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Exploring the Prerequisites for Developing a Blended Instructional Model in Undergraduate Music Education

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ABSTRACT

This study utilized a mixed-methods approach to explore the essential elements for creating a blended instructional model tailored for undergraduate music education students. The study involved 200 students from the Department of Music and Dance at Guangxi University of Foreign Languages, Nanning, China, and four faculty members with 5–10 years of teaching experience. Data collection included the Survey of Blended Learning for Music Students, which assessed students' prior online learning experiences, attitudes, and perceptions of blended learning, and semi-structured interviews with faculty to provide qualitative insights into blended learning practices. The results revealed that 90.5% of students had prior online learning experience, with 53% preferring a blended learning format. Students appreciated the flexibility and efficiency of blended learning, particularly for its ability to enhance knowledge acquisition and skill development. However, some challenges emerged, including issues with self-discipline and engagement in the online environment. Faculty interviews highlighted both advantages and challenges of blended teaching, including barriers to quick adaptation and the need for increased communication in the blended environment. A novel contribution of the study lies in its focus on the limited integration of blended learning in music education, an area that has received little attention in the existing literature. The findings offer important pedagogical implications for developing effective blended learning models that balance the practical and theoretical aspects of music education. Specifically, it highlights the need for better engagement strategies and support mechanisms for students and instructors to navigate blended learning effectively, fostering a more

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flexible, adaptive, and interactive learning environment.

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1. Introduction

Since the early 20th century, technological advancements have reshaped education, offering flexibility, personalization, and accessibility[1]. Digital tools like audio and video enable educators to meet diverse learning needs, but disciplines like music, which depend on hands-on and emotional engagement, face unique challenges[2]. In music, where physical demonstration and immediate feedback are crucial for skill-based training, online platforms cannot fully replicate the real-time, emotionally rich interactions of face-to-face instruction[3]. However, online learning has proven useful for music theory, providing flexible access to resources, especially post-COVID-19[4]. The challenge in music education is to blend online and face-to-face instruction effectively. Blended learning models, combining online flexibility with in-person engagement, offer a promising solution[5]. Effective implementation requires planning to ensure both modalities support each other, enhancing student interaction and emotional connection[6].

This study explores how an integrated, blended approach can enhance music education, addressing the limitations of each modality while meeting the evolving needs of music students[7]. By preserving the tactile, nuanced experience of in-person instruction alongside digital tools, this model envisions a holistic, adaptive educational environment.

2. Literature Review

With the popularization of the Internet and the continuous progress of information technology, global education informatization has developed rapidly. Undergraduate music education needs to keep up with this trend, improve teaching effectiveness and quality through blended learning models, and meet the needs of modern education. The information age requires music education to fully utilize multimedia technology and network platforms, provide rich teaching resources and interactive environments, and enhance students' learning experience and participation.

Significant progress has been made in the research and application of blended learning models in skills disciplines other than music. These studies provide valuable experience and reference for undergraduate music education, which can help optimize the design and implementation of blended learning models. For example, research on blended learning in skill subjects such as language learning and programming shows that combining online self-directed learning with offline practical operations can effectively enhance students' comprehensive abilities

2.1. The Evolution of Educational Technology

Educational technology has evolved from visual aids to multimedia tools like computers, making learning more engaging and personalized[8]. Digital media now supports flexible, student-centered education[8]. However, integrating multimedia effectively in hands-on fields like music education remains challenging due to the need for tactile and auditory learning. Further research is necessary to explore how these tools can support both theoretical and practical skill development in music education[9].

2.2. The Global Shift towards Educational Informatization

Digital technology has transformed global education, enhancing curriculum delivery and enabling flexible, remote learning through internet-based tools[9]. Countries like the U.S., UK, and South Korea have advanced educational informatization, with initiatives like asynchronous online classes and blended learning[9]. The COVID-19 pandemic accelerated this shift, particularly in China[9].

However, integrating digital tools in hands-on fields like music education remains challenging. Music education relies on face-to-face interactions for skill development, and further research is needed to adapt digital tools to support these experiential aspects without losing essential tactile and kinesthetic learning.

2.3. The Rise of Blended Learning and Its Challenges

Blended learning, which combines in-person and online instruction, offers flexibility and autonomy, allowing self-paced learning while maintaining in-person benefits[10]. This approach became crucial during the COVID-19 pandemic, but it primarily supplements traditional teaching rather than transforming it.

In skill-based fields like music education, online learning struggles to replace the sensory-rich, interactive experiences essential for skill development. More research is needed to adapt blended learning for practical disciplines, ensuring it preserves key sensory and experiential elements.

