The Use of Blended Piano Teaching in Aba Teachers University

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Abstract

Background and Aim: This study aims to explore a blended piano teaching model within the unique geographical context of Aba Tibetan and Qiang Autonomous Prefecture. As the only higher education institution in the region, Aba Teachers University combines traditional and modern approaches in its music education to address the challenges of local culture and limited educational resources. This study aims to utilize Ding Talk within a blended teaching framework to enhance teaching effectiveness, support the preservation of local music culture, and provide a more flexible learning experience. The research addresses the gap in applying blended teaching models in Aba and aims to contribute to the local education system and cultural heritage.

Materials and Methods: The participants in this study were 72 sophomore students, comprising 20 males and 52 females, majoring in musicology at the School of Music and Dance, Aba Teachers University. They were divided into an experimental group and a control group, with the experimental group receiving instruction using a blended piano teaching model, and the control group receiving traditional teaching methods. Students' performance in musical memory, technical proficiency, and musical understanding was assessed through pre-tests and post-tests.

Results: It was found that blended piano teaching for college students in the Aba ethnic area led to a significant improvement in their performance. This approach not only enhanced their scores in musical memory, technical proficiency, and musical understanding but also provided a solid foundation for their future musical careers.

Conclusion: This study found that Aba Teachers University, by combining a hybrid piano teaching model with both traditional and modern methods and utilizing Ding Talk, effectively enhanced teaching effectiveness, supported the heritage of local music and culture, and contributed new practical experiences to education and culture in the Aba region.

Keywords: Blended Piano Teaching Model; Ding talk; Musical memory; Musical understanding; Technical proficiency

Introduction

In recent years, blended learning models have gradually gained attention. Although there are numerous studies in the field of online learning, there is a lack of specialized research on blended learning. The understanding of blended learning research dynamics and categorizing the studies by topics and themes. Blended learning may become one of the most significant developments of the 21st century (Osguthorpe & Graham, 2003). The blended learning, which combines online and offline teaching methods, is highly effective in optimizing virtual environments in design education and meeting student preferences. Blended learning, integrating the best elements of online and face-to-face education, is likely to become a dominant teaching mode in the future (Watson, 2008). The Ministry of Education of the People's Republic of China (MOE, 2019) is promoting the reform and innovation of aesthetic education by integrating it with moral education, intellectual education, physical education, and labor education. This initiative aims to combine aesthetic education with various disciplines, social practice, and innovation and entrepreneurship education. The MOE emphasizes the use of modern information technology to develop a networked, digital, intelligent, and blended teaching model, thereby advancing collaborative innovation in aesthetic education.

Blended learning, which combines the best elements of online and face-to-face education, is likely to be the dominant pedagogical model of the future (Watson, 2008). For example, Ji (2020) focuses on the implementation of blended learning through the Ding Talk collaboration platform in a university English course. The importance of adopting a blended learning model and its uniqueness are explained, and several efficient strategies for using blended learning in teaching practice are shared. Based on relevant educational concepts, Chen et al (2020) detailed the steps of building a blended teaching model for a cloud classroom from three dimensions: online learning environment, learning group, and instant feedback, centered on knowledge content. Taking the course "Network Security" as an example, Ding Talk and the online open class platform of Zhejiang University as a carrier, shows the complete teaching process before, during, and after the class. A variety of technologies are also used in different teaching.

Aba Teachers University employs a music education approach that blends traditional and modern methods. The college encourages students to deeply explore and study local musical traditions while also emphasizing Western music theory and techniques. This educational approach aims to produce musicians who possess both local characteristics and an international outlook (Aba Teachers University, 2023).

In the Aba ethnic region, the diverse cultural background provides rich soil for arts education. Students in colleges and universities in this region have unique musical traditions and aesthetic concepts, which provide a unique opportunity for blended piano teaching. Blended teaching, combining online and offline methods, not only makes full use of modern technological resources but also combines them with the traditional culture of the region to provide students with a learning experience that is closer to their cultural background. In addition, considering the geographical location and transport conditions of the Aba region, blended teaching can also effectively solve the spatial barriers between students and teachers, making learning more flexible and convenient. Therefore, the study of blended piano teaching in colleges and universities in the Aba ethnic region is not only a need to adapt to the modernization of education but also an important support for the inheritance of local music culture.

