Development of Framework to Introduce Music Education through Blended Learning during Post Pandemic Era in Chinese Universities

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Abstract. This article presents a preliminary mixed-method study that explores the integration of blended teaching in music education at Chinese universities in the post-pandemic era. The study investigates the perceptions and attitudes of university music teachers towards blended instruction, using qualitative and quantitative data collection and analysis techniques. The Narrative Literature Review (NLR) is used to define online education and blended learning in music education, while the Delphi method is employed to examine the data through questionnaires distributed to specialists.The main focus of the article is on developing a conceptual framework using the Input-Process-Output (IPO) model to illustrate how music education can be introduced through a synchronous blended learning platform at Chinese universities. This framework aims to bridge the gap between education and technology in the post-pandemic digital era. The theoretical input underpinning this study is summarized, and the Delphi iteration process is used to obtain a sophisticated understanding of viewpoints and knowledge from music and mixed teaching experts. The IPO model is expected to yield complete agreement on complex topics.By utilizing blended teaching methods in music education, this research addresses the evolving needs of Chinese universities and provides valuable insights for the field's advancement. It also offers suggestions for future directions and serves as a guide for the study's proponents.

Keywords: Music Education, Blended Learning, Conceptual Framework, Post Pandemic Era, narrative Literature Review, 'Education-Technology' gap.

1   Introduction

1.1   Background and Overview

In 2019, the COVID-19 pandemic originating in China had noteworthy consequences on the Chinese education sector. In response, the Ministry of Education of the People's Republic of China mandated on February 4, 2020, that higher education institutions incorporate online course platforms and on-campus digital learning spaces for teaching and learning during the crisis [1]. The prohibition was lifted on January 8, 2023, three years following the commencement of the COVID-19 epidemic, enabling Chinese universities to resume in-person teaching modes. It is evident that online teaching during the pandemic had a substantial negative impact on music teachers at universities. For example, teachers were concerned about the fairness of online exams, technical support, and the increased psychological burden due to social isolation, economic impact, and the inability to resume regular activities [2].

There is thus a need to bridge the gap [3] between the music 'education' provided by these universities as well as the 'technology'-enhanced knowledge and skills required for post pandemic era.This article illustrates the development of a conceptual framework to introduce music education through blended learning during post pandemic era in Chinese universities.

1.2   Rationale and Objectives

The employment of online music instruction during the pandemic offered certain advantages. For instance, in courses pertaining to music theory and music history, online instruction enabled the creation of compelling teaching materials that effectively engaged students [4]. Teachers expressed a highly positive view of the benefits of e-learning distance education for the teacher community, emphasizing the advantages of e-learning courses in terms of scheduling flexibility, reduced physical constraints, improved concentration, and greater accessibility [5]. By combining the advantages of e-learning with traditional classroom instruction, we were able to implement a blended delivery model for the university music course.

This article provides an overview of the development process of the framework, including a review of relevant literature and empirical evidence with discussions on the potential benefits of the framework to guide R&D processes.

1.3   Research Questions

The following are research questions (RQs) identified:

1. What are the operational definitions of online education, blended learning and blended learning?

2. How can music education be implemented through blended learning platform anchoring on relevant theories and effective strategies to bridge the theory-practice gap in overcoming the challenges faced in post pandemic era?

1.4   Research Objectives

The following are two Research Objectives (RO) identified that reflect the RQs:

1. To conduct a comprehensive review of literature related to the existing theories and practices focusing on technology integration in music education.

2. To develop a conceptual framework that can bridge the gap between theory and practice in technology integration in music education.

2 Methodology

2.1 Research Framework

This research framework of this study that is anchored on social constructivist and socio-cultural theories involves comprehensive literature review entitled Narrative Literature Review (NLR) and Delphi technique [6] that are two main components of mixed-research techniques [7] as cited by [8].