2.4. The Role of Technology in Music Education

Technology use in music education is growing, particularly with online and blended learning. Digital platforms support areas like music theory and composition, enhancing flexibility and accessibility[11]. Tools such as music notation software enable personalized learning. However, integrating technology into performance-based music education faces challenges due to the need for hands-on interaction, real-time feedback, and the emotional aspects of music.

Most research focuses on theoretical aspects of music education, with limited exploration of blended learning's effectiveness in practical courses[12]. This study examines blended learning's role in performance-based music education in China, addressing pedagogical needs and key factors for success[13]. It aims to identify pedagogical needs and key factors for a successful blended learning environment in music education. Specifically, the study seeks to answer the following research questions:

1. How do the participants perceive their educational experiences in terms of:
   a Prior online learning experience
   b Preferred teaching and learning styles
2. What is the current state of blended learning in undergraduate music education, particularly for music majors?
3. What are the key factors influencing the effectiveness and adoption of online classroom environments in music education?
4. What are the current teaching practices and challenges faced by instructors in the undergraduate music department?

3. Methodology

Method: This study used a mixed-methods approach to explore prerequisites for a new blended instructional model for undergraduate music education majors in China[14]. The quantitative phase involved a survey to assess students' learning status, practices, and factors influencing blended learning[15]. The qualitative phase included semi-structured interviews with music educators to provide deeper insights.

Participants: This study involved 2000 undergraduate music students from multiple universities across the country, stratified by academic level. The sample includes 870 males and 1130 females, majoring in music theory and music performance[16]. Four experienced teachers from different music disciplines participated in the interview.

Instruments: The Survey of Blended Learning for Music Students (SBLMS)[17], adapted from Liu Peng and Cao Chenwen's established questionnaires, measured student satisfaction and the impact of technology[18]. The 30-item bilingual questionnaire used a five-point Likert scale and achieved a Cronbach's Alpha of 0.956. Semi-structured interviews provided additional faculty insights.

Data Collection: The SBLMS[19] survey was distributed to students via email with confidentiality assurances, yielding data[20] on students' perceptions and experiences in blended learning. Faculty interviews were conducted in-person or online, using core questions and flexible prompts to gather detailed insights on instructional practices and challenges.

Procedures: Data collection occurred in two phases: the quantitative survey assessed students' blended learning experiences, and the qualitative interviews explored educators' instructional needs and challenges.

Data Analysis: Survey data were analyzed using descriptive statistics in SPSS[21], while interview data were analyzed thematically to identify key themes in the blended learning environment for music education.

4. Results

4.1. Quantitative Analysis

4.1.1. Participants' Perceptions and Preferences of Blended Learning Modality

Table 1 summarizes students' experiences and preferences regarding blended learning in the music program. Most students (90.5%) have prior online learning experience, and 60%[22] have taken additional courses outside the regular curriculum. Regarding teaching preferences, 53% favor a blended approach, 39.5% prefer fully offline classes, and 7.5% opt for fully online classes. Nearly half (49%) prefer inquiry-based learning, with group collaborative learning (27.5%) and self-learning (23.5%) also being popular choices. These responses indicate students' preference for flexible, dynamic, and hands-on learning experiences, with a strong interest in blended and inquiry-based methods.

Table 1. Participants' prior experiences on their exposure to online learning.

No.	Statements	N	(%)
1	*Have you taken online learning?*		
	Yes, I have taken	181	90.5
	No, I haven't taken yet	19	9.5
2	*Apart from the required courses in your study plan (compulsory and elective), have you taken or completed any additional courses outside of your academic program?*		
	Yes, I have taken additional courses outside the required curriculum	120	60
	No, I haven't taken any courses outside the required curriculum.	80	40
3	*Which teaching style do you prefer?*		
	Completely offline teaching	79	39.5
	Completely online teaching	15	7.5
	Online and offline blended teaching	106	53
4	*Which type of learning environment do you find most effective?*		
	Self-learning	47	23.5
	Group collaborative learning	55	27.5
	Inquiry learning	98	49

N = 200.

4.1.2. The Current Situation of Blended Learning for Music Majors

Table 2 highlights the current status of blended learning for music majors, covering 11 aspects such as obtaining information from various sources[23]. Mean scores range from 3.37 to 3.49, indicating agreement that blended learning enhances learning efficiency and allows material previewing before class. Scores between 3.52 and 3.61 reflect higher comfort levels, with participants noting that the model supports offline courses, improves knowledge acquisition, and offers flexible study schedules. The highest scores (M = 3.69 and M = 3.62) emphasize the practicality and comprehensive content of blended learning, preparing students for future studies and careers.

Table 2. The current situation of blended learning for music majors.