The scope of this study covers the exploration of using Ding Talk technology in blended piano teaching at colleges and universities in the Aba ethnic area. Specifically, the study aims to investigate how integrating Ding Talk technology into piano instruction in the Aba region can bring innovative changes to piano education. By providing students with richer learning resources and increased interactive opportunities, the study hopes to enhance students' piano performance.

Objectives

1. To explore the development of blended piano teaching at colleges and universities in the Aba ethnic area.

2. To investigate whether the post-test scores of students in the experimental group show improvement compared to the control group, based on their pre-test scores.

Literature review

Blended Teaching

In her study, Crawford (2017) emphasized the application and value of blended learning and multidimensional/non-linear teaching models in music education, as well as the challenges and solutions encountered during their implementation. In the digital era, blended teaching combines traditional face-to-face instruction with online learning to offer students a more flexible and interactive learning experience. This pedagogical model highlights the critical role of technology in education, particularly in music education. Blended teaching and learning, as an innovative approach to modern education, has been widely adopted across various educational fields.

This concept was explored in detail in a study by Pape (2010), which emphasized the importance of combining online tools with traditional teaching methods to enhance students' learning experiences and the skills needed for the 21st century. The Online Music Education Project, described in Crawford's (2017) study, aimed to provide music education resources to schools in remote areas using Web 2.0 technologies. The project's goals were to offer high-quality learning materials and resources to students and teachers, promote the use of online music technology, and continue advancing music education and the use of online technology even after the project concluded.

In summary, blended learning offers an effective method for integrating online and face-to-face instruction, allowing students to benefit from a well-rounded educational experience within an integrated learning environment.

Ding Talk

At Aba Teachers University in the Aba ethnic region, the remote location and rich ethnic culture present unique opportunities for blended learning in piano education. Ding Talk, as an online education tool, meets this need effectively. The COVID-19 pandemic severely disrupted traditional teaching methods and led educators to seek new online tools. Originally designed for corporate communication, Ding Talk has quickly evolved into a popular online teaching platform, showcasing technology's adaptability in education and the potential for integrating modern technology with traditional teaching methods.
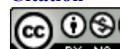
Ding Talk provides educators and students with comprehensive online education tools, notably supporting multiple file formats such as PPT, Word, and PDF. This capability enables teachers to easily upload and share teaching materials without concerns about format compatibility. Additionally, Ding Talk's live audio and video streaming features enhance teaching interactions, allowing students to hear lectures and view materials in real-time, even from home.

Social Cognitive Theory

Social Cognitive Theory (SCT), developed by Bandura (1986), integrates behaviorist and cognitive learning theories. According to Schunk (2012), this theory offers researchers a comprehensive framework for understanding human thinking, feeling, and behavior, emphasizing human initiative, observational learning, self-regulation, and self-reflection, as well as the impact of social factors on cognitive functioning. SCT provides a framework for analyzing blended piano instruction within specific cultural and social contexts, focusing on observational learning, self-regulation, the influence of cultural and social factors, and the interaction between students and their educational environment.

Blended teaching integrates online and offline methods, while Social Cognitive Theory's concept of observational learning highlights the importance of gaining knowledge by observing others. In blended learning, students use digital media such as online videos and tutorials, aligning with Bandura's theory of observational learning (Bandura, 2020). To learn effectively in the absence of direct instructor guidance, students must be adept at self-regulation, which aligns with the concepts of self-regulation and self-reflection in Social Cognitive Theory.

This study focuses on colleges and universities in the Aba ethnic region, where teaching methods' effectiveness and selection may be significantly influenced by the specific cultural and social context. Social Cognitive Theory underscores the impact of social and cultural factors on cognitive functioning, which relates closely to the study's examination of cultural differences and the adaptation of teaching methods. Additionally, the theory emphasizes individual initiative, highlighting the ability to control one's own life and learning.

Overall, Social cognitive theory provides researchers with a framework for understanding and analyzing how blended piano instruction works in specific cultural and social contexts.

