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Impact of Blended Learning Techniques on Skill Acquisition in Chinese Classical Dance Among University Students

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Abstract

This study aims to evaluate the effectiveness of blended learning strategies in skill acquisition for Chinese classical dance among university students. A cross-sectional survey was conducted with 120 university students to assess various aspects of blended learning. Independent t-tests and linear regression analyses were used to examine how different blended learning variables affected skill improvement in Chinese classical dance. Additionally, thematic analysis was used to explore the challenges and advantages students reported when applying blended learning principles to dance education. The results indicate that blended learning significantly enhances skill development in Chinese classical dance compared to traditional teaching methods. Specifically, the duration of blended learning, instructors' experience with the method, and session frequency all contributed to improved dance skills. The study concludes that blended learning is an effective educational model for enhancing skill acquisition in Chinese classical dance. It combines the benefits of face-to-face and online learning, offering a flexible and collaborative approach to teaching.

Introduction

Background

Blended learning (BL) practices have been identified as an important approach in higher education, integrating face-to-face instruction with online materials that supplement each other to produce an enriching, motivating experience (Castro-Rodriguez et al., 2021). This approach leverages the benefits of media and face-to-face interaction, and research consistently shows

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positive effects on learners' achievement and performance (Castro, 2019). For example, according to Lina and Brahmakasikara (2021), a blended learning model for dance majors at Guangdong University enhanced motivation and learning outcomes through the integration of technology. Likewise, Wang et al. (2022) examined BL in physical education because it is beneficial for improving students' fundamental motor skills and perceptions of learning.

BL is particularly beneficial in Chinese classical dance. Videos and discussion boards are only a few examples of the diverse resources available through web-based technologies to help understand and apply complex choreographic movements (Lina & Brahmakasikara, 2021). BL also enables ongoing contact between instructors and students, making them more interactive and effective (Fielden et al., 2022). According to Rahayuningtyas et al. (2021), web-based BL of Malang regional dance enhanced learning during the pandemic, whereas Bayyat (2020) revealed that a hybrid of face-to-face and technology-enhanced instruction enhanced interest and participation in ballet.

Nevertheless, several problems exist, including a lack of technological resources, poor instructor training, and negative attitudes among those accustomed to traditional teaching (Hapizah et al., 2022; Niemiec & Otte, 2009). Nevertheless, BL offers flexibility, accessibility, and improved learning outcomes, making it appropriate for teaching Chinese classical dance. By combining instructional modalities, BL can improve skill learning, motivation, and engagement and help overcome some of the shortcomings of traditional education. Hence, this research paper will analyze the performance and engagement of university students in Chinese classical dance, focusing on the teaching methods they can employ through blended learning.

Research aims and questions

The research aims to assess the impact and effectiveness of blended learning techniques on teaching Chinese classical dance. In this regard, research questions are given below:

- What are the differences in skill acquisition in Chinese classical dance between students who learn through blended learning techniques and those who learn through traditional face-to-face or in-person learning methods?
- What is the impact of specific factors of blended learning (like duration of blended learning usage, instructor experience with the method, and frequency of blended learning sessions) on the skill acquisition in Chinese classical dance?
- What are the challenges and benefits of using blended learning methods for learning Chinese classical dance?

Research hypothesis

The research hypotheses for this study are given below:

H_1: Students who learn through blended learning techniques show significantly higher levels of skill acquisition in Chinese classical dance compared to those who learn through traditional face-to-face or in-person learning methods.

H_2: The longer the duration of blended learning usage, the more it significantly improves skill acquisition in Chinese classical dance.

H_3: Instructors with more experience in blended learning techniques significantly enhance skill acquisition in Chinese classical dance.

H_4: A higher frequency of blended learning sessions significantly improves skill acquisition in Chinese classical dance.

Literature Review

Impact of blended learning on Chinese classical dance skill acquisition

Blended learning (BL), the combination of face-to-face and online education, has proven effective in Chinese classical dance, and the extent of its use strongly influences skill levels. Short- and long-term applications have proven beneficial, but to develop technical level, style, and rhythm, regular practice is required (Liu, 2023). The eight-week program based on BL in classical Chinese dance enhanced students' abilities in body rhyme, posture, and rhythm (Lina & Brahmakasikara, 2021). The instructors' level of expertise is also decisive. In medical education, Gong et al. (2021) found that learners trained by BL-proficient instructors performed better than those trained by other, less-experienced teachers on both practical and theoretical tests. Similarly, in Chinese classical dance, teachers' ability to use digital tools and BL methods increased the effectiveness of their teaching (Tan & Brahmakasikara, 2021), demonstrating that professional development is key to achieving learning outcomes. The rate of BL sessions also affects skill acquisition. Regular, persistent classes maintain focus and encourage more learning. An extended use of the China Dance Network Application enhanced students' body rhythm, soft opening, posture, rhythm style, and expressive force (Lina & Brahmakasikara, 2021). Rahayuningtyas et al. (2021) also found that more frequent BL sessions improved skill development while maintaining higher student engagement than less frequent sessions. BL usually considers social networks in dance education to establish interactive learning environments. According to Chao et al. (2021), frequent interactions in mixed-learning environments encouraged self-directed learning opportunities and deeper involvement. More recent meta-analysis data have supported this general effectiveness of active learning interventions at the larger level, where one exhaustive review revealed that, across all contexts, active instruction showed a statistically significant gain in learning performance of 0.489 standard deviations in courses between the humanities and social sciences and traditional lecturing (Kozanitis & Nenciovici, 2022). It underscores the relevance of active learning models beyond STEM subjects and suggests transferable benefits for expressive and performative fields of dance. Overall, the evidence shows that frequent practice, teacher experience, and interactive learning are of paramount importance for acquiring physical skills in BL settings, where diverse modes and forms can convey both the technical and expressive aspects of Chinese classical dance.

Drawbacks and advantages of using blended learning methods for learning dance

The combination of in-person instruction with online features, known as blended learning, has shown interest in Chinese classical dance. This approach offers both challenges and benefits that affect students' learning abilities. Regarding limitations, the primary challenges for blended learning in Chinese dance are changes in teaching practices and facilities, and, importantly, the proper training of teachers in technology use (Tan & Brahmakasikara, 2021). Furthermore, this research notes that students are inclined to face challenges in self-regulation and utilization of learning technology, which are likely to hinder their learning process. Moreover, another study notes that issues affecting blended learning in dance and dance education include students' inappropriate behaviour, poor attention during lessons, and disorganized lessons (Hikmawaty &

Nugroho, 2022). Thus, blended learning involves major changes in approaches to classroom behaviour and organization to meet learning needs and foster positive learner interactions.

Nevertheless, in the context of dance learning, blended learning has numerous advantages. In this regard, research shows that blended teaching methods in Chinese dance education empower students to learn about dance history and style independently through online and face-to-face instruction (Feng, 2022). This model enables the acquisition of theoretical concepts and skills in Chinese classical dance. Likewise, another study shows that the web course model of blended learning is just as effective in helping students learn skill-based subjects such as the Malang regional dance (Rahayuningtyas et al., 2021). Besides, this approach to learning allows students to progress through lessons at their own comfort level and on their own time, with in-person support and online resources. According to Herlina et al. (2019), blended learning in environments that foster autonomy and cooperation may be helpful in dance teaching and learning contexts, with a focus on practice and feedback. The study indicated that standard learning integration models in today's societies enable students to engage more appropriately and effectively with subject content. However, these works are insufficient to adequately address the current state of the literature on the analysis of the multiple advantages and disadvantages of Chinese classical dance. It remains important to seek superior research that considers and analyzes these factors, thereby contributing to the development of a framework to enhance the usefulness of blended learning in this setting.

