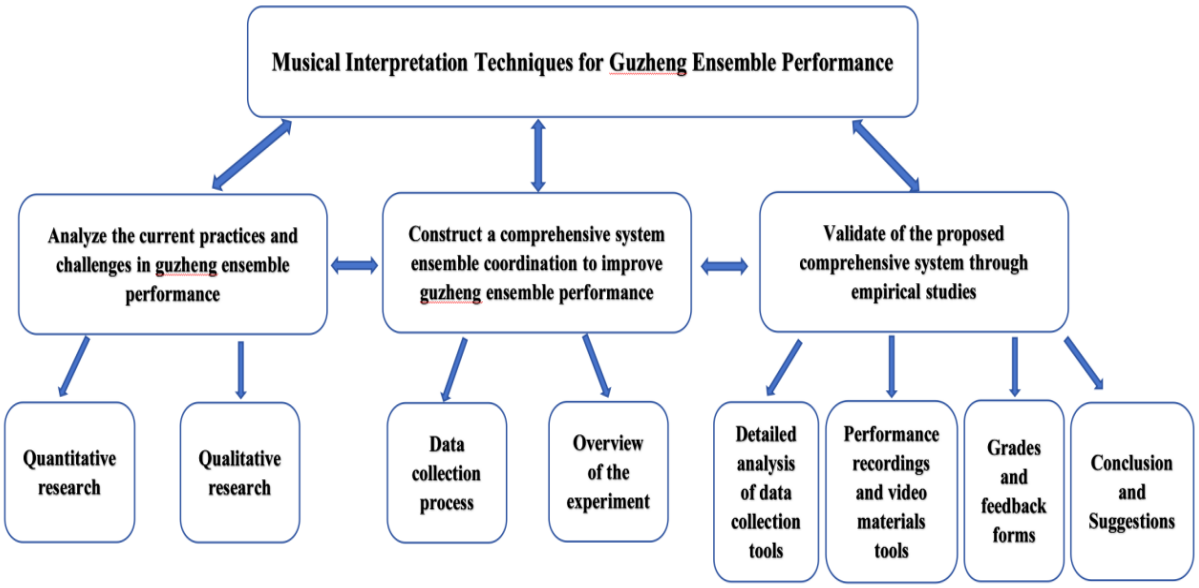
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throughout the semester, and student interviews were conducted at the end of the intervention period.

Quantitative data were analyzed using SPSS 26. Independent-samples t-tests were applied to compare differences between the experimental and control groups at both the pre-test and post-test stages. Paired-samples t-tests were used to examine within-group improvement from pre-test to post-test. Effect sizes were calculated using Cohen's d to determine the magnitude of the instructional impact. When comparing the four dimensions of ensemble performance simultaneously, a one-way repeated measures ANOVA was used to examine whether the improvement differed across technical precision, ensemble coordination, interpretive coherence, and emotional expressiveness. Statistical significance was set at the conventional threshold of $p < .05$. Qualitative data from interviews and observations were analyzed through thematic analysis following the six-step procedure proposed by Braun and Clarke. This process allowed recurring themes such as collaborative problem solving, listening awareness, and interpretive negotiation to emerge inductively from the data. These qualitative insights complemented the statistical results and provided a deeper understanding of the pedagogical processes underlying the development of guzheng ensemble proficiency.

Research Scope



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Research results

The study employed a combination of literature review, questionnaire survey, interviews, and statistical analysis to explore the current status and developmental needs of guzheng ensemble teaching in Chinese universities. The collected data provided both quantitative and qualitative insights into students' and instructors' perceptions, technical proficiency, and artistic growth in ensemble contexts.

Findings revealed that current guzheng ensemble teaching remains largely technique-centered. Instruction tends to emphasize mechanical mastery of repertoire and finger techniques while neglecting students' broader musical literacy, emotional engagement, teamwork, and aesthetic development. This imbalance limits students' ability to perform collaboratively and expressively in ensemble settings.