Item No.	Statements	$\overline{\text{X}}$	SD
SII-01	You will often use the Internet to study.	3.57	1.07
SII-02	You are comfortable with the blended learning model.	3.61	1.12
SII-03	With a blended learning model, you will preview what you are about to learn before class.	3.37	1.04
SII-04	With a blended learning model, you can schedule your studies on your own time.	3.59	1.08
SII-05	You think the blended learning model contains more content.	3.62	1.06
SII-06	You think the blended learning model is helpful for your offline courses.	3.52	1.09
SII-07	You think a blended learning model can make it easier for you to acquire knowledge and skills.	3.61	1.02
SII-08	You think the blended learning model has significantly improved learning efficiency.	3.49	1.04
SII-09	You think that the blended learning model has significantly improved the learning effect and has obvious effects on cultivating and improving analytical and problem-solving skills.	3.60	1.00
SII-10	You think the blended learning model has significantly improved your self-learning ability.	3.52	1.10
SII-11	You think the blended learning model is very practical and helpful for future study and work.	3.69	1.03

*Note: **SII** represents the second section of the questionnaire that asked on students' current situation of blended learning.*

4.1.3. Influencing Factors of Online Classroom

Table 3 presents students' experiences with online learning platforms[24]. The highest mean score (M = 3.87) indicates students feel their questions are promptly addressed by instructors, reflecting effective interaction. Other high scores (M = 3.53 and M = 3.52) show students believe the platform provides sufficient resources and encourages class participation. Students also find the online resources convenient (M = 3.77) and engage in self-reflection (M = 3.67). However, lower scores (below 3.5) highlight challenges, such as feelings of helplessness (M = 3.29), lack of self-discipline (M = 3.27), difficulty focusing (M = 3.24), and occasional boredom (M = 3.35), suggesting issues with self-regulation and engagement.

Table 3. Influencing factors of online classroom.

Item No.	Item Description	$\overline{X}$	SD
SIII-01	When you study with an online platform, you feel that the functions of the platform are easy to operate.	3.41	1.06
SIII-02	When you use the online platform to study, the operation of the learning platform is stable.	3.39	1.08
SIII-03	You think that the online learning platform provides sufficient learning resources to meet your learning needs.	3.53	1.01
SIII-04	You think online resources are convenient to use.	3.77	1.01
SIII-05	In your online learning class, you reflect on yourself and improve.	3.67	0.99
SIII-06	You won't get bored in your online learning class.	3.35	1.09
SIII-07	You will not feel helpless when faced with difficulties in an online learning class.	3.29	1.12
SIII-08	You will not feel anxious when faced with tasks in an online learning classroom.	3.35	1.06
SIII-09	You have a high level of self-discipline in your online classes and will restrain yourself from thinking about doing other things.	3.27	1.11
SIII-10	You're so focused on learning in your online class that you don't notice what's going on next to you.	3.24	1.06
SIII-11	You will be proficient in using a variety of software to communicate in the online classroom.	3.44	1.10
SIII-12	You will actively participate in class discussions during the online class.	3.52	1.10
SIII-13	The topics you discuss in the online class get responses from other classmates.	3.52	1.10
SIII-14	The topics you discuss in the online class get responses from other classmates.	3.43	0.98
SIII-15	The questions you ask in the online class can be understood and answered in time by the teacher.	3.87	1.02

Note: SIII represent the third section of the questionnaire that asked students what they think are the influencing factors of online classroom.

4.2. Qualitative Analysis

Theme 1: Advantages of Traditional and Online Teaching Modalities

This theme highlights the unique strengths of traditional and online teaching. It includes three sub-themes:

Real-time Interaction and Classroom Atmosphere in Traditional Teaching. Face-to-face interaction in traditional classrooms enables teachers to gauge students' understanding through non-verbal cues, offering instant feedback that enhances engagement and comprehension. Lecturers highlight the importance of these direct interactions, allowing them to adjust teaching strategies and foster a sense of community.

> *"Face-to-face interactions allow for immediate feedback and support, helping me gauge student understanding."* –**Lecturer A**[25]

> *"Direct communication in traditional teaching enables me to adjust my strategies based on students' real-time reactions."* –**Lecturer B**[26]

Flexibility and Accessibility in Online Teaching. Online teaching removes geographical and scheduling barriers, offering students the flexibility to learn at their convenience, especially beneficial for those in remote areas or with time constraints.

> *"Online courses allow students to learn according to their schedules and without geographical restrictions."* –**Lecturer B**

Self-paced Learning and Resource Diversity in Online Teaching. Online teaching allows students to learn at their own pace, revisiting materials to deepen understanding. It also provides diverse multimedia resources, enhancing the learning experience.

> *"Allowing students to replay course videos helps them better understand challenging ma-*

terial." **–Lecturer C**

Theme 2: Challenges of Traditional and Online Teaching Modalities

This theme focuses on the obstacles and limitations both teaching modes present, revealing areas where each mode may fall short in meeting all student needs. It had two sub-themes:

Limited Flexibility and Accessibility in Traditional Teaching. Traditional teaching's requirement for in-person attendance restricts access for students with conflicting schedules or long commutes, potentially reducing their learning experience.