Firstly, a comprehensive literature review investigates the impact of online teaching on university music programs during the COVID-19 pandemic and the potential of blended instruction in the post-pandemic era. The traditional music curriculum comprises performance, theory, and ensemble courses. Online learning provides diverse modalities, interactions, and personalized experiences, thereby enhancing motivation and engagement in music theory courses. Nevertheless, concerns persist regarding internet technology limitations, inefficiencies in performance and ensemble courses, and increased workload for instructors [9]. Blended instruction, which integrates online and face-to-face learning, emerges as a more stimulating, motivating alternative that fosters students' creativity and critical thinking skills. Although ample literature exists on blended instruction, limited empirical research has been conducted on its implementation in university music courses, particularly in China. Challenges faced by performance and ensemble courses include technological issues, high instrument costs, and varied adaptability among teachers [10][11]. In conclusion, the blended teaching model shows promise for music programs in the post-pandemic era; however, further research is required to assess its effectiveness in Chinese university music programs. Developing a conceptual framework that bridges the gap between theory and practice in integrating technology in music education and addresses implementation challenges is also essential.This review also examines the influence of social constructivism on blended instruction, offering theoretical support for the development of a conceptual framework for the Input-Process-Output (IPO) model. Introduced by Lev Vygotsky, social constructivism emphasizes active learning, collaboration, and reflection in the learning process, carrying implications for teaching and learning experiences. The application of social constructivist principles to blended learning can enhance learning outcomes, cultivate communities of practice, and create more engaging and effective learning experiences [12].

Finally, this study employed the Delphi method to gather data by distributing a series of questionnaires to a panel of experts [13], a technique that enables achieving consensus on complex issues within a group. During this iterative process, the data obtained from the experts enhanced their understanding of their own perspectives and knowledge. After the final iteration, the compiled data provided a comprehensive insight into the issue under investigation [6] . To mitigate the influence of expert status on the collected data, 20 professionals were recruited and divided into two virtual groups: 'music teaching experts' and 'blended learning experts' [14], and the Delphi method was employed [15]. Three rounds of interviews were conducted to gather data, with efforts made to achieve consensus between the expert groups in each round. The number of interview rounds was determined by the level of agreement among the experts and any necessary refinement of the consensus [16]. In summary, the research framework for this study incorporated a narrative literature review and the Delphi method, aiming to provide a comprehensive understanding of the challenges and opportunities associated with implementing blended learning in Chinese university music programs. It also sought to develop a conceptual framework that bridges the gap between theory and practice in integrating technology in music education, drawing on insights from social constructivism and the input-process-output (IPO) model.

2.2   Narrative Literature Review (NLR)

This section reviews literature related to the focus of this study.

2.2.1 Online learning

The traditional university music curriculum typically comprises three components: a performance course, a theory course (covering music theory and history), and an ensemble course featuring group performance [17][18]. In China, this conventional face-to-face teaching approach was widely used until the outbreak of COVID-19. However, the pandemic forced Chinese universities to switch to online instruction. "Online learning is a rapidly developing educational technology in the age of the Internet that encompasses various forms, including synchronous and asynchronous modes, differing in levels of interaction and immediacy. Synchronous learning provides real-time interaction and immediate feedback, which benefits students who require guidance or support. Conversely, asynchronous learning offers flexibility and convenience, allowing students to learn at their own pace and schedule. online learning provides a personalized experience that can be customized to a student's individual learning style and preferences [19]. In this paper, we focus on the synchronous online learning model and propose a definition of online education based on the Systematic Literature Review on the Definition of Online Learning (1988-2018) as an educational method that occurs in a synchronous virtual classroom environment accessed through the Internet. This method allows students to interact with instructors and other students, overcoming physical location limitations. Online learning employs various technologies to provide a dynamic and collaborative learning experience, fostering a sense of community and encouraging the exchange of ideas. As Singh and Thurman

point out, online learning creates an environment that allows for synchronous and asynchronous communication, providing multiple channels of interaction for instructors and students [20].