The results indicated several key directions for improvement in the teaching and learning of guzheng ensemble performance. The first involves the adoption of innovative ensemble teaching methods. Diversified strategies such as cooperative learning and project-oriented instruction can stimulate students' interest and creativity. When basic training is integrated with advanced technical application, students become better equipped to master complex techniques and adapt to varied musical styles.

A second finding emphasizes the need to integrate emotional expression with music theory instruction. Students' interpretive ability and artistic sensitivity can be enhanced through a deeper connection between emotion and musical structure. This integration encourages them to explore the expressive depth of repertoire, improving both musical understanding and emotional communication during performance.

Another major finding concerns the cultivation of teamwork skills. Effective ensemble performance depends not only on technical precision but also on cooperation and shared decision-making. Group rehearsals, peer assessment, and collaborative projects were found to strengthen coordination, leadership rotation, and communication among students, fostering a collective sense of responsibility.

The study also highlights the importance of integrating aesthetic pedagogy with modern technology. Digital tools such as virtual ensemble simulations, multimedia platforms, and intelligent feedback systems can expand instructional possibilities and create flexible rehearsal environments. These innovations not only enhance performance quality but also broaden students' artistic horizons and promote the fusion of tradition and modernity.

Finally, the results suggest that instructional content should be optimized by aligning it with both social needs and student interests. Selecting repertoire that reflects cultural identity while engaging contemporary sensibilities can increase motivation and relevance. Incorporating

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community-oriented performance projects may further strengthen the connection between classroom learning and cultural dissemination.

Overall, the findings demonstrate that effective guzheng ensemble pedagogy requires a holistic approach combining technical training, emotional development, teamwork, and aesthetic cultivation. Such integration not only improves performance precision but also enriches students' artistic expressiveness and cultural awareness, contributing to the sustainable advancement of guzheng education in higher institutions.

Quantitative research

Quantitative research, also known as quantitative research, is an objective and accurate description and analysis of guzheng instruction in the form of numbers and charts through the exploration and prediction of specific facts. In guzheng instruction, quantitative research is mainly applied in the following aspects:

By quantifying the students' guzheng playing skills, such as pitch, rhythm, and intensity, the researchers designed a scoring system to reflect the students' skill mastery with objective data. Each skill point was set with a full score of 10 points, and then the students' performances were scored.

Table 1 Assessment of skill mastery

Skill points	Full marks	Student A's scores	Student B scores	Student C scores
Intonation	10	8	9	7
Rhythm	10	7	8	6
Control of force	10	9	7	8
Total points	30	24	24	21

As can be seen from the above table, students A and B have the same total score, but they have different levels of mastery of specific skills. Student A performs better in force control, while Student B performs better in pitch.

By meticulously comparing and analyzing various instruction methods and the learning outcomes of students at different time investment levels, researchers can conduct detailed statistical analyses supported by data. This work aims to reveal and determine the most effective instruction methods and the most efficient learning strategies. Researchers design an experiment, randomly dividing a group of students into two groups: one group receives traditional instruction methods, while the other group adopts modern multimedia instruction methods. After a period

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of pedagogical practice, researchers can compare which instruction method better promotes student learning outcomes by observing and evaluating the progress of both groups over a certain period.

Table 2 Comparison of learning effects

Instruction method	Number of students	Average progress score	Progress rate (%)
Traditional instruction methods	60	15	25
Multimedia instruction method	60	18	30