Theoretical framework

This study utilizes constructivist learning theory, grounded in the work of Piaget and Vygotsky, which posits that learners construct knowledge through activities and interactions with others (Bada & Olusegun, 2015). Since learners are active, social, and contextualized, the theory is also consistent with blended learning, which integrates online and conventional learning to enhance skill learning (Chuang, 2021). Constructivism in Chinese classical dance involves learning through doing, instant feedback and instructor mediation of the learning. This paradigm helps investigate the influence of blended learning time, instructor expertise, and session frequency on skill development. Other complementary models include the Cognitive Load Theory (CLT), which emphasizes managing limited cognitive capacity in learning (Sweller, 1994), and digital videos minimize mental load by allowing close attention to movement. The Multimedia Learning Theory (MLT) explains the importance of visual and verbal media in developing understanding and motor skills (Yeşilda & Sadik, 2021). Other views, such as behaviourism, emphasize rote learning and reinforcement (Watson, 2017), which is the opposite of blended learning, which is interactive. Experiential Learning focuses on learning by doing and thinking (Kolb, 2014), which aligns with the blended learning approach that combines technology and in-person communication. This study is also grounded in Bloom's Taxonomy (Krathwohl, 2002), which provides a structured hierarchy of learning outcomes, from remembering the choreography to developing new sequences of movements, making the research design and analysis of results more predictable and educationally relevant. Moreover, this is complemented by the Critical Thinking Theory (Kurfiss, 1988), which emphasizes that blended learning promotes reflective practice and evaluative judgment, suggesting that the study will not only examine perceived skills acquisition but also students' ability to analyze and edit their work. A combination of these theories would provide a detailed picture of how blended learning can improve the teaching of Chinese classical dance across cognitive, experiential, and interactive dimensions.

Conceptual framework

The purpose of this conceptual framework is to delineate the link between four independent variables, namely blended learning techniques, duration of blended learning usage, instructor experience with blended learning, and frequency of blended learning sessions, towards affecting the dependent variable, skill acquisition in Chinese classical dance (Fig 1). The model assumes that the level of skill acquisition among students learning Chinese classical dance depends on blended learning techniques, the time and frequency of their exposure to it, and the trainers' competence in delivering this mode of learning. Thus, this framework systematically demonstrates how components of blended learning enhance education goals in a dance learning environment.

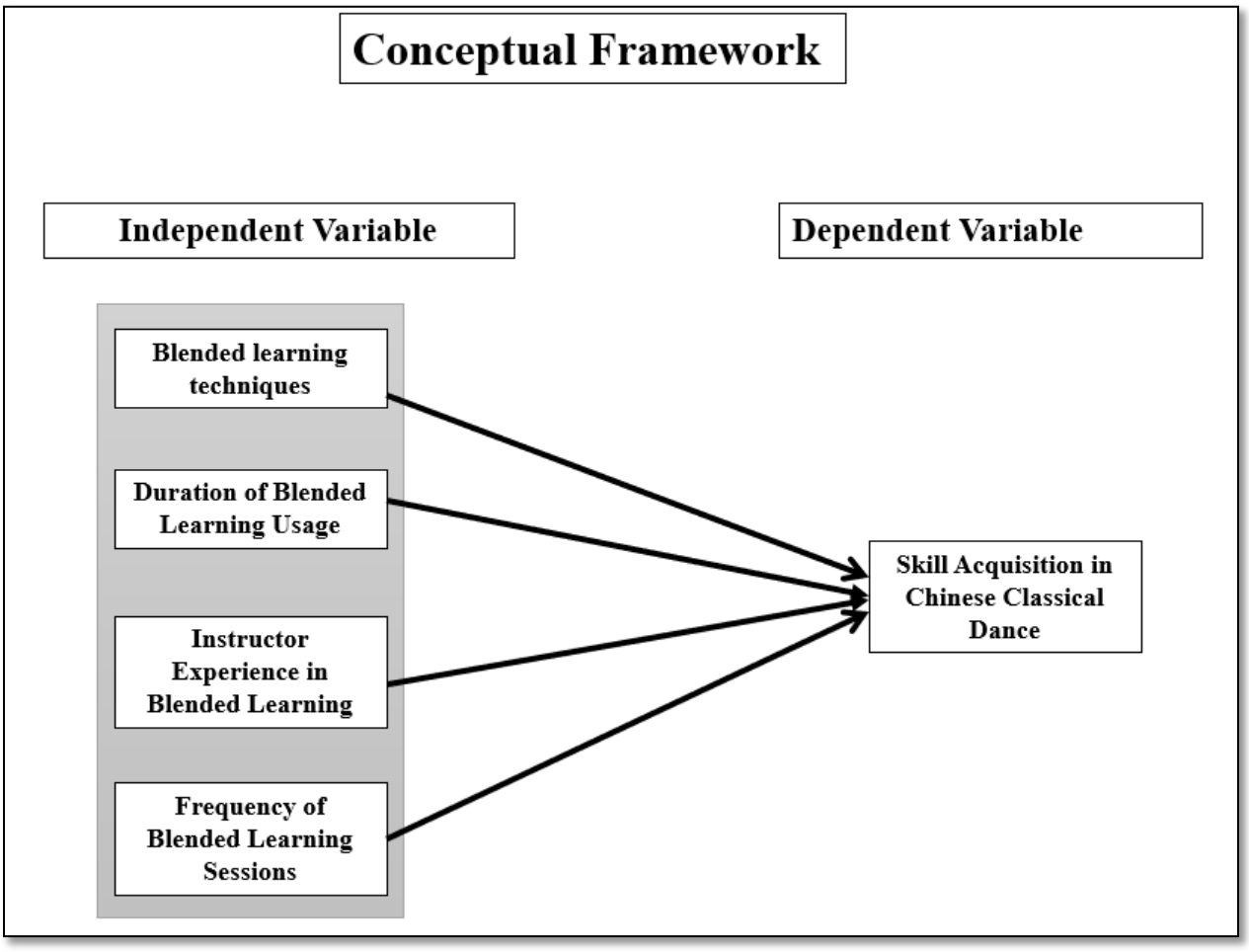

Figure 1: Conceptual framework for this research (Source: Self-generated).

Methodology

Research design

This study used a cross-sectional approach to assess the effectiveness of blended learning strategies in teaching Chinese classical dance. This design used survey questionnaires to capture a snapshot of a large, diverse student population at a single point in time, thereby helping to explore current experiences and outcomes. Consequently, this method helped to understand students' experiences at a particular time (Kesmodel, 2018). The cross-sectional design used in the study was appropriate for exploring relations among blended learning techniques, duration of blended learning use, instructor experience with blended learning, frequency of blended learning sessions, and skill acquisition in Chinese classical dance.