Online education can significantly enhance students' learning experience By leveraging modern technology, online teaching can transform an otherwise tedious music theory course into a lively and captivating learning experience, thereby boosting students' motivation and engagement. This approach can also create a novel and dynamic learning environment for students while improving the traditional face-to-face teaching of music theory [21] [22]. Although the shift to online teaching has brought numerous benefits to music education, including increased flexibility, more teacher-student interaction, and the use of virtual collaborative tools that foster student creativity [23][24] but many university instructors continue to express concern about the future of online instruction due to several factors: the limitations of internet technology, the general inefficiency of learning in performance classes and ensemble courses, and the significant additional workload required to deliver online courses. These issues have reportedly contributed to psychological distress among teachers, including anxiety and depression [4] [25].

2.2.2 Blended teaching

Chinese universities have employment online teaching during the COVID-19 pandemic. However, with the government's announcement of the end of the pandemic, a shift in teaching modes has become urgent. Solely relying on online teaching is no longer adequate for music courses. Blended learning models, on the other hand, can better meet the current needs of music courses. "Blended learning design" has been listed as one of the trends driving technology adoption in higher education in the 2017 Horizon Report. Moreover, it has been the most discussed topic in the past five years of the report [26]. Blended instruction provides learners with two different styles of learning, which is more stimulating and motivating than a single learning mode [27]. According to Oordt and Mulder's study, blended instruction allows students to enhance their creativity and critical thinking skills, due to the impact of their environment. Moreover, blended instruction is the best way to improve students' knowledge in both practical and theoretical areas [28]. There is a considerable body of literature on blended instruction, but few empirical studies have been conducted on its application in university music courses. Within the context of university music in China, the current research focuses on the classification of blended instruction in music performance courses, music theory courses (encompassing music theory and history), and music ensemble courses featuring group performance. In their study, Goncharova and Gorbunovad argue that music theory history courses can be entirely conducted online. They suggest that online instruction adds flexibility and interest to these courses, and that using online instructional software to design theory courses can improve the learning experience, learning efficiency, and course satisfaction in theory courses [29]. However, we found that online instruction was not suitable for performance and ensemble courses due to technical issues with internet technology and online instructional software that resulted in network fluctuations, lag, and unclear images.

Additionally, students' families could not afford the high cost of purchasing large instruments for online instruction, and they had to use the school's communal instruments, such as the marimba, piano, and harp, for learning. Our study also revealed that younger teachers (with 1-5 years of teaching experience) adapted to online teaching more quickly than older teachers (with 6+ years of teaching experience). While all teachers used ICT more than before the outbreak, the percentage was not too high. Most teachers in our study agreed that the quality of teaching in ensemble and performance courses was the same despite the different teaching modes used. However, some even considered online teaching in both courses to be inferior to face-to-face teaching, with concerns about the quality of teaching [30] [31].

The literature review discusses the impact of online learning and blended teaching on university music courses. The traditional music curriculum consists of performance, theory, and ensemble courses. The COVID-19 pandemic forced a shift to online learning, which offers synchronous and asynchronous modes, various forms of interaction, and personalized experiences. Online teaching has improved music theory courses by increasing motivation and engagement, but concerns remain about the limitations of internet technology, inefficiency in performance and ensemble courses, and increased workload for instructors. Blended teaching has emerged as an alternative, combining online and face-to-face learning. This approach is considered more stimulating and motivating, and it can enhance students' creativity and critical thinking skills. While there is much literature on blended instruction, few empirical studies have been conducted on its application in university music courses, especially in China. Some researchers argue that music theory history courses can be conducted entirely online, but performance and ensemble courses face challenges due to technical issues, the high cost of instruments, and varying adaptability among teachers.

In conclusion, the literature highlights the importance, and usefulness of the blended teaching model for music courses in the post-popular era. However, further research is needed to examine its effectiveness in Chinese university music programs and to develop a conceptual framework to bridge the gap between theory and practice in integrating technology in music education and to address the challenges associated with its implementation.

2.2.3 The impact of social construction theory on blended instruction

Research on blended instruction has been continually updated during the COVID-19 pandemic, making it crucial for researchers to identify a foundational theory to guide the design and implementation of blended learning research. Identifying and selecting such a theory has become a focal point in the field. In this study, social construction theory is chosen as the foundational theory for blended instruction. The influence of social construction theory on blended instruction is explored and elaborated upon, providing theoretical support for the development of the Input-Process-Output (IPO) model's conceptual framework presented in this paper.

