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Research Article

Enhancing Pre-Service Music Teachers' Skills: A Three-Phase Blended Model