Data collection and sampling

This study used an online, self-administered questionnaire designed by the researchers as the data source. They were spread through platforms such as WeChat, Weibo, QQ, Zhihu, Douyin, and Baidu Tieba, which are popular among Chinese university students; thus, the coverage was wide, and the participants had diverse backgrounds (Zhu, 2019). The survey link also included the study's purpose and assurances that participants would not be required to take part and that no monetary gain would be offered. The questionnaire was sent to students, inviting them to complete the survey via the provided link. The sample comprised 120 participants selected via simple random sampling, with equal allocation across all university students who practiced Chinese classical dance (Noor et al., 2022). The sample size was selected based on previous studies reporting that a minimum of 105 participants was needed for simple regression and other quantitative analyses (Memon et al., 2020). Even though random sampling was used, limitations may arise from geographic concentration, experience levels, and platform accessibility. Besides, perceived changes in skill might be biased by self-reported data. To address these dilemmas, future studies might consider objective measures, such as practical tests, or longitudinal designs to assess the long-term effects of blended learning interventions.

Research participants

The research included 120 university students, undergraduate and postgraduate, who are currently studying blended learning in Chinese classical dancing (Zhu, 2019). The achieved sample size of 120 participants was determined using Cochran’s Sample Size Formula, ensuring adequate statistical power for the study’s scope (Nanjundeswaraswamy & Divakar, 2021). The participants, who were master's and Ph.D. students, offered a broad vision of teaching effectiveness. Inclusion criteria were that study participants be current university students and be engaged in Chinese classical dance either as an academic subject or as a co-curricular activity, with no limitations on experience level. Non-students or those with no prior experience in Chinese classical dance were excluded.

Research instrument

The data collection approach used in this study was questionnaires. The survey included two major parts: the demographic details and the main survey questions. The demographic section

comprised four questions on age, gender, current level of study, and use of the hybrid learning model in learning Chinese classical dance. This section was important for providing background information on the participants and enhancing the interpretive potential of the collected data. The main survey questionnaire comprises 20 items, divided into four sections to address each research question effectively. The first part (Q1-Q8) concerned the skill acquisition in traditional Chinese dance. The second block of questions (Q9-Q12) was designed to get information on the duration of blended learning applications. The third set of questions (Q13-Q16) was meant to investigate instructor experience with blended learning. The last set of questions (Q17-Q20) focused on the frequency of blended learning sessions (Appendix A). Regarding the operationalization of the structural variables, each question in the main survey was designed to use a five-point Likert scale, on which participants' levels of agreement or disagreement could be expressed with varying degrees of intensity (Joshi et al., 2015). Following the closed-ended items in the main survey section, there was one open-ended item that asked participants to elaborate on the benefits and constraints of using the blended learning approach to learn Chinese classical dance (Appendix A). Internal data consistency was assessed using SPSS Cronbach's alpha coefficients to evaluate survey reliability. The whole questionnaire's Cronbach's Alpha Coefficient was 0.979 in the reliability test. Among the sub-indices, the highest alpha was observed in the skill acquisition section, at 0.971. In contrast, the duration of blended learning usage section had an alpha of 0.892, the instructor experience section had an alpha of 0.891, and the frequency of blended learning sessions section had an alpha of 0.889. Usually, research analysts consider Cronbach's alpha to be 0.7 (Adeniran, 2019). A measure or test is considered reliable if its items are at 0.7 or above (Adeniran, 2019). However, for this research, Cronbach's alpha was greater than 0.8, indicating strong internal consistency and reliability when measuring the survey questionnaire.

Intervention process and implementation details

The Chinese classical dance blended-learning intervention used asynchronous digital modules and synchronous practice to implement specific active-learning strategies. Students watched instructor-recorded demonstration videos each week that broke down complex dance movements into smaller skill units, followed by self-practice activities. They had to record themselves performing short pieces, conduct a structured self-evaluation using a provided checklist, and participate in peer feedback sessions using a calibrated rubric for technique and musicality. Real-time or face-to-face learning sessions incorporated micro-coaching, instantaneous correction, and brief retrieval tests on terms and stylistic features to consolidate conceptual knowledge. Teachers who provided the blended format had prior experience teaching Chinese classical dance and received a briefing and preparation outlining expectations for aligning asynchronous materials with the aims of the live sessions, consistently using the feedback rubric, and facilitating self-regulated learning among students. The intervention occurred during a typical 12-week academic period, with asynchronous course materials posted at the beginning of each week and synchronous sessions held one or twice a week, depending on the class schedule. Data collection took place during the last two weeks of the term via an online survey distributed through popular social media platforms in China. The survey included demographic information, exposure to active learning strategies, perceived skill development and open-ended responses to what they found beneficial and problematic. This design provided temporal consistency between exposure and outcome measurement and fidelity to the intended blended learning design.

Data analysis

SPSS version 26 was used to analyze the data for the present study. For the skill acquisition test, an independent t-test was used to compare responses between groups adopting blended learning and those adopting traditional, face-to-face learning. In this current research, linear regression was used to assess how program duration, instructor expertise, and session frequency affect skill acquisition in blended learning.

To understand how students perceive the advantages and disadvantages of blended learning in Chinese classical dance, the researcher used reflexive thematic analysis (RTA) by Braun and Clarke (2019) to interpret one open-ended survey question. The main principle of RTA, reflexivity, was preserved throughout, considering the researcher's connection to the data and pre-existing knowledge about blended learning, which might affect interpretation (Byrne, 2022; Braun & Clarke, 2006). In this reflexive position, the ways assumptions could facilitate or impede the identification of themes were discussed. The researcher acknowledged the subjectivity of coding and theme construction (Braun & Clarke, 2021a) and adopted a loose process of revisiting the data to refine codes and themes as new information emerged (Byrne, 2022). There was an attempt to preserve the participants' words and experiences and ensure that the analysis is based on their views. According to the six-stage framework proposed by Braun and Clarke (2021b), the following stages were carried out: familiarisation with the data, generation of initial codes, search for themes, review of potential themes, definition and naming of themes, and production of the final report. This methodology captured nuances and conveyed the breadth of participants' views without introducing bias. To increase the validity of the thematic analysis, a second coder independently coded 25% of the responses using the same coding framework. Cohen’s kappa ($K = 0.84$) was applied to measure the inter-rater reliability, which shows substantial agreement. The discrepancies were negotiated and agreed upon, and the coding scheme was improved before determining themes.

Ethical consideration

In this study, it might have been helpful to examine ethical concerns about protecting participants' rights throughout the research process. However, this study did not obtain ethical approval from a specific university because it distributed the survey link via social media to recruit participants. Thus, this is an independent research study that did not involve any institutional affiliation requiring Research Ethics Board (REB) review. Along with the survey questionnaire, each respondent received a consent form and an information sheet. These documents included background information on the planned study, the type of study to be conducted, and the benefits the gathered data would provide to participants. Study participants were told the study was voluntary, implying they could withdraw at any time without repercussions. Moreover, no personally identifiable information was recorded, and responses were securely stored, which minimized the study's risk. This helped ensure participants' ethical treatment, safety, and the study's credibility and trustworthiness.

Findings

Analysis of demographic data

Table 1: Demographic information about participants.