As can be seen from the above table, the average progress score and progress rate of students using the multimedia instruction method are higher than those of the traditional instruction method, indicating that the multimedia instruction method may be more effective in guzheng instruction.
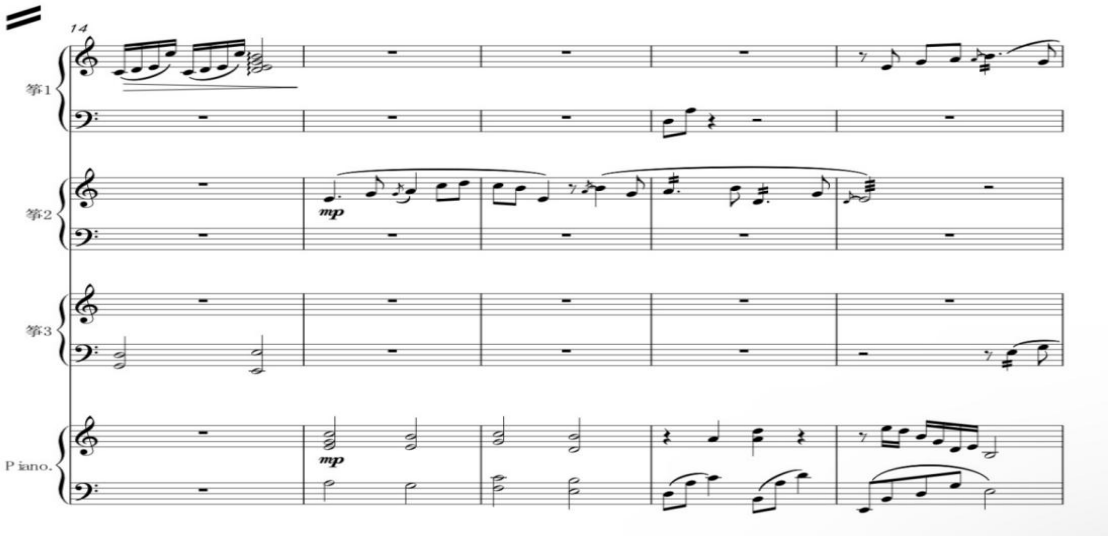


Figure 1 A part of the trio guzheng ensemble score
Source: Liu Le's Music and Zither Words-Seven pieces for guzheng ensemble (2021)

In the detailed analysis of the score, the researcher took the ancient guzheng piece "Sleeping Dragon Concealing Its Tail" as an example. By conducting a detailed comparison of the scores of guzheng 1, guzheng 2, and guzheng 3, the researcher demonstrated the process and effectiveness of the study.

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The researcher observed that Guzheng 1's melody was smooth with harmonious intervals, primarily using the traditional pentatonic scale. Guzheng 2 introduced variations in melody, adding ornaments and changing rhythm at the climax, enhancing the performance's color and expressiveness. Guzheng 3 maintained the original melody system while incorporating modern elements, using non-traditional scales and complex rhythms, giving the piece new vitality.

To assess the adaptations' impact, the researcher performed and recorded the three versions. The recordings revealed that guzheng 1's performance was simple and profound, guzheng 2's was lively and varied, and guzheng 3's demonstrated a modern and innovative approach. These changes enriched the piece's expressiveness and provided listeners with a more diverse emotional experience.

Comparative analysis of different guzheng scores for "Sleeping Dragon Concealing Its Tail" confirmed the importance and effectiveness of adaptation and innovation in guzheng performance. This analytical approach not only deepens understanding of guzheng music's connotations but also offers new perspectives for its inheritance and development.

Qualitative research

Love for the guzheng deepens as one understands and appreciates its cultural heritage and emotional expression. Learning brings challenges that teach perseverance and patience, and overcoming them brings joy and pride, enriching students' inner worlds and cultivating willpower and problem-solving abilities. Instructional methods are constantly evolving, with interactive teaching boosting student interest. Future research will emphasize musical emotional expression and timely positive feedback. Understanding the guzheng's cultural significance is crucial in teaching, encouraging students to explore its history and diversity, thus enhancing their appreciation of Chinese culture and aesthetic judgment. Guzheng instruction is vital for cultivating students' comprehensive qualities and cultural literacy, improving musical proficiency, fostering respect for traditional culture, and training focus, memory, and creativity. In essence, guzheng instruction combines musical skill transfer, cultural inheritance, and emotional communication, enabling students to enjoy music and traditional culture and shaping them into culturally rich individuals.