> *"The need for physical presence restricts access for students with other commitments or those unable to attend in person."* **–Lecturer B**

Engagement and Motivation Gaps in Online Teaching. While flexible, online teaching can lead to varying engagement levels. Motivated students benefit from rewatching lectures, but those with less motivation may struggle due to the lack of structure and real-time support.

> *"Motivated students thrive in online settings by rewatching material, but less motivated students might disengage, lacking the structure provided by a traditional classroom."* **–Lecturer C**

Theme 3: Optimal Integration of Traditional and Online Teaching for Enhanced Learning

The interviewees emphasized the value of combining traditional classroom instruction with online tools to achieve an ideal learning environment. They highlighted various approaches to leveraging online platforms for supplementing classroom activities, tracking progress, and accommodating diverse learning needs. This theme had three sub-themes:

Online Platforms as Support for Homework and Review. Online platforms enhance traditional teaching by enabling students to complete homework, get faster feedback, and review lessons independently, extending learning beyond the classroom.

> *"Using the internet for homework submissions enables faster feedback and convenient tracking of student progress."* **–Lecturer A** [27]

Enhanced Student Interaction and Participation through Online Collaboration. Online platforms foster student engagement and collaboration by allowing discussions and projects outside class, promoting deeper interaction.

> *"Online platforms allow for expanded student cooperation through online discussions and interactive projects, encouraging exploration and learning outside the classroom."* **–Lecturer B**

Customizing the Mix for Individual Student Needs. Flexibly combining traditional and online methods helps meet diverse student needs. Tailoring the balance of face-to-face and online learning offers personalized support and addresses individual learning styles.

> *"Some students adapt better to online components, while others may require more face-to-face instruction. Individualized course plans could be beneficial."* **–Lecturer D** [28]

Theme 4: Barriers to Adapting Quickly to the Blended Teaching Model

Interviewees highlighted several challenges they face in adapting to a blended teaching model. Key issues include technological limitations [29], the need for adjustments to teaching strategies, and student engagement difficulties. It involved three sub-themes [30]:

Technological and Equipment Limitations. Network delays and inadequate equipment hinder real-time feedback and interaction, crucial for effective blended teaching, especially in fields like music.

> *"Network delays prevent simultaneous interaction with multiple students and limit the capacity to address issues, especially for music instruction."* **–Lecturer A**

Adjustments in Teaching Methods and Strategies Adapting to blended teaching requires teachers to learn new platforms and modify traditional methods, which can be time-consuming and demanding.

> *"Adapting teaching strategies and learning new platforms takes time and effort, as online learning introduces unique needs that traditional methods don't fully address."* **–Lecturer B**

Student Engagement and Motivation Challenges. *Technical issues and difficulties with platform navigation reduce student motivation, making them less likely to engage or review materials, impacting learning outcomes.*

> "Students' frustration with online platforms, especially limitations on navigation controls, reduces their motivation to review or rewatch online materials."**–Lecturer D**

Theme 5: Timeliness of Feedback on Online Learning Platform Issues

The interviewees emphasized the importance of providing timely feedback to students encountering problems on the online learning platform, though the speed of feedback varies depending on the nature of the issue. This theme included two sub-themes:

Immediate Feedback for Common Problems. Immediate feedback for widespread issues helps prevent disruptions, allowing teachers to quickly address common challenges and maintain course continuity.

> *"If most students are facing the same issue, feedback is given immediately to address the problem efficiently."*–**Lecturer A**

Delayed Feedback for Individual Issues. For individual concerns, feedback may be delayed to avoid disrupting the overall class flow, allowing instructors to provide thoughtful responses without impacting class progression.

> *"For individual problems, immediate feedback is not always feasible, as it could disrupt the class's progression."*–**Lecturer A**

Theme 6: Increased Communication in the Blended Teaching Environment

The interviewees noted that communication between teachers and students, as well as between students, has increased in certain areas within the blended teaching model. The communication primarily focuses on operational issues, homework, and clarification of course materials. It involved three sub-themes:

Increased Communication on Software and Operational Issues. Frequent online communication about software and platform issues helps both teachers and students become familiar with technical tools, reducing disruptions.

> *"Online communication is effective in addressing technical issues, which can be clarified in advance, reducing the need for face-to-face communication."*–Lecturer B

Enhanced Communication on Homework and After-Class Assignments. *Blended teaching promotes more communication on homework, enabling students to seek clarification and discuss assignments outside class, deepening their understanding.*

> *"Students bring their questions or challenges to the classroom, leading to more exchanges and discussions regarding after-school assignments."*–**Lecturer C**

Limited Real-Time Interaction During Online Classes. Online classes face challenges with real-time interaction due to distractions, making timely communication difficult.