Social constructivism, a learning theory introduced by Lev Vygotsky in 1968, posits that language and culture serve as the framework through which individuals experience, communicate, and comprehend reality. As a form of cognitive constructivism, social constructivism underscores the collaborative nature of learning, either under the guidance of a facilitator or within an individual setting. The theory further expands on social constructivism by incorporating the influence of other participants and culture on development [32] [33]. Within the realm of education, social constructivism highlights the significance of active learning, collaboration, and reflection in the learning process, which carries substantial implications for both teaching and learning experiences.

Applying social constructivist theoretical foundations to blended learning, this approach combines traditional face-to-face instruction with online learning experiences to provide unique opportunities to enhance learning outcomes. This approach emphasizes the importance of collaboration, critical reflection, active learning, and the development of shared understanding among learners as knowledge is constructed through social interaction. By integrating these principles into a blended learning environment, educators can create more engaging and effective learning experiences for their students. In their study, Mal and Adhya emphasize the complementary relationship between social constructivism and blended learning, asserting that integrating social constructivist principles with blended learning can greatly enhance learning outcomes. Key features of social constructivist theory in blended learning include collaboration, interactive learning, critical thinking, goal-oriented learning, group performance, and diverse interactions among group members. The authors argue that constructivist-based blended instruction prioritizes the development of learners' individual conceptions within an interactive learning environment. This approach encourages students to employment their unique problem-solving strategies instead of merely adopting others' ways of thinking, ultimately refining their intuitive thought processes. Social constructivist theory highlights the crucial role of collaboration and communication in knowledge construction. By incorporating online discussion forums, group projects, and peer-reviewed activities into blended instruction, educators can facilitate rich social interactions that foster shared understanding among students [34]. The integration of social constructivist theory and blended learning facilitates the creation of communities of practice, wherein students actively participate in the learning process and develop their identities and roles within the group. In Capone's study, which is based on the premise of combining social constructivism and blended instruction, learning is understood as the creation of meaning, identity development, community belonging, and the outcome of practice within a community. Communities of practice are fostered through direct interaction among their members and the continuous negotiation of practices and meanings.Capone argues that blended learning enhances the social dimension of learning by combining online and face-to-face components. Online platforms support collaborative learning among students and enable ongoing interaction with teachers in a supportive role. However, online environments are most effective when complemented by face-to-face interactions. His research once again validates this integration of social constructivist theory and blended learning emphasizing the importance of collaboration, communication, and critical reflection in fostering meaningful learning experiences [35].

3   Analysis and Discussions

3.1   Illustrations on Conceptual Framework Developed

Figure 1. Conceptual framework
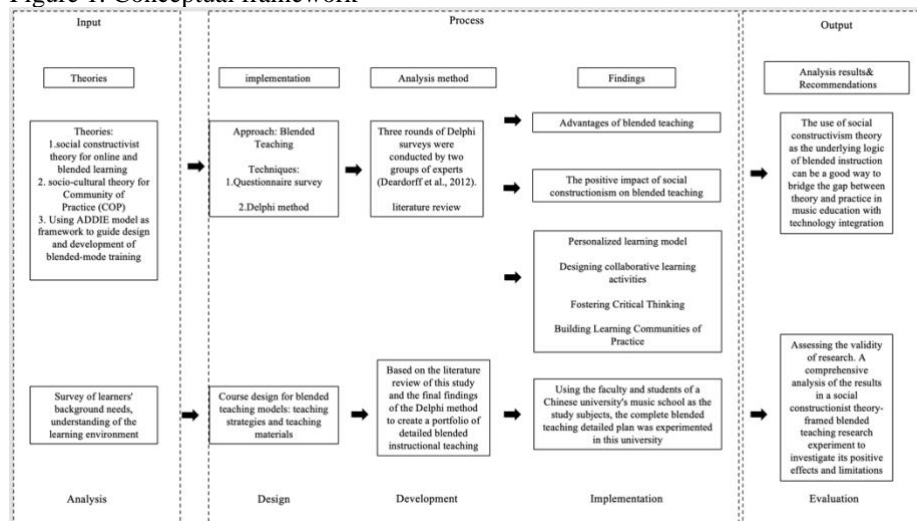
3.2   Elaborations on how framework bridge the 'Education-Technology' gap