A combination of qualitative and quantitative research

In the technical implementation and artistic presentation research of efficient guzheng, qualitative and quantitative research are not isolated but complementary and supportive. Quantitative research provides objective and accurate data support for qualitative research, while qualitative research offers in-depth and detailed explanations and analyses for quantitative research. Only by combining both can we gain a more comprehensive understanding of the

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current state and issues in guzheng technical development, providing scientific evidence and practical guidance for improvement.

In practice, the combination of qualitative and quantitative research can be realized by the following methods:

To scientifically and reasonably assess students' skill acquisition and learning outcomes, researchers have developed a set of quantitative evaluation indicators, covering three main aspects: skill acquisition, learning effectiveness, and learning motivation and attitude. Skill acquisition encompasses basic skills such as scales and rhythms, as well as advanced skills such as performing complex pieces and improvisation. Learning effectiveness evaluates knowledge comprehension and theoretical mastery, as well as the practical application of skills and musical creativity. Learning motivation and attitude are based on participation, homework completion, and enthusiasm towards challenges.

Table 3 Data comparison table

Student	Degree of skill mastery	learning effect	Academic motivation	Attitude to learning
A	85	80	90	88
B	78	75	85	80
C	92	90	95	93
D	80	82	88	85

In a recent music class assessment, students excelled in basic skills and actively participated in class discussions, leading to a positive learning environment and improved efficiency. However, advanced skill guidance was monotonous, and some struggled with complex theoretical concepts. To enhance teaching and learning outcomes, researchers plan to diversify advanced skill practice, incorporate interactive methods for theoretical knowledge, and organize student concerts and seminars. These steps aim to address current challenges and further develop students' musical abilities and understanding of music theory.

In the technical implementation and artistic presentation research of guzheng ensembles in universities, the data collection process is a crucial step, directly affecting the accuracy and reliability of the research results. The following is a description of the data collection process, including sample size and participant characteristics, as well as an explanation of the tools used for data collection.

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Table 4 Test results before experiment

Test item	Average score of the experimental group	The average score of the control group
Guzheng playing skills test	75	76
Music theory knowledge test	80	82

Table 5 Comparison of instruction methods between the experimental group and the control group

Instruction method	Experimental group instruction content	Instruction content for the control group
key instruction points	Teamwork, improvisation, musical expression	Personal skill improvement, learning of classic pieces
instruction methods	Group discussion, listening, and communication	Repetition practice, individual guidance
music piece	Multiple musical styles and cultural backgrounds	Classic pieces of the traditional guzheng

Table 6 Experimental process evaluation

Evaluate projects	Average score of the experimental group	The average score of the control group
Playing technique	85	87
Music comprehension	88	86
Teamwork ability	90	75