> *"Online classes often lead to distractions, making timely communication difficult during sessions."*–**Lecturer A**

Theme 7: Impact of Blended Teaching on Student Satisfaction

Blended teaching has been perceived as a method that increases student satisfaction with their teachers. The flexibility, personalized learning, and support offered in this model contribute to a positive learning experience for students. It consisted of two sub-themes:

Increased Flexibility and Convenience. Blended teaching allows students to manage their learning schedules more easily, balancing online coursework with other responsibilities, which increases satisfaction and reduces stress.

> *"Students appreciate the flexibility of online learning, as it allows them to manage their time and activities better."*–**Lecturer A**

Personalized Support and Feedback. The blended model provides opportunities for personalized feedback and support, fostering student engagement and satisfaction. Online platforms enable timely feedback, while face-to-face interactions allow for additional guidance.

> *"When teachers provide timely feedback and personalized learning guidance, stu-*

dents are more satisfied with the instruc-
tion.*"–Lecturer B*

Theme 8: Overall Satisfaction with Blended Learning Outcomes

Teachers' overall satisfaction with blended learning outcomes varies, with some achieving their expected results, while others feel that blended learning has not been effective in certain aspects such as student engagement and enthusiasm. This theme entails two sub-themes:

Positive Learning Outcomes and Classroom Atmosphere. Blended learning has enhanced learning outcomes in some courses, with active student participation contributing to a positive classroom environment.

> *"Students achieved the expected learning outcomes and engaged actively in the classroom, contributing to a positive atmosphere."*–**Lecturer B**

Challenges in Student Engagement and Enthusiasm. Some courses, particularly those needing hands-on practice, have seen lower engagement and enthusiasm, impacting student satisfaction and learning experience.

> *"The blended model did not inspire the desired level of engagement."*–**Lecturer D**

Theme 9: Assessing Student Learning in Blended Instruction

Teachers employ a variety of assessment methods to evaluate student learning in blended instruction, balancing traditional grading with more interactive and collaborative evaluations. However, challenges related to fairness and comprehensiveness in assessment are common. This theme involved two sub-themes:

Comprehensive and Multi-faceted Evaluation. *Blended instruction employs diverse assessment methods—such as homework, presentations, teamwork, and discussions—to provide a holistic view of student learning beyond traditional exams.*

> *"I use written assignments, exams, and video recordings to assess students' learning."*–**Lecturer B**

> *"Class discussions serve as an indicator of learning beyond grades."*–**Lecturer C**

Ensuring Fairness and Comprehensiveness in Collaborative Assessments. Ensuring fair evaluation in group settings is challenging. Some teachers use peer voting to recognize individual contributions, promoting fairness and accurate assessment of team performance.

> *"I use class voting to evaluate team performance, ensuring fairness through collective decision-making."*– **Lecturer D**

5. Discussion

5.1. Participants' Perceptions and Preferences of Blended Learning Modality

The participants in this study expressed a strong preference for the blended learning model, as reflected by the 53% who favor a combination of online and offline instruction. This preference aligns with the flexibility and variety that blended learning offers, allowing students to balance their studies with their personal schedules and preferences[12, 18, 28]. The majority of students (90.5%) have prior online learning experience, which may have contributed to their comfort and familiarity with the blended model. Additionally, the inclination toward inquiry-based learning (49%) indicates a desire for a more exploratory and self-directed learning environment, which blended learning facilitates effectively. This preference reflects students' recognition of the hybrid model's potential to enhance their knowledge and skills, promoting a more dynamic and adaptable educational approach[13].

5.2. The Current Situation of Blended Learning for Music Majors

The survey results reveal that music program students find the blended learning model highly effective for improving learning efficiency and academic performance. It supports flexible schedules, enhances offline content, and aids knowledge acquisition and problem-solving. Students also see it as beneficial for future study and work, highlighting its practical advantages[14]. This aligns with findings in other studies that blended learning can enhance both learning outcomes and self-regulated learning[15]. However, the emphasis on previewing content before class and the high ratings for the model's practical value suggest that students

appreciate the blend of structured learning and independent exploration[16].

5.3. Influencing Factors of Online Classroom

The results regarding the influencing factors of online classrooms show that students generally view online learning as effective and engaging, with high ratings for prompt teacher responses and active participation. The convenience of online resources also supports positive engagement. However, lower scores in self-discipline, focus, and emotional responses indicate challenges for some students in maintaining engagement and self-regulation. This highlights the importance of addressing challenges such as distractions and lack of self-regulation in online courses, which have been noted in other studies as barriers to effective online learning[17]. Providing more structured guidance and fostering self-regulation could improve online learning experience for students.