This study investigates the application of a social constructivist framework to address the limitations of traditional educational technology in blended teaching models. The research explores the practical implementation of blended teaching methods in the post-pandemic era, employment questionnaires and the Delphi method, which includes three rounds of Delphi surveys with two expert groups and a narrative literature review. The anticipated findings will contribute to the feasibility of transitioning from theory to practice in blended instruction, such as enhancing student engagement, improving learning outcomes, designing blended instruction in music courses, and scientifically transforming the current face-to-face teaching model in Chinese university music courses.

A crucial aspect of this research is examining the positive impact of social constructivism on blended instruction. This involves investigating how the integration of social constructivist principles results in personalized learning models, designing collaborative learning activities, fostering critical thinking skills, and establishing learning communities of practice. The analysis of the findings will offer recommendations for educators and policymakers on effectively integrating technology into education, using social constructivist theory as the foundation for blended learning and teaching. These suggestions aim to bridge the gap between theory and practice in educational technology integration, ensuring that instructional technology is effectively

employed to enhance teaching and learning experiences and facilitating the widespread adoption of blended instruction in music education at Chinese colleges and universities.

By thoroughly exploring the social constructivist framework in the context of blended instruction, this study contributes to the expanding body of knowledge on effective approaches to education and technology integration. Ultimately, this research provides a theoretical foundation and conceptual framework for transitioning from theory to practice in blended music instruction in Chinese colleges and universities.

4 Conclusion

4.1 Summary and Implications/Significance

This study presents the initial investigation into the development of an Input-Process-Output (IPO) model-based conceptual framework for analyzing the necessity and significance of implementing blended instruction for music teaching in Chinese universities. The findings of this research offer novel theoretical backing for integrating social constructivism with blended instruction, thus facilitating the transition of the music blended instruction model from theory to practice in Chinese universities. The study provides recommendations for music educators at Chinese universities on the effective incorporation of technology in music education.

Overall, the article valuable contribution to the field of music education and technology integration by providing a framework that can help bridge the gap between theory and practice in 'Education and Technology' with promotion of research/evidence-based findings.

4.2 Limitations and Recommendations

Despite its potential benefits, there are limitations to the development of a conceptual framework The conceptual framework relies heavily on a theoretical foundation and lacks direct empirical validation through real-world implementation and evaluation. This limitation may affect the understanding of the effectiveness of the model in practice and the potential challenges that arise in its application. Although the framework provides recommendations for technology integration in music education, it may not provide sufficient guidance to address practical barriers such as resource limitations, educator training, or institutional resistance to change. As a result, these limitations may hinder successful implementation in real-world settings. Furthermore, the applicability of the framework to Chinese university music education may limit its relevance to other disciplines or educational contexts. In addition, cultural differences may impede the transfer of research findings to institutions in other countries.

To address these limitations, there are several recommendations for future study with the following areas and suggested titles:

(1) 'Empirical Validation: Conduct empirical research to assess and validate the proposed conceptual framework within real-world settings'. This may entail case

studies, experimental designs, or longitudinal investigations to evaluate the effectiveness and feasibility of blended teaching models in Chinese university music education.

(2) Adapting to Emerging Trends: Explore how the suggested framework can be adjusted to address evolving educational technologies, pedagogical theories, and learner requirements. This may involve investigating the incorporation of emerging tools, such as virtual reality, artificial intelligence, or learning analytics, to enhance the efficacy of blended instructional models.

(3) Professional Development: Examine strategies for training and supporting educators in implementing the proposed blended instruction model. This may include exploring effective professional development programs, instructional coaching, or peer mentoring to enhance educators' skills and confidence in employing blended instructional approaches.

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