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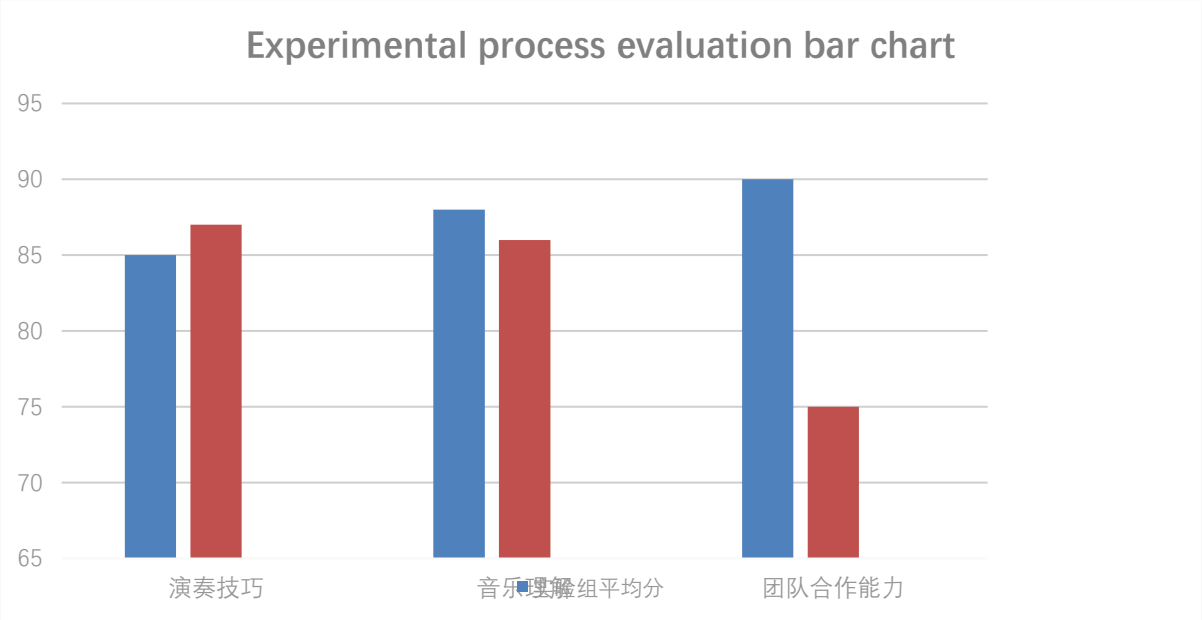


Figure 2 Experimental process evaluation bar chart

A new instruction method of the guzheng ensemble was evaluated through a semester of experimental assessment.

Overview of the experiment.

Through a semester of experiments, the researchers made a comprehensive evaluation of the performance of the experimental group and the control group in guzheng ensemble instruction. The following is a detailed analysis and data comparison of the experimental results.

Table 7 Data comparison table

Group	Average score for teamwork	Music comprehension average score	Average score for playing technique
experimental group	90	88	85
control group	75	86	87

The experimental group showed significant improvements in teamwork and music comprehension, scoring 90 vs. 75 points and 88 vs. 86 points, respectively, compared to the control group. This indicates the new guzheng ensemble instruction method enhances both technical and non-technical musical abilities. Post-experiment, a blind review of performance videos by independent experts and student surveys will evaluate the effectiveness of the new method. Analysis of these results will determine if the new instruction method significantly

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improves performance skills, musical understanding, and teamwork, potentially offering valuable insights for future music pedagogy.

During the data collection process, the questionnaire survey revealed the students' attitudes and opinions towards the guzheng ensemble class, the observation checklist recorded the students' classroom performance and teamwork abilities, the interview guide through in-depth interviews with teachers and students revealed the current teaching situation and problems, the performance videos and video materials demonstrated the students' playing skills and musical expression abilities, and the grades and feedback forms reflected the students' learning outcomes and the teaching effectiveness of the teachers. After comprehensive analysis, the conclusion was drawn: The students have a positive attitude towards the guzheng ensemble class and have high expectations for the difficulty and practicality of the course; the students' playing skills have significantly improved, their teamwork abilities are excellent, but in terms of musical expression, further improvement is needed; the teaching methods of the teachers are generally recognized, but interactive and practical sections need to be added to enhance students' participation and interest. It is suggested to increase practical sections to enhance teamwork and musical expression abilities, adjust the course difficulty to meet the challenge requirements, add interactive elements, and organize regular teacher training to share effective teaching methods to further improve teaching quality and enrich students' learning experience.

Discussion

The findings of this study highlight several enduring challenges in guzheng ensemble pedagogy, including uneven technical proficiency, limited expressive depth, and difficulties in ensemble coordination. These issues stem from the persistence of solo-oriented instruction, which prioritizes technical mastery over collaborative musicianship. To address these challenges, a comprehensive and systematic instructional framework is necessary, one that integrates technical training, emotional expression, teamwork, and aesthetic development. Such integration allows students to advance from the acquisition of foundational skills to higher levels of interpretive and collaborative artistry.