5.4. Teachers' Perspectives on the Effectiveness and Challenges of Blended Learning in Music Education

Advantages and Limitations of Traditional vs. Online Teaching Modalities

The findings indicate that both traditional and online teaching modalities offer complementary advantages, enhancing the overall learning experience. Traditional teaching excels in fostering real-time interactions, providing immediate feedback[18] and addressing misunderstandings, as emphasized by Lecturer A and Lecturer B. This aligns with research by Dzemidzic Kristiansen[19] and Lee[19], who highlighted the importance of face-to-face engagement in building community and supporting student interaction. However, the flexibility of online learning allows students to expand their knowledge beyond the curriculum, catering to diverse schedules and learning styles. Research by Cavalcanti[21] supports this flexibility, noting that online learning allows students to learn at their own pace, a key factor for those balancing education with other commitments. The blended learning model effectively integrates these strengths, combining the immediacy of face-to-face interaction with the convenience of online platforms, a concept supported by studies such as those by Norberg[22], who argued that blended learning offers a dynamic and adaptable educational environment, which is reflected in the 53% of students in the music program who favor this combined approach.

Online learning, as highlighted by Lecturer B, offers unparalleled flexibility, particularly for students with scheduling conflicts or those living in remote areas. This is consistent with findings from Sung and Mayer[23], who noted that online learning environments are particularly beneficial for students who need the flexibility to study at their own convenience. The music program students, with 90.5% reporting prior online learning experience, show a familiarity with this modality, which aligns with research by Suhalka[24] and Wang[25], who noted that students with previous online learning experience tend to value the ability to engage with materials independently. The opportunity to review materials at their own pace, such as videos and supplementary resources, enhances their comprehension, confirming the benefits of self-paced learning highlighted by Palaigeorgiou and Papadopoulou[26].

Despite its benefits, traditional teaching is constrained by physical presence, limiting accessibility for students with conflicting schedules or geographical constraints, as noted by Lecturer B. This challenge is echoed in studies by Wut and Xu[27] who identified logistical issues in traditional classrooms, particularly for students who face scheduling conflicts. The preference for blended learning in the music program reflects this desire for flexibility, with 39.5% of students indicating a preference for fully offline courses. This preference underscores the importance of offering flexible learning options, allowing students to engage in both synchronous and asynchronous learning to accommodate their individual needs and limitations.

On the other hand, online teaching presents challenges related to student engagement and motivation, particularly in the absence of face-to-face interaction. As Lecturer C noted, motivated students thrive in online environments, but others may struggle without the accountability provided by in-person classes. This is consistent with findings by Lee[28], who noted that a lack of social presence in online learning could hinder student engagement. The blended model, with its combination of online flexibility and offline interaction, helps to address these concerns, ensuring that students receive the necessary support and feedback to stay engaged and motivated in their learning process.

5.5. Blended Learning Integration and Adaptation

The integration of traditional and online teaching methods in blended learning models presents a compelling solution to the limitations of each modality. Research highlights that blending face-to-face and online components creates a more holistic and flexible learning environment, combining the benefits of in-depth discussions and collaborative learning in the classroom with self-paced, accessible online resources. This flexibility is key to enhancing student satisfaction, allowing learners to control their schedules and work at their own pace. Online platforms, for instance, enable homework submission and feedback to be managed more efficiently, offering students opportunities to engage with course material beyond the classroom.

Despite the advantages, the adoption of blended learning is impeded by technological challenges. Institutions must ensure they have the necessary infrastructure, as inadequate technology can undermine the effectiveness of online components. As Yu[29] assert, unreliable internet access or outdated devices create barriers to real-time feedback, while research by Kintu and Zhu[30] confirms that technology is essential for making blended learning effective. Transitioning to blended learning also requires educators to adjust their teaching methods, which can be time-consuming, especially when new platforms and tools are involved. These hurdles make it crucial for institutions to provide adequate training and support to ensure effective use of digital resources.

Pedagogical resistance adds to the challenges, with many educators hesitant to adopt blended learning due to concerns about its effectiveness or their own lack of confidence with digital tools. Studies show that teachers may resist changing traditional practices, making professional development and institutional support vital for fostering confidence and competence in blended learning environments. Successful blending requires more than just technological integration; it necessitates a pedagogical shift that aligns the strengths of both face-to-face and online instruction. Designing courses with flexibility in mind can accommodate the diverse needs of both students and instructors, facilitating smoother transitions to blended models.

Effective course design is central to overcoming these barriers and maximizing the benefits of blended learning. Research supports the idea that a thoughtful integration of online and offline components leads to improved student engagement and learning outcomes. By providing platforms for online collaboration and discussion, students can engage more deeply with course material, participate in projects, and extend learning beyond the classroom. Such strategic integration not only fosters student participation but also helps develop a more inclusive and dynamic learning environment, ensuring the success of blended learning approaches.