Factor	Attribute	Frequency	Percent %	Mean	Standard Deviation
Age	18-20	31	25.8	1.93	0.67
	21-23	66	55.0		
	24-26	23	19.2		
	Total	120	100.0		
Gender	Male	42	35.0	1.65	0.48
	Female	78	65.0		
	Total	120	100.0		
Current Level of Study	Undergraduate	43	35.8	1.70	0.57
	Postgraduate (Master's)	70	58.3		
	Doctoral (PhD)	7	5.8		
	Total	120	100.0		
Use of Blended Learning in Learning Chinese Classical Dance	yes	60	50.0	1.50	0.50
	No	60	50.0		
	Total	120	100.0		

The demographic breakdown indicates balanced representation across key groups, enabling a comprehensive understanding of the study sample (Table 1). The age and gender distribution suggest a diverse respondent base, thereby enhancing the generalizability of the findings. The larger proportion of postgraduate students may reflect greater engagement with advanced studies and specialized areas such as Chinese classical dance. The equal split between participants using blended learning and those who do not suggests that both perspectives are well represented, facilitating a more nuanced exploration of the impact of blended learning on dance education. This balance provides valuable insights into the broader context of the study.

Hypothesis testing

H_1: Students who learn through blended learning techniques show significantly higher perceived skill acquisition in Chinese classical dance compared to those who learn through traditional methods.

An independent sample t-test was conducted to compare students who learn through blended learning techniques with those who learn through traditional methods in Chinese classical dance.

Table 2: Mean comparison of perceived skill acquisition in Chinese classical dance between students who learn through blended learning techniques and those who learn through traditional methods.

Variables	Students who learn through blended learning techniques		Students who learn through traditional methods		*t*	*p*	Cohen's *d*
	Mean	Standard Deviation	Mean	Standard Deviation			
Effectiveness of ITS in enhancing student engagement	4.38	0.26	1.82	0.40	41.34	0.00	7.59

Table 2 revealed significant mean differences in the acquisition of Chinese classical dance skills between students who learn through blended learning techniques and those who learn through traditional methods ($t = 41.34$, $p < .001$). Students in the blended learning group reported perceived skill acquisition ($M = 4.38$, SD = 0.26) than those in the traditional learning group ($M = 1.82$, SD = 0.40), with a mean difference of 2.56 points, 95% CI [2.45, 2.67]. The Cohen's *d* value of 7.59 indicated a very large effect size, further supporting the substantial advantage of blended learning for skill acquisition in Chinese classical dance. As outcomes were self-reported, findings reflect confidence/self-efficacy rather than objectively assessed dance performance.

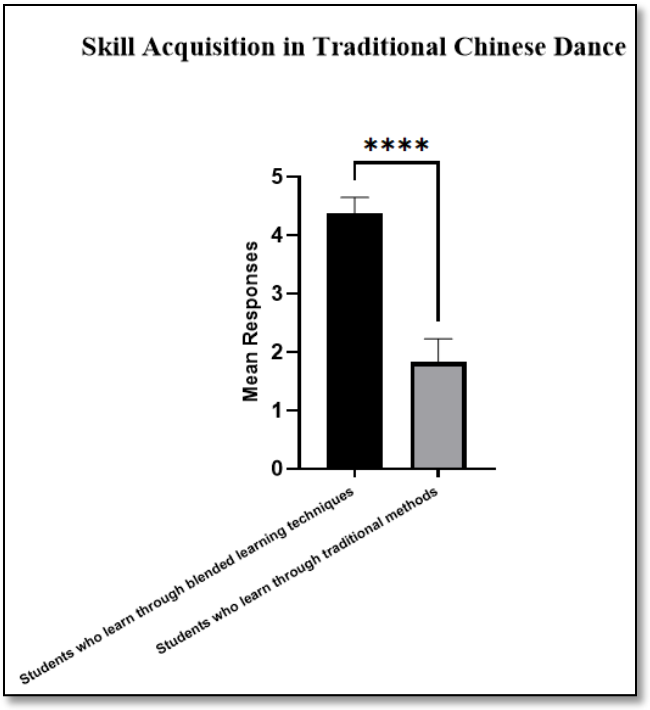

Figure 2: Comparison of skill acquisition in Chinese classical dance between students using blended learning techniques and traditional methods. The asterisks (****) indicate a statistically significant difference at $p < 0.0001$.

The bar graph (Fig 2) shows that students who use blended learning techniques acquire significantly more skill in Chinese classical dance than those who use traditional methods. The difference in mean responses indicates a notable advantage for blended learning.

H_2: The longer the duration of blended learning usage, the more it significantly improves skill acquisition in Chinese classical dance.

To validate the hypothesis, a linear regression was performed with blended learning usage duration as the independent variable and skill acquisition in Chinese classical dance as the dependent variable.

Table 3: Regression coefficients of the duration of blended learning usage on the skill acquisition in Chinese classical dance.

Variables	**Unstandardized Beta coefficient**	**Standard Error**	**t-Statistic**	**p**	**95.0% Confidence Interval**
Constant	-0.46	0.17	-2.72	0.007	[-0.79, -0.13]
Duration of Blended Learning Usage	1.02	0.05	22.20	0.000	[0.93, 1.11]

Table 3 shows the impact of the duration of blended learning on skill acquisition in Chinese classical dance. The R^2 value of 0.807 indicates that approximately 80.7% of the variance in skill acquisition in Chinese classical dance is explained by the duration of blended learning use, which is statistically significant, $F(1, 118) = 492.922$, $p < .001$. The findings revealed that the duration of blended learning usage is positively associated with skill acquisition in Chinese classical dance ($\beta = 0.898$, $p < .001$). This finding indicates a positive, influential impact of extended blended learning use on enhancing dance skills.

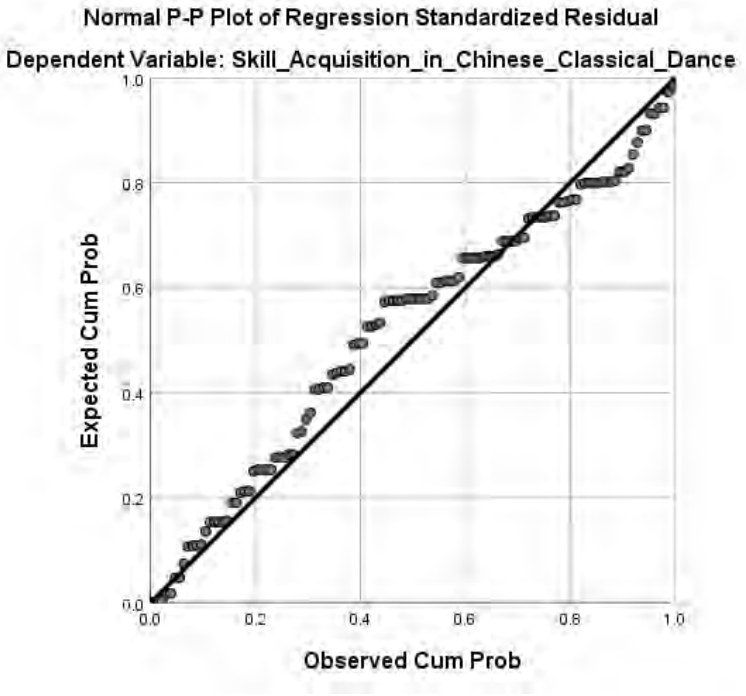

Figure 3: The normal P-P Plot for the variable skill acquisition in Chinese classical dance and duration of blended learning usage.