The introduction of diverse teaching methods, such as cooperative learning, reflective practice, and project-based ensemble activities, has demonstrated potential to enhance both motivation and musical understanding. These approaches foster active student participation and collective decision making, enabling learners to develop both individual expression and ensemble cohesion. Furthermore, the incorporation of modern technologies, including metronomes, recording tools, and digital learning platforms, provides effective means for rhythm control, self-assessment, and performance reflection. By promoting a balance between traditional pedagogy

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and technological innovation, guzheng ensemble instruction can cultivate students' capacity for precise coordination, interpretive sensitivity, and creative engagement.

Empirical evaluation remains crucial in verifying the effectiveness of pedagogical reform. Regular assessment of students' technical proficiency, expressive ability, and collaborative performance can provide measurable indicators for continuous improvement. Instructors are encouraged to adapt the framework to varying ensemble levels and contexts, ensuring its applicability across different institutional settings. Ongoing evaluation and iterative refinement of teaching practices will strengthen the sustainability of guzheng ensemble education and enhance its contribution to both artistic development and cultural transmission.

This study demonstrates that structured guzheng ensemble instruction significantly enhances students' musical proficiency and artistic awareness. Through systematic training, students achieve greater accuracy in tone production, rhythm, and expressive delivery. They also develop stronger cooperative abilities by learning to listen, adjust, and coordinate with peers during ensemble rehearsals, which improves both teamwork and problem-solving skills in performance contexts.

The instructional framework encourages innovation by guiding students to explore diverse performance techniques and interpretive possibilities. It further deepens their understanding of traditional Chinese music, fostering cultural appreciation and artistic confidence. As students engage in ensemble performances and related cultural activities, they gain a renewed sense of identity and pride in their musical heritage.

Overall, the integration of technical, expressive, and aesthetic dimensions within guzheng ensemble pedagogy not only elevates students' performance competence but also strengthens the continuity and vitality of Chinese musical culture. The research affirms that ensemble instruction serves as both a pedagogical innovation and a cultural bridge, promoting the preservation and creative evolution of guzheng art in contemporary higher education.

Recommendations

Based on the findings of this study, several recommendations are proposed to further strengthen guzheng ensemble pedagogy and ensure its sustainable development in higher education.

First, teacher training and resource investment should be prioritized. Instructors play a decisive role in shaping the quality of guzheng ensemble instruction, and their professional competence directly affects students' learning outcomes. Continuous professional development programs should therefore be established to enhance teachers' instructional design, ensemble leadership, and assessment literacy. At the institutional level, universities should allocate greater

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funding to improve teaching facilities, rehearsal spaces, and instrument maintenance, thereby creating a supportive learning environment conducive to ensemble practice.

Second, the integration of modern teaching technologies should be further promoted. Digital tools, multimedia platforms, and online learning systems can expand access to resources and enrich instructional content. The use of virtual ensembles, interactive software, and remote supervision can help overcome limitations of time and location, providing students with flexible learning opportunities and immediate performance feedback. Incorporating technology into guzheng ensemble teaching not only enhances engagement but also encourages self-directed and collaborative learning.

Third, innovation and dissemination of guzheng art should be continuously encouraged. The vitality of this traditional instrument depends on its ability to evolve within modern educational and artistic contexts. Educators and performers should be motivated to explore new repertoire, create ensemble arrangements, and integrate cross-genre collaborations that reflect contemporary aesthetics while maintaining cultural authenticity. Public performances, community workshops, and outreach programs can help popularize guzheng art and increase public appreciation for its expressive richness.

Finally, the long-term development of guzheng ensemble education requires broader collaboration and policy support. Universities and cultural organizations should establish exchange and cooperation mechanisms with domestic and international music institutions to share pedagogical innovations and performance practices. Engaging with professional associations and cultural foundations can also provide additional financial and technical support. By enhancing students' practical abilities and performance experience, such initiatives will strengthen their artistic competence and competitiveness, ensuring the sustained growth and modernization of guzheng ensemble teaching in the years ahead.

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