5.6. Feedback and Communication in Blended Learning

Timely feedback is essential for maintaining course flow on online platforms, especially for issues affecting multiple students. Immediate responses to common problems prevent delays, as emphasized by Lecturer A. Students appreciated quick solutions to technical difficulties, allowing them to focus on learning. However, while rapid feedback addresses group concerns, individualized responses may be delayed to avoid disrupting course progression. This balanced approach—swift for collective issues, detailed for personal ones—boosts student satisfaction.

Blended teaching has enhanced communication between students and instructors regarding technical issues, assignments, and course materials. Lecturer B noted that proactive online troubleshooting minimizes disruptions, and students agreed that resolving software issues early reduces confusion. Lecturer C observed that students were more engaged with assignment questions, leading to better collaboration and understanding, aligning with Hollister et al. on the importance of continuous engagement.

Despite these benefits, real-time interaction in online classes remains challenging due to distractions, as Lecturer A noted, impacting meaningful live feedback. Students acknowledged the difficulty of maintaining focus, aligning with Wut et al. on the challenge of consistent interaction online. To address this, both students and lecturers aim to improve virtual engagement strategies, enhancing the strengths of blended learning for a more interactive educational experience.

5.7. Student Satisfaction in Blended Learning

Blended teaching increases student satisfaction largely due to its flexibility, allowing students to manage academic

and personal commitments effectively. Students value the freedom to structure their learning, as noted by Lecturer A, which aligns with research emphasizing flexibility as key to satisfaction and engagement. This flexibility fosters a positive learning environment where students feel in control.

Personalized feedback also boosts satisfaction in blended learning, with Lecturer B highlighting its role in motivation and content connection. Research confirms that tailored feedback enhances academic success and engagement, helping students feel supported and invested in their progress.

However, blended learning's effectiveness varies by subject. While some courses benefit, subjects needing real-time interaction, like music practice, face challenges. Lecturer D noted that blended learning may lack the engagement necessary for hands-on disciplines, echoing studies on its limited suitability for experiential learning.

5.8. Assessment of Student Learning in Blended Instruction

Blended instruction encourages diverse assessment methods beyond traditional exams and assignments, providing a more comprehensive view of student learning. Lecturer B highlighted the use of exams, written work, and video recordings to capture various aspects of performance, while Lecturer C emphasized class discussions as indicators of deeper understanding. Research supports this multi-faceted approach, showing that a blend of cognitive and collaborative assessments offers a fuller picture of student progress.

However, assessing collaborative work poses challenges in fairly recognizing individual contributions. Lecturer D addressed this by implementing peer assessments through class voting, promoting fairness and balanced grading. This approach aligns with research suggesting that peer feedback enhances fair evaluation and fosters responsibility among students.

Ensuring fairness and consistency in assessments is a challenge in blended learning, even with peer voting and diverse assessment methods. Balancing subjectivity and objectivity remains difficult. Research suggests that instructors should design assessments that capture individual and group achievements while minimizing bias. Clear criteria for collaborative tasks and regular feedback can improve transparency, helping students understand evaluations and

making assessments fair, balanced, and reflective of learning outcomes.

There are some potential limitations to relying on self-reported data in music education research. Self reported data may be influenced by subjective feelings and memory biases of participants, leading to inaccurate results. For example, students may overestimate or underestimate their learning progress or engagement. In addition, self-reported data cannot provide real-time behavioral observation, making it difficult to capture students' specific performance and interaction during the learning process.

Future research could consider incorporating direct classroom observations as a supplementary method. Through classroom observation, researchers can obtain more objective and comprehensive data to understand students' performance and behavior in actual learning environments. For example, observing students' participation, interaction frequency, and problem-solving ability in blended learning mode. In addition, classroom observation can also help researchers identify students' learning barriers and needs, providing a basis for adjusting teaching strategies.

Combining self-report data and classroom observation data can improve the reliability and effectiveness of research. Self reporting data can provide students with internal feelings and attitudes, while classroom observation can provide empirical support for external behavior. Combining the two can comprehensively evaluate the effectiveness of blended learning models and provide stronger evidence for the development of music education.

6. Conclusions

This study explores the key factors for developing innovative blended instructional models in undergraduate music education, focusing on the balance between real-time interaction, flexibility, and accessibility. Traditional teaching excels in immediate feedback and engagement, while online learning offers flexibility and self-paced progress. The challenge is optimizing both approaches to leverage their strengths and address limitations. An effective blended model in music education must integrate diverse tools and strategies, prioritizing student engagement, accessibility, and real-time support. The study emphasizes the importance of a community-based, interactive approach, essential for skill development in col-

laborative music education.