Constructive theory

Constructive is deeply embedded in music education, particularly through the incorporation of creativity, even though this may not always be apparent. Paynter research and Swanwick's theories reinforce this perspective. A key feature of the constructivist curriculum is that it defines the learning process based on students' understanding, rather than assessing learning solely by their abilities (Swanwick, 1979).

Bodner (1986) asserts that constructivism views learning as a dynamic and interactive process where learners enhance and expand their knowledge through continuous interaction with their environment. In a constructivist classroom, the teacher shifts from being the sole source of knowledge to acting as a guide and facilitator, aiding students in exploring, questioning, and applying knowledge in real-world contexts. Students are encouraged to ask questions, develop hypotheses, and test their validity, with the challenges and problems they encounter being authentic and relevant to real life, which fosters deeper thinking (Applefield et al., 2000).

Moreover, constructivism highlights the significance of social interaction in the learning process. Through discussions with peers and teachers, students share, defend, and validate their ideas, which not only helps in building and refining their understanding but also enhances their critical thinking and problem-solving skills. Blended learning incorporates constructivist principles of active learning, real-world contexts, and social interaction, providing an effective piano teaching method tailored to the cultural context of students in colleges and universities in the Aba ethnic region.

Group dynamics

Forsyth (2018) describes group dynamics as an interdisciplinary field focused on understanding the interactions, structure, and processes within groups. This field views groups not merely as collections of individuals but as cohesive entities with unique characteristics and influence. Murphey et al. (2012) highlight the role of individual agency, noting how personal experiences of past successes or failures and future goals affect current team dynamics.

Group dynamics offers insights into student interactions, influences, and development, which can inform the design and implementation of blended learning strategies. Combining Heron's (1999)

framework with Lewin et al.'s (1939) research, group-sensitive teaching methods are found to be more structured in the initial stages, providing guidance, security, and motivation for the group.

In blended piano instruction, students work in learning groups, which differs from traditional piano teaching. The cultural and social context of the Aba ethnic region may impact this blended approach. Understanding how family, community, and cultural backgrounds affect classroom behavior and interaction is crucial. Applying principles of group dynamics can help educators design more effective blended learning strategies, enhancing student collaboration and supporting both individual and group development. For example, educators might use group dynamics strategies to foster teamwork or create tasks and activities that promote student growth.

Conceptual Framework

This study focused on three main variables: musical memory, technical proficiency, and musical understanding, which are considered key factors affecting students' performance in the piano course at Aba Teachers University. An initial assessment of these three variables was conducted during the first week of the course for both the experimental and control groups. The experimental group used a blended learning approach with Ding Talk technology, while the control group continued with traditional teaching methods. In the sixth week, both groups underwent a follow-up assessment, with the results influencing their respective scores. The researchers accounted for various factors and developed an appropriate framework for the study.

Based on the theory and the pedagogical model support of the BPTM, a relationship diagram was constructed for the three variables tested: Musical memory, Technical proficiency, and Musical understanding.
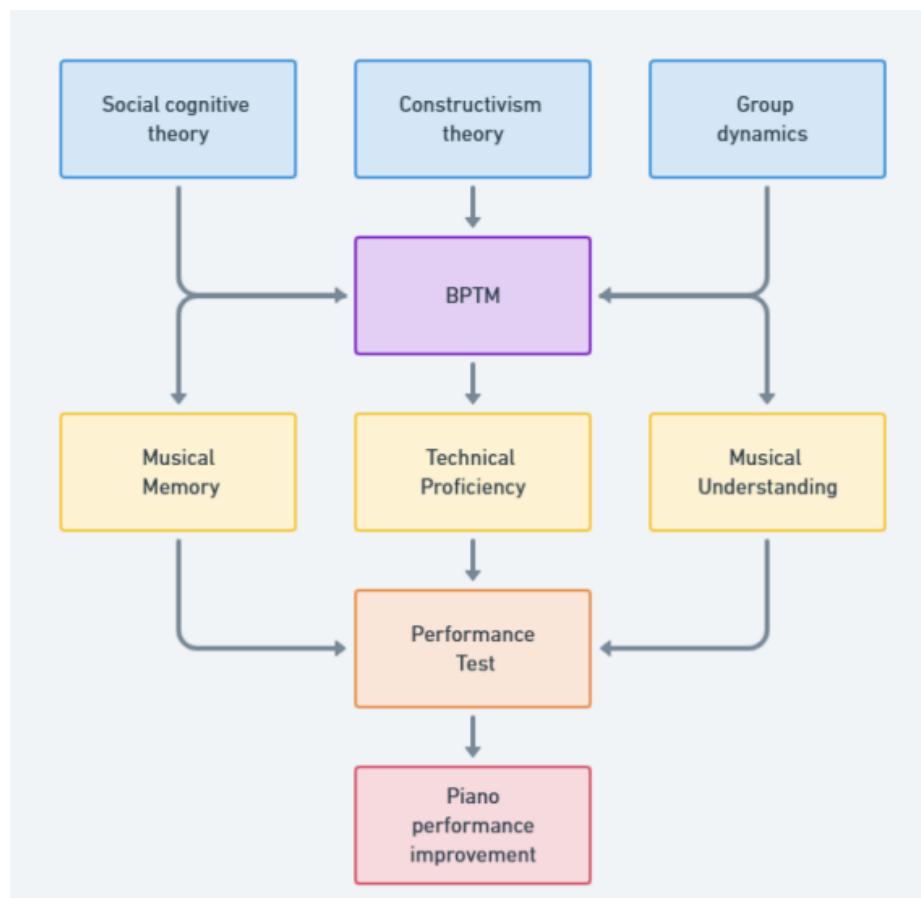