Figure 3 illustrates a strong alignment between the observed cumulative probabilities and the expected values under the assumption of normal distribution for the regression model examining skill acquisition in Chinese classical dance relative to the duration of blended learning usage. The close adherence of the plotted points to the diagonal line indicates that the model residuals are normally distributed. This normal distribution of residuals validates the assumptions underlying linear regression analysis, supporting the reliability of the regression results regarding the positive impact of blended learning duration on dance skill acquisition.

H_3: Instructors with more experience in blended learning techniques significantly enhance skill acquisition in Chinese classical dance.

To validate the hypothesis, linear regression was performed with instructor experience as the independent variable and skill acquisition in Chinese classical dance as the dependent variable.

Table 4: Regression coefficients of experience of instructors in blended learning techniques on the skill acquisition in Chinese classical dance.

Variables	**Unstandardized Beta coefficient**	**Standard Error**	**t-Statistic**	***p***	**95.0% Confidence Interval**
Constant	-0.38	0.18	-2.72	0.042	[-0.74, -0.01]
Experience of Instructors in Blended Learning Techniques	1.01	0.05	22.20	0.000	[0.91, 1.11]

Table 4 shows the impact of instructors blended-learning experience on students' skill acquisition in Chinese classical dance. The R^2 value of 0.774 indicates that approximately 77.4% of the variance in skill acquisition in Chinese classical dance is explained by the instructor's experience with blended learning, which is statistically significant with $F(1, 118) = 403.055$, $p < .001$. The findings reveal that instructor experience with blended learning is positively associated with skill acquisition in Chinese classical dance ($\beta = 0.880$, $p < .001$). This finding indicates a substantial and positive impact of experienced instructors on improving dance skills through blended learning methods. This significant relationship underscores the critical role experienced instructors play in the effective implementation of blended learning techniques in dance education.

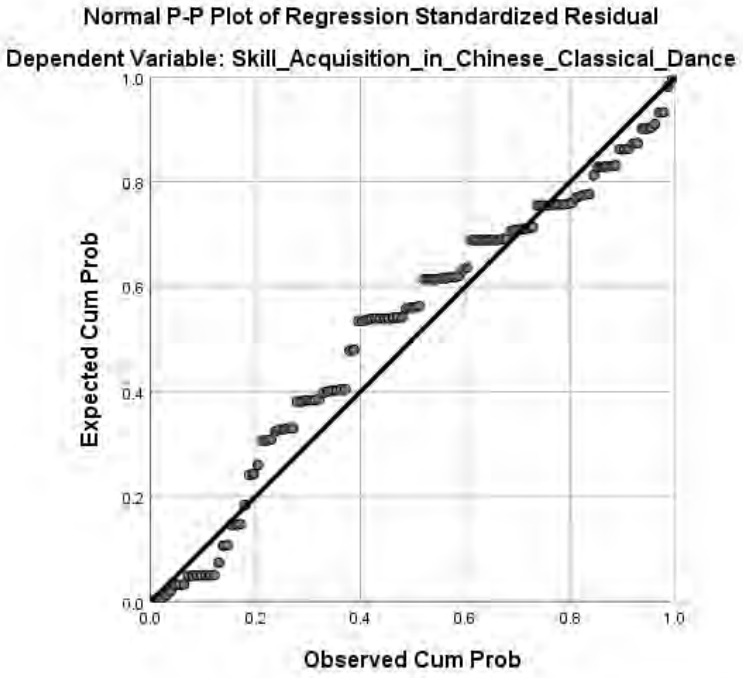

Figure 4: The Normal P-P Plot for the variable skill acquisition in Chinese classical dance and instructor experience.

Figure 4 exhibits a strong alignment between the observed cumulative probabilities and the expected values under the assumption of a normal distribution.

H4: A higher frequency of blended learning sessions significantly improves skill acquisition in Chinese classical dance.

To test the hypothesis, linear regression was performed with the frequency of blended-learning sessions as the independent variable and skill acquisition in Chinese classical dance as the dependent variable.

Table 4: Regression coefficients of the frequency of blended learning usage on the skill acquisition in Chinese classical dance.

Variables	Unstandardized Beta coefficient	Standard Error	t-Statistic	p	95.0% Confidence Interval
Constant	-0.42	0.19	-2.25	0.026	[-0.79, -0.05]
Frequency of Blended Learning Usage	1.03	0.05	19.89	0.000	[0.93, 1.14]

Table 6 shows the impact of the frequency of blended learning sessions on skill acquisition in Chinese classical dance among university students. The R^2 value of 0.770 indicates that approximately 77.0% of the variance in skill acquisition in Chinese classical dance is explained by the frequency of blended learning sessions, which is statistically significant with $F(1, 118) = 395.751$, $p < .001$. The findings reveal that the frequency of blended learning sessions is positively associated with skill acquisition in Chinese classical dance ($\beta = 0.878$, $p < .001$). This finding indicates a substantial, positive impact of increased session frequency on dance skill development. This significant relationship highlights the critical role that frequent engagement in blended learning activities plays in the effective acquisition of dance skills in Chinese classical dance education.

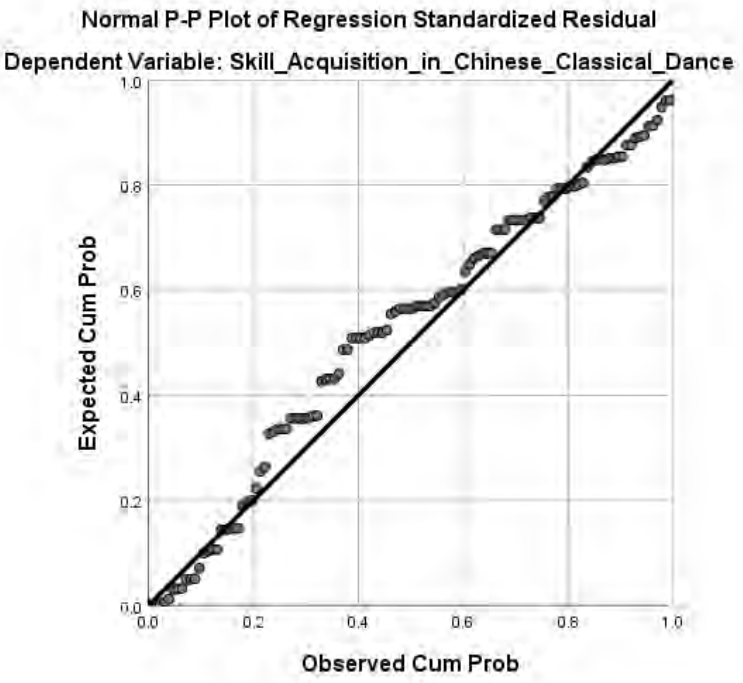

Figure 5: The Normal P-P Plot for the variable skill acquisition in Chinese classical dance and fluency of blended learning usage.

Figure 5 demonstrates a strong alignment between the observed cumulative probabilities and the expected values under the assumption of a normal distribution. However, some limitations can be identified that impede the implications of this study's results. The cross-sectional design does not allow for causal inference between blended learning and skill mastery; other variables, such as enthusiasm, prior experience, or exposure to technology, may have affected the results. For example, students who often used computers might have benefited more, while less motivated students gained fewer benefits relatively.