Implementing blended learning in undergraduate music education requires the development of a series of correct strategies to address challenges. Improving technological infrastructure is the top priority. Schools should invest in advanced multimedia equipment and stable network connections to ensure smooth online learning. In addition, providing professional development training for teachers is also crucial. Through regular workshops and online courses, help music teachers acquire the necessary technical skills to design and implement effective blended learning.

Enhancing students' self-discipline and motivation is also crucial. By setting clear learning goals and incentive mechanisms, students can be encouraged to actively participate in online learning. At the same time, establish effective evaluation and feedback mechanisms to timely understand students' learning progress and difficulties, and provide personalized support and guidance.

Finally, promoting home school cooperation and jointly focusing on students' learning process is also an important strategy to improve the effectiveness of blended learning models. Through regular communication and feedback, parents can better support their children's learning and jointly promote innovation and development in undergraduate music education.

The implementation of blended learning mode in undergraduate music education can adopt various strategies and technical tools to enhance students' participation and enthusiasm. The key is to utilize multimedia and digital tools. For example, using sequencers, digital audio workstations (DAWs), and multimedia courseware, these tools not only provide rich audio-visual experiences, but also enable students to engage in practical music creation and editing, enhancing their practical abilities. Building an online learning platform is also very important. By creating specialized online platforms such as DingTalk or cloud learning platforms, teachers can provide rich music resources and interactive modules, allowing students to learn anytime and anywhere, breaking the limitations of time and space. In addition, online platforms can monitor students' learning progress in real-time and provide timely feedback.

Interdisciplinary integration is also an effective strategy to enhance student engagement. By integrating music with other disciplines such as moral education and history through information technology, interdisciplinary blended learning can be carried out. For example, combining anti epidemic themed music works for moral education not only cultivates students' musical literacy, but also enhances their moral qualities and sense of social responsibility. Diversified evaluation methods cannot be ignored either. Adopting multidimensional evaluation methods, such as online karaoke scoring systems and regular online learning performance assessments, can comprehensively assess students' music abilities and learning attitudes, and motivate them to actively participate in music learning.

Finally, promoting collaboration and creative expression is also crucial. Utilize technology platforms to promote collaboration and communication among students, sharing creative ideas and musical works. Through group collaboration and project exploration, students can learn and grow through interaction, cultivating their team spirit and innovation ability. In summary, by utilizing multimedia and digital tools, building online learning platforms, implementing interdisciplinary integration, designing diverse assessment methods, and promoting collaboration and creative expression, student participation and enthusiasm in blended learning in undergraduate music education can be effectively improved.

This research uniquely contributes to the literature by focusing on music education's specific needs, where practical skills, collaboration, and real-time feedback are vital. It identifies the critical balance between flexibility and interaction, often overlooked in broader blended learning models, and highlights challenges like fostering community in online settings. These insights enrich the broader concept of blended learning, offering a tailored perspective on integrating technology while maintaining pedagogical integrity.

The study has important implications for educators and institutions. Blended courses should prioritize both flexibility and real-time interaction. Online platforms can support self-paced learning, but synchronous components like live discussions and feedback are crucial for guidance. In music education, this could include combining online tutorials with in-person practice, real-time feedback during virtual rehearsals, and collaborative projects. Educators must also consider student motivation by incorporating personalized feedback, flexible assessments, and multimedia resources.

Given the unique demands of music education, future

blended learning models should balance online flexibility with the interactive, performance-based nature of the discipline. Understanding the current use and limitations of blended learning can help design more effective instructional strategies that better support music majors, promoting both academic and professional growth.

This study offers valuable insights into blended instructional models for undergraduate music education but has several limitations. First, the sample of 200 students from a single educational setting may limit the generalizability of findings, as music education programs vary in resources and teaching approaches. Second, reliance on self-reported data from four lecturers and 200 students may introduce bias, as responses could be influenced by personal experiences or study alignment. The lack of direct classroom observations or assessments of actual learning outcomes also limits objective evaluation of the model's effectiveness. Lastly, while educators' insights were explored qualitatively, student perspectives were only gathered through surveys. Future research could benefit from deeper student engagement and consideration of technological challenges, such as internet access and digital literacy, which are critical for successful blended learning.

Author Contributions

Conceptualization, F.Y. and A.K.; methodology, F.Y. and A.K.; software, F.Y.; validation, F.Y. and A.K. and P.K.; formal analysis, P.K.; investigation, F.Y.; resources, F.Y.; data curation, F.Y.; writing—original draft preparation, F.Y.; writing—review and editing, F.Y., A.K. and P.K.; visualization, F.Y.; supervision, A.K. and P.K.; project administration, F.Y.; funding acquisition, A.K. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

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