Figure 1 Flowchart between variables

This study focuses on three key variables: musical memory, technical proficiency, and musical understanding, which are considered critical factors affecting students' performance in the piano course at Aba Teachers University. In the first week of the course, preliminary assessments were conducted for both the experimental and control groups in these three areas. The experimental group used a blended learning approach incorporating Ding Talk technology, while the control group continued with traditional teaching methods. In the sixth week, both groups underwent a follow-up assessment, and the results were reflected in their respective scores. The researchers took various factors into account and developed an appropriate research framework.
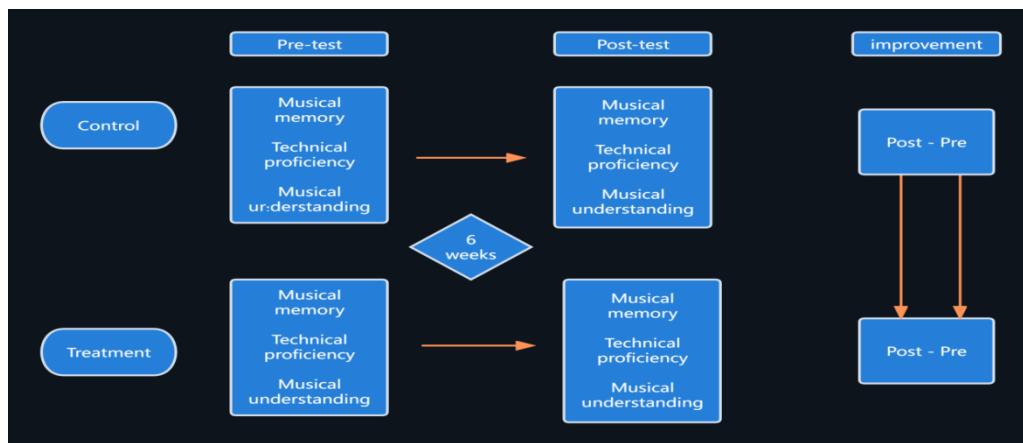

Figure 2 Research Framework

Hypotheses

Based on the literature review and conceptual framework, the proposed hypotheses are as follows.

H_a1: There is a difference between the experimental and control groups in terms of performance in Musical memory.

H_a2: There is a difference in Technical proficiency between the experimental and control groups.

H_a3: There is an improvement in the performance of the experimental group in terms of Musical understanding as compared to the control group.

Methodology

This study employed a quasi-experimental design to conduct a six-week blended piano teaching experiment. The schedule included two lessons per week, each lasting 90 minutes. The study comprised a control group, which used traditional offline instruction, and an experimental group, which integrated Ding Talk technology for online blended learning. Both groups followed the same lesson content and schedule.

Quantitative methods were used to evaluate students' performance in musical memory, technical proficiency, and musical understanding through pre-tests and post-tests, to assess the effectiveness of the blended teaching approach. The participants were 72 sophomore students from the School of Music and Dance at Aba Teachers University. Traditional teaching methods were used during the first four weeks, and the quasi-experiment commenced in the fifth week. The pre-tests included bars 1-12 from Exercise 36 of Czerny's 299 and bars 1-18 from the first movement of Mozart's K330. These assessments aimed to evaluate students' musical understanding, memory, and technical skills, ensuring that both groups started from a consistent baseline. During the experiment, students were required to practice exercises and pieces from the first movements of Czerny's 299 and Mozart's K330.

This study was designed using the BPTM teaching model to analyze the current state of piano courses in colleges and universities within the Aba ethnic area and to select appropriate variables for a quasi-experiment. The experiment integrated Ding Talk technology into blended piano instruction to enhance students' musical memory, technical proficiency, and musical understanding. Industry experts were invited to conduct a final assessment for both the experimental and control groups, which was graded according to Aba Teachers University standards. After the assessment, student performance data were

analyzed using Jamovi to determine whether Ding Talk technology effectively improved student outcomes in blended piano teaching at Aba Teachers University.

The quasi-experimental study began in the fifth week, while the first four weeks of piano foundation courses were conducted using traditional face-to-face teaching methods. Before the quasi-experiment started, the researchers conducted a pre-test for 72 students. The test included bars 1-12 of Article 36 from Czerny's Op. 299 and bars 1-18 of the first movement of Mozart's Sonata K. 330. The test aimed to assess students' performance in musical understanding, musical memory, and technical proficiency, ensuring that both groups had a consistent baseline level in these aspects.

Table 1 Pre-test Examination Methods

People	Pre-test content	Assessment Criteria	Test
72	Subsections 1-12 of article 36 in Cherny 299 ; Measures 1-18 from the first movement of Mozart's Sonata Op. k330	Aba Teachers University Piano Course Syllabus(2023)	Expert scoring

Once the pre-test is completed, students will enter a formal six-week course study phase. The six-week teaching plan is designed to help students gradually master the techniques and musicality of the two pieces, ensuring that they can perform at a high level. Through continuous practice and reinforcement, students will also enhance their musical memory, technical proficiency, and musical understanding.

Table 2 Six-week lesson plan

Week	Theme	Content
Week 1	Analysis and presentation of the work	1. Analyse and introduce Cherny 299 No.36 2. Analyse and introduce the first movement of Mozart K330.
Week 2	Improvement of playing techniques and expression such as triple jumps, chromatic scales, etc.	1. Three-degree jumps, chromatic scales, and broken chord technique learning 2. Focusing on the improvement of playing technique and expressiveness
Week 3	Reverse, Decomposed Octave and Musicality Shaping	1. Inversions, broken octave modal progressions, and continuous chord strings 2. Musicality shaping and overall performance
Week 4	Consolidation of playing techniques with an emphasis on musical expression	1. Performs the entire piece fluently 2. Focus on delicate musical expression
Week 5	Enhancement of musicality and musical expression	1. Enhance the musicality of the work 2. Focus on musical expression in the work

Week 6	Theatre practice	Stage practice before post-testing of two pieces

The experimental group consists of 40 second-year music students who will participate in a six-week piano course using the DingTalk blended learning approach. The first class of each week, lasting 45 minutes, will be conducted online by the teacher via DingTalk. This class leverages DingTalk's multimedia features to enrich the teaching content and enhance learning efficiency, distinguishing it from traditional face-to-face instruction. In the online classes, the interactive elements of the DingTalk platform will provide students with immediate feedback and personalized guidance, helping to correct errors promptly, deepen understanding, and improve learning outcomes.