4.3. Thematic Analysis

Challenges of implementing blended learning in Chinese classical dance education

The potential disadvantages and problems of blended learning (BL) in the learning environment of Chinese classical dance are attributed to the interaction between technological factors and instructional factors. Normally, blended learning, which combines face-to-face and online content, is viewed as a convenient and accessible delivery model. However, when referring to a field like dance, which requires immediate feedback from physical actions, the advantages are less apparent. The incorporation of online platforms into the teaching of dance blurs the fundamentals of learning, as dance involves many body movements and touches. The transition to a digital environment not only alters the physicality of the dancing body but also brings several technical considerations. These effects include instability, low quality, and a lack of instructor interaction to correct students' flaws. However, concerns such as reduced faculty-student interaction may be disrupted by a lack of face-to-face contact. That flexibility, however, is evident in the observation that these difficulties highlight a significant tension between the convenience of

blended learning and the nature of the activity and the context of mastering physical moves, such as dancing. Due to this, the following quotations from the participants are provided below:

> The constant buffering during live sessions really makes it difficult to keep up with the choreography. It often feels like I'm learning at a slower pace because I can't follow properly." (Participant 28)

> When the video quality drops or the audio lags, I can't properly see or hear the movements being demonstrated. It breaks the flow of learning and makes it feel disconnected. (Participant 39)

> I miss the instant corrections that I would get in a physical classroom. Sometimes, I don't realize I'm doing something wrong until much later, and by then, it feels harder to correct. (Participant 113)

> The lack of face-to-face interaction means I can't get a personal sense of whether my posture or technique is correct. The virtual environment makes me feel disconnected from the instructor's guidance. (Participant 128)

All the responses from the participants gathered reveal that technical and engagement-related issues lead to disruptions. This is evident in the concept of buffering raised by Participant 28, which shows that the problem of being unable to follow movements is compounded by the medium itself, complicating learning. This technical problem hinders the free and continuous flow of information, which is central to the dynamism characteristic of dance practice. This is supported by Participant 39's observation that poor video and audio quality make it difficult to see and imitate the instructor's actions. In dance, imprecision is disadvantageous, as even minor details can significantly affect movement. Likewise, Participant 113's experience of delayed correction raises an important question of the immediacy of feedback, which is an essential modality in the learning of dances. This way, due to a lack of regular interaction, mistakes tend to accumulate, and when corrections are required, they can feel somewhat overwhelming. Furthermore, regarding the lack of interaction, Participant 128 said something important regarding engagement in the virtual learning environment. Students might not have the opportunity to engage in physical contact with the remaining students or the instructor, which is a crucial part of the learning process and determines the quality of the instructor's feedback on the techniques explained. These challenges, as highlighted collectively, show how the blended learning model in education significantly affected dance by erecting barriers to how instruction is delivered and to students' engagement in the learning process.

Benefits of implementing blended learning in Chinese classical dance education

BL offers numerous advantages for the education of Chinese classical dance, especially in terms of flexibility, convenience, and access to resources. One of the main benefits of BL is its temporal and spatial arrangements for acquiring learning content. It will help dance students who often have a tight daily schedule and cannot afford to attend classes at specific times or days. This flexibility enables them to schedule their practices according to their busy schedules to avoid congestion in physical classes. Also, the availability of online resources helps students review material that has been taught multiple times, which is particularly useful when learning a dance

routine or challenging techniques. In addition, BL can enhance access to a wide variety of resources that may not be available in conventional dance practice. For instance, a student can gain perspectives by watching videos, lectures, and tutorials from dance instructors around the world, which are often difficult or costly to obtain in a traditional face-to-face format. Furthermore, the economic feasibility of BL is reasonable. Classes, especially at reputable or technical schools, may be expensive. Since these elements are online, they allow students to benefit from BL's instruction and make dance education more affordable and accessible in general. This democratization of access is important for increasing the diversity of instruction, enabling as many people as possible to benefit from quality dance tutors.

> The ability to access class recordings at my convenience has made learning so much easier. I can review movements at my own pace and improve more effectively. (Participant 8)

> The flexibility to practice on my own time, without being bound by class schedules, helps me perfect my technique without stress. (Participant 23)

> Blended learning allows me to access tutorials from renowned global instructors, which is something I couldn't do in a traditional classroom setting. (Participant 38)

> Blended learning has made dance classes more affordable for me, especially with the online resources that complement the live sessions. It's made a significant difference. (Participant 110)

The participants' quotes also show that adopting blended learning approaches in the teaching and learning of Chinese classical dance is the most effective. Participant 8 stated that having a podcast of the classes is advantageous for students because it reduces tension and allows learners to master steps at their own pace while learning choreography. This is especially useful in vigorous activities such as dance, as it encourages skill development through repetition. Moreover, Participant 23 reiterates that more practice time outside regular class periods is achievable in the BL setting, giving the student greater control over learning. This is essential for creating muscle memory and enhancing the movements used in future activities. Participant 38's observation regarding access to global dance tutorials demonstrates the extent to which BL opens more avenues to instructional material. This creates opportunities to be trained in a variety of methods, approaches, and perspectives that would otherwise be hard to become accustomed to. Furthermore, the idea proposed by Participant 110 regarding the cost of blended learning could solve the problem, making quality dance education easily affordable and accessible to many students. Collectively, these quotes reveal that, though BL is not without its difficulties, it is undeniably effective in enhancing approaches to delivering dance education in contemporary ways.

Discussion

Comparison between blended learning and traditional methods in skill acquisition in Chinese classical dance

This study aimed to compare the skills acquired in Chinese classical dance between students enrolled in blended-learning-based instruction and those in a conventional teaching method. The results showed a significant and consistent difference in support for blended learning, confirming the hypothesis that it offers specific advantages for teaching and learning in this field.

Blended learning has the best of both worlds with online and face-to-face learning, allowing students to go at their own pace, access many online resources, and receive immediate feedback, which greatly improves performance (Salcedo, 2022). The findings are consistent with those of Salcedo's (2022) study, which show that personalized pacing and prompt feedback lead to better learning outcomes. Learners' preferences are also addressed through the effective integration of multimedia and interactive elements in blended environments, which helps learners master dance techniques (Gong et al., 2021). It extends the article by Gong et al. (2021) by demonstrating that multimedia resources directly contribute to the acquisition of complex dance movements. In line with the study by Lina and Brahmakasikara (2021), the present study aimed to enhance performance and motivation through blended learning, albeit with a more in-depth explanation of the effects in the context of dance education. The same advantages are noticed in other areas, such as medical education and physiotherapy, which have been shown to enhance skill acquisition and satisfaction with blended learning (ShahAli et al., 2023). Nevertheless, unlike ShahAli et al. (2023), the current results reveal that in a highly skill-intensive environment such as Chinese classical dance, blended learning supports not only theoretical knowledge but also practical skill. The findings also contribute to the study by Lehmann et al. (2015), which shows that blended learning is an effective tool for bridging the gap between theory and practice in dance education. The implications of such findings are reflected directly in the design of the art curriculum and in teaching practice, where skill development requires frequent, specialized practice. The results are based on constructivist learning theory, which focuses on learning through experience and interaction (Saleem et al., 2021). The blended learning approach combines face-to-face instruction with technology to encourage active learning. It is consistent with the Zone of Proximal Development concept developed by Vygotsky and enables students to progress at their own pace with guidance (Liu, 2024). The cognitive load theory posits that working memory load is low in instructional videos and that the step-by-step understanding of movements is facilitated (Sweller, 1994). Moreover, multimedia learning theory assumes that integrating visual and verbal elements will positively impact learning dance techniques (Shehu et al., 2024). All these findings support the conclusion that blended learning yields much more effective results than traditional instruction in the teaching of Chinese classical dance.

Impact of duration, instructor experience, and session frequency on blended learning effectiveness

This research analyzed three central measures of blended learning, which were the duration of use, instructor experience, and frequency of sessions, to determine their effectiveness in training Chinese classical dance. The results indicated that the prolonged use of blended learning led to better skill acquisition among students, significantly increased the performance of experienced

instructors, and enabled regular sessions to achieve uniform progress. These findings were expected, and all three hypotheses were confirmed.

The efficiency of these aspects may be attributed to the blended learning framework that combines online and face-to-face formats. Such integration will provide students with more time to work with lesson materials, thereby enhancing knowledge and comprehension (Wang et al., 2022). In the present study, there was a direct relationship between exposure to blended learning and improved dance skills, supporting Wang et al.'s claim that more time on content correlates with improved learning. Skilled instructors introduce various teaching approaches, differentiate instruction to meet diverse learning needs, and provide specific feedback, which aligns with the findings of Diep et al. (2017), who revealed the positive effect of teacher expertise. Similarly, frequent sessions enable consistent follow-up, which is crucial for learning intricate skills (Chao et al., 2021).

These findings are reflective of those in other studies. During physical activities, duration and frequency enhance motor abilities and physical fitness (Bayyat, 2020), and the present study will extend this association to dance education. In line with this, improvements in skill acquisition through more integrated learning activities and feedback from experienced lecturers in medical education have also been observed here (Liu et al., 2016). The current findings are consistent with research indicating that structured weekly sessions lead to better outcomes (Salcedo, 2022). The meta-analysis by Vo et al. (2017) in higher education also established that duration and frequency have a major impact on achievement. Moreover, Diep et al. (2017) showed that training teachers in blended learning methods enhances student interaction and mastery, and Li et al. (2019) in nursing education found that frequent, well-organized blended learning improves theoretical and practical skills. The results of the present study align with these trends, demonstrating that the combination of regular, systematic, and teacher-guided blended learning is beneficial for practicing dance skills. The consequences are twofold. These results provide novel insights into how learning time, the instructor's level of expertise, and session frequency can be combined to improve skill development, consistent with previous research by Lina and Brahmakasikara (2021). They promote understanding of blended learning as a synergistic strategy that supports the best outcomes by leveraging time, expertise, and practice.

The findings are also based on the educational theory. According to constructivism, learning is constructed through experiences and activities (Saleem et al., 2021). The long-term learning time, professional guidance, and multiple sessions facilitate knowledge building and skill mastery in this case. Vygotsky's concepts support the need for expert scaffolding and extensive interaction. In contrast, cognitive load theory (Plass et al., 2010) posits that the steps of complex dance movements can be processed through extended exposure to blended learning. These results are further confirmed by multimedia learning theory (Shehu et al., 2024), which posits that visual and verbal material enables learners to learn and remember complex techniques. Overall, the study reveals that longer training duration, expert trainers, and frequent training indicate significant progress in skill development in Chinese classical dance, as evidenced across various educational settings.

Challenges and benefits of implementing blended learning in Chinese classical dance education

The research identified technical challenges and the absence of immediate feedback as the major challenges. It increased flexibility, accessibility, resource optimization, and cost-efficiency as major benefits for the teaching of Chinese classical dance.

The findings of this study are attributable to several factors. Connection issues, streaming disruptions, and other technical difficulties are common hindrances to learning in blended learning environments, and robust technical support is essential (Kanwal et al., 2023). This is also consistent with the findings of Kanwal et al., who highlight dependable infrastructure in the current study. A disadvantage of remote lessons is that errors cannot be corrected as quickly as in traditional face-to-face learning. Such feedback delay may retard the pace and make it slower to hone the skills, similar to the effects of the lack of real-time interaction identified by Rasheed et al. (2020). This work adds to the literature by demonstrating how late corrections in dance training may affect mastery.

Nevertheless, blended learning also has great benefits. It is flexible, as students can practice at any time and apply what they have learned in real life, which promotes self-paced progress (Muhria et al., 2023). It is also more attractive because it provides greater access to resources, owing to its cost-effectiveness and reduced geographical constraints (Mintii, 2023). These results are similar to those of Kumar et al. (2021), who highlighted the importance of resources and noted that blended learning is the best option to maximize institutional and transportation resources, as well as other resources, and minimize total costs. Nevertheless, the literature also states that technical issues and infrastructure gaps remain obstacles (Rasheed et al., 2020). Practice-oriented subjects, such as dance, are particularly affected by the absence of immediate feedback, as it is instrumental to learning a skill (Alsaif, 2021). In the current study, Alsaif expands on the argument, underscoring the need for real-time corrections in physically demanding, precision-based training.

Theoretically, this observation aligns with constructivist learning theory, which emphasizes the importance of interaction and the integration of online and classroom models (Devi, 2019). Although the blended learning approach promotes independent, deep learning, technical problems and delays in feedback may constrain it. The cognitive load theory states that non-immediate feedback escalates intrinsic cognitive load, making it more difficult for learners to adapt and rise to the occasion (Plass et al., 2010). On the other hand, the multiple formats, such as videos and tutorials, proposed by the multimedia learning theory (Yeşildağ & Sadik, 2021), can also reduce cognitive load by providing information visually and orally. Nonetheless, without regular face-to-face contact, misunderstandings can exist, which is why a balance between the digital and physical is necessary.

Conclusion

Key Findings

The study concluded that blended learning is more effective than traditional methods for teaching Chinese classical dance skills, and that instructor experience, level of integration, and session frequency have positive effects. The advantages are flexible scheduling, more time to practice, reduced expenses, and the option of various tutors. Difficulties include technical issues, poor internet, and insufficient real-time feedback. Although it is effective, the cross-sectional design limits causal inference, and other factors, such as prior IT use or motivation, could affect

the findings. Therefore, the significance of the study is to argue for the effectiveness of a blended learning environment that incorporates a website and face-to-face instruction to support students' development of dance skills and to identify shortcomings in current practice.

Limitation

Despite the scope and design of this research, there are some limitations to consider. First, the research is quasi-experimental, which limits the ability to draw causal conclusions because participants were not randomly assigned to blended or traditional learning formats. This increases the likelihood of selection bias, in which pre-existing differences, e.g., motivation, prior dance training, or access to technology, may have affected group membership and results. Secondly, the online, self-reported questionnaires used create the possibility of social desirability and recall bias, which could influence the accuracy of reporting skill acquisition. Thirdly, the sample size of 120 students, which is sufficient for initial statistical analysis, might not be representative of the broader population of Chinese classical dance students. Furthermore, because the participants were recruited through a few selected Chinese social media platforms, the sample may underrepresent less digitally active students, thereby limiting the diversity of opinions captured. Moreover, the results cannot be generalized to other Chinese universities with varying institutional resources, curricular priorities, or student demographics, or to cultural or educational settings outside China. It is also important to note that adopting student-centred pedagogies, including blended learning, could be challenged by the cultural and institutional structures of Chinese higher education, given its long-standing teacher-centred environment. Lastly, although the active learning practices that were used in this study were viable at the course level, it is possible that scaling these types of practices at the institution-wide level will be limited by practical issues, such as the required training needed by instructors, investment in digital infrastructure, and the need to coordinate curriculum development across institutions.