Table 3 Treatment

		Semester teaching plan	
week	**Activity plan**	**Contents of Courses**	**Course goals**
1	1. During the 6-week study period, the control group will receive traditional face-to-face instruction two lessons a week to ensure a consistent level of student knowledge.	1. Pre-testing before research and design 2. Ding Talk to upload the score and the background of the work and other electronic materials around the multimedia materials of the work online explanation and teaching 3. Offline face-to-face teaching and guidance	To help students learn and compare piano works of different genres, and improve their aesthetic ability and musical literacy.
2	2. During the 6-week study period, students in the experimental group will complete their learning by using Ding Talk online piano teaching in the first session and face-to-face offline teaching in the second session.	1. Detailed comprehension and recorded demonstration teaching videos of playing techniques such as third-degree jumps, chromatic scales, etc. in Ding Talk classroom. 2. Face-to-face teaching of basic techniques and answering questions.	To help students improve their Technical proficiency in basic piano playing techniques.
3	3. Both groups will have the same learning objectives, content, and tasks, but different teaching methods. Students will have the same learning objectives, content, and tasks, just different teaching methods.	1. Demonstrate the playing of the reverse decomposed octave in the Ding Talk classroom and let students show it using Ding Talk. 2. Upload different versions of the performance video to Ding Talk classroom, so that students can feel the musicality of the work. 3. Face-to-face offline teaching, mainly group practice and face-to-face communication.	To help students stimulate their active exploration and eternal pursuit of art and culture.
4		1. Consolidate the playing techniques learned in the Ding Talk classroom, and randomly select students to connect to play and point out the problems for personalized tutoring. 2. Face-to-face offline communication, for difficult points to raise questions and solve.	To help students stimulate their active exploration and eternal pursuit of art and culture.
5		1. Through the Ding Talk classroom, the teacher will sort out all aspects of the musical	To help students learn and understand the

Semester teaching plan			
week	Activity plan	Contents of Courses	Course goals
		style of the work according to the demonstration video and audio 2. Face-to-face offline courses to raise questions and feedback, exchange, and solve.	artistic value of piano works and guide them to establish correct values.
6		1. Have each student make a full presentation of their work through the Ding Talk classroom. Targeted suggestions for improvement 2. Face-to-face offline classes for stage practice	To help students to enrich their stage experience and increase their stage practice.

Results

The results section offers a thorough analysis of the research findings. It begins with the presentation of demographic data, followed by detailed inferential statistics and hypothesis testing. The focus is on evaluating the effectiveness of the blended piano teaching method in improving student performance at Aba Teachers University compared to traditional teaching methods. This approach facilitates a clear analysis of the data and interpretation of the study's results.

Demographic Information

The study participants were 72 sophomore music students, majoring in musicology but not specializing in piano, from the School of Music and Dance at Aba Teachers University in Aba Tibetan and Qiang Autonomous Prefecture, Sichuan, China. The students were aged between 18 and 20 years, all having completed high school and currently pursuing undergraduate studies. The group included students from Han, Tibetan, Qiang, and Yi ethnic backgrounds.

Inferential Statistics: Hypothesis Testing

In this study, hypothesis testing is crucial. Testing the hypotheses will provide a thorough evaluation of whether blended piano teaching has improved the piano performance of students at Aba Teachers University.

Hypothesis Testing

In this hypothesis testing, the aim is to measure whether there is a difference in piano performance between the two groups of students and to test this using an independent samples t-test. Based on the design of the blended piano teaching course, the researcher tested hypotheses Ha1 through Ha3 to distinguish the performance differences between blended piano teaching and traditional teaching.

Table 4 Independent Samples T-Test（Pre）

	Statistic	df	p
Pre_Musical memory Student's t	1.83	70	0.071
Pre_Musical understanding Student's t	0.107	70	0.915
Pre_Technical proficiency Student's t	1.71	70	0.092

An independent samples t-test was used to compare the pre-test scores of musical memory, technical proficiency, and musical understanding between the experimental and control groups, with p-values of 0.071, 0.915, and 0.092, respectively. There were no significant differences in musical memory, technical proficiency, or musical understanding between the students in the experimental and control groups.

Table 5 Group Descriptive

	Group	N	Mean	SD
Pre_Musical understanding	Control Group	32	19.1	1.94
	Experimental Group	40	19.1	1.54
Post_Musical understanding	Control Group	32	21.1	1.81
	Experimental Group	40	23.9	1.14
Pre_Musical memory	Control Group	32	20.8	1.48
	Experimental Group	40	20.1	1.29
Post_Musical memory	Control Group	32	22.7	1.26
	Experimental Group	40	24.6	1.17
Pre_Technical proficiency	Control Group	32	24.1	1.5
	Experimental Group	40	23.4	1.74
Post_Technical proficiency	Control Group	32	26.9	1.37
	Experimental Group	40	30.1	2.94

From the descriptive statistics of the pre-test and post-test scores for musical memory, technical proficiency, and musical understanding, differences were observed between the experimental and control groups. The data indicate that both groups showed an increase in average scores after the intervention, with the experimental group demonstrating a more significant improvement.

Table 6 Independent Samples T-Test（Post）

	Statistic	df	p
Post_Musical memory Student's t	-6.76	70	< .001
Post_Technical proficiency Student's t	-5.70 [a]	70	< .001
Post_Musical understanding Student's t	-8.17 [a]	70	< .001

Independent samples t-tests were used to compare the post-test scores of musical memory, technical proficiency, and musical understanding between the experimental and control groups. The results yielded a p-value of less than 0.001, indicating significant differences in scores for musical memory, technical proficiency, and musical understanding between the students in the experimental and control groups.

Discussion

The study indicates that blended piano teaching is not only applicable to piano instruction at universities in the Aba ethnic region but can also provide flexible teaching methods for students at various grades and levels.

Pulham and Graham (2018) argue that blended education emphasizes providing students with a flexible and customized learning experience, which fosters greater engagement and allows them to shape their learning journey. Blended learning typically follows a mastery-based approach, enabling students to progress at their own pace, and often involves group work for projects, discussions, or impromptu tasks. In contrast, traditional online education models rarely incorporate collaborative learning methods (Pulham & Graham, 2018; Graham et al., 2019). This highlights the potential of blended piano teaching as a valuable tool in piano instruction, demonstrating its effectiveness in improving musical memory, technical

proficiency, and musical understanding. However, further investigation is needed to confirm its effectiveness across different age groups and academic levels.

In the context of piano instruction at Aba Teachers University, blended learning has led to significant improvements in student performance, enhancing their musical skills and laying a solid foundation for their future careers in music. Beyond the experimental and control groups in this study, other students in the music program at the university could also benefit from this innovative teaching approach. This suggests that the application of blended teaching methods could have a broader impact across the entire institution, offering more effective and targeted piano education to a larger number of students.

Conclusion

This study focuses on blended piano teaching for university students in the Aba ethnic region, The aim is to test the effectiveness of the blended piano teaching model in enhancing students' musical memory, technical proficiency, and musical understanding. What sets this study apart is its innovative application of the blended teaching model to piano instruction in this specific cultural context, addressing these three aspects of student performance.

The findings reveal that blended piano teaching positively affects piano learning among students in the Aba ethnic region. It enhances musical memory, technical proficiency, and musical understanding. The results show a significant difference in post-test scores between the experimental group and the control group, indicating the effectiveness of the blended teaching model in this context.

In summary, blended piano teaching, which integrates online and offline methods, leverages modern technological resources while incorporating local cultural traditions. This approach not only provides a learning experience more aligned with students' cultural backgrounds but also supports the modernization of education and the preservation of local musical heritage.

Recommendations

This study aims to contribute significantly to piano education at universities in the Aba region, beyond its academic value. The researchers hope to provide local educators with effective teaching methods and strategies, helping them better nurture students and develop talent for the region's cultural and artistic sectors.

The research offers a practical approach to improving piano performance among students at Aba Teachers University and serves as a valuable case study for exploring the integration of modern technology into traditional music education. This offers future educators and researchers a useful reference, potentially advancing the field of music education.

This study has several limitations. Firstly, the duration of the research: The study spanned 6 weeks, which means the collected data may not fully reflect long-term trends or sustained impacts. Secondly, the regional demographic limitation: The study focused primarily on the Aba Tibetan and Qiang Autonomous Prefecture. Although this region includes multiple ethnic groups such as Han, Tibetan, Qiang, and Yi, it does not encompass all 56 ethnic groups in China. Therefore, the findings may not fully represent China's diverse cultural background.

Furthermore, the study provides valuable insights for future educators and researchers, especially given China's diverse cultural landscape and the unique challenges faced in minority regions. It presents a successful example of how modern technology, like Ding Talk, can be effectively combined with traditional teaching methods. This approach not only benefits minority students but could also positively impact students from non-minority backgrounds.

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