Future recommendation

Given these limitations, future studies on blended learning in Chinese classical dance should adopt longitudinal designs to observe changes in skill acquisition over time and to more precisely determine causal relationships. Selection bias would be reduced and internal validity enhanced by randomly assigning participants to blended- or traditional-learning groups. Increasing the sample size by adding representatives from universities, regions, and demographic backgrounds would make the findings more representative and enable generalization to other educational and cultural contexts. Recruitment efforts must not be limited to social media but should also include approaches that target less digitally active students to ensure a broader range of viewpoints. Self-reported measures could be supplemented with objective performance-based tests, such as standardized practical tests rated by expert raters, to reduce bias. Moreover, studies should investigate how active learning methods can be scaled, examining the infrastructure, instructor training, and curriculum alignment required to make active learning more common. Pilot studies across different institutional environments would help determine the most efficient and sustainable ways to implement blended learning in dance education, while managing logistical and resource limitations. In the end, the research structure would be more robust and comprehensive, providing stronger evidence to inform policy, curriculum design, and pedagogical practice in Chinese classical dance and other performance-based disciplines.

Authors' Bios

Xinfei Xie holds a master's degree in art studies from the Belarusian State University of Culture and Arts and a doctoral degree from Universiti Utara Malaysia. Currently serving as a full-time dance instructor at Sichuan Film and Television University, she has published two academic papers indexed in CNKI (China National Knowledge Infrastructure). With a strong commitment to advancing professional expertise, she remains dedicated to conducting in-depth research in the field of dance.

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Appendix A: Survey Questions

We respectfully request your participation in a survey that is currently being conducted to evaluate the efficacy and influence of blended instructional methodologies on the instruction of traditional Chinese dance. You will have the freedom to withdraw your approval at any time, even if you do not provide a reason, and your participation will be wholly at your discretion. You may choose to disclose any information to us, and it will be kept confidential and anonymous. There are two categories of survey questionnaires: Demography and Main survey enquiries.

Demographic Questions

1. What is your age?

- o 18-20
- o 21-23
- o 24-26
- o 27 or older

2. What is your gender?

- o Male
- o Female

3. What is your current level of study at the university?

- o Undergraduate
- o Postgraduate (Master's)
- o Doctoral (PhD)

4. Is blended learning currently being used in your traditional Chinese dance training?

- o Yes
- o No

Main Survey Questions

Below are a series of statements regarding the impact and effectiveness of blended learning techniques on teaching traditional Chinese dance. Please rate your level of agreement with each statement on a scale of 1 to 5, where:
1 = Strongly Disagree
2 = Somewhat Disagree
3 = Neither Agree nor Disagree

4 = Somewhat Agree
5 = Strongly Agree
Please select only one option that best corresponds with your opinion for each statement.

No.	Statement	Scale				
		Strongly Disagree	**Somewhat Disagree**	**Neither Agree nor Disagree**	**Somewhat Agree**	**Strongly Agree**
	Skill Acquisition in Traditional Chinese Dance					
1.	I feel that my ability to perform traditional Chinese dance has significantly improved due to the blended learning techniques					
2.	Blended learning techniques have increased my confidence in executing traditional Chinese dance routines.					
3.	The blended learning approach has enhanced my understanding of the technical aspects of traditional Chinese dance.					
4.	I find myself more engaged in learning traditional Chinese dance through blended learning methods compared to traditional methods.					
5.	I am satisfied with the skills I have acquired in traditional Chinese dance through the use of blended learning techniques.					
6.	Blended learning techniques have					

	specifically enhanced my ability to perform traditional Chinese dance movements accurately.
7.	Blended learning has helped me master the stylistic nuances unique to traditional Chinese dance.
8.	As a result of blended learning, I feel more connected to the traditional expressions and emotions conveyed in Chinese dance performances.
	Duration of Blended Learning Usage
9.	I have been using blended learning techniques for a considerable duration to learn traditional Chinese dance.
10.	The longer I use blended learning techniques, the more proficient I become in traditional Chinese dance.
11.	Extended daily exposure to blended learning techniques has significantly improved my dance skills.
12.	The duration of my engagement with blended learning correlates with my skill level in traditional Chinese dance.
	Instructor Experience with Blended Learning

13.	My instructor has extensive experience using blended learning techniques for teaching traditional Chinese dance.
14.	My instructor's expertise in blended learning positively impacts my learning experience.
15.	Instructors with greater experience in blended learning facilitate a better understanding of dance techniques.
16.	The effectiveness of my dance learning is greatly influenced by my instructor's familiarity with blended learning methods.
	Frequency of Blended Learning Sessions
17.	The frequency of attending blended learning sessions each week has a direct impact on my progress in traditional Chinese dance.
18.	Participating in multiple blended learning sessions per week speeds up my ability to learn and perform new dance sequences.
19.	Higher frequency of blended learning sessions per week allows for quicker correction of my dance

	techniques and posture.
20.	Attending more frequent blended learning sessions ensures consistent reinforcement and practice of dance movements specific to traditional Chinese dance.

Open-ended Question:

1. Can you describe the challenges and benefits you have experienced while using blended learning methods to learn traditional Chinese dance? Please provide specific examples of both positive and negative aspects based on your personal experiences.

Appendix B: Themes and Sub-themes Based on Responses

Research Question	Main Theme	Quotations	Participant Number
What are the challenges and benefits of using blended learning methods for learning Chinese classical dance?	Challenges of Implementing Blended Learning in Chinese classical dance Education	"The constant buffering during live sessions really makes it difficult to keep up with the choreography. It often feels like I'm learning at a slower pace because I can't follow properly."	Participant 28
		"When the video quality drops or the audio lags, I can't properly see or hear the movements being demonstrated. It breaks the flow of learning and makes it feel disconnected."	Participant 39
		"I miss the instant corrections that I would get in a physical classroom. Sometimes, I don't realize I'm doing something wrong until much later, and by then, it feels harder to correct."	Participant 113
		"The lack of face-to-face interaction means I can't get a personal sense of whether my posture or technique is correct. The virtual environment makes me feel disconnected from the instructor's guidance."	Participant 128
	Benefits of Implementing Blended Learning in Chinese classical dance Education	"The ability to access class recordings at my convenience has made learning so much easier. I can review movements at my own pace and improve more effectively."	Participant 8
		"The flexibility to practice on my own time, without being bound by class schedules, helps me perfect my technique without stress."	Participant 23
		"Blended learning allows me to access tutorials from renowned global instructors, which is something I couldn't do in a traditional classroom setting."	Participant 38

		"Blended learning has made dance classes more affordable for me, especially with the online resources that complement the live sessions. It's made a significant difference."	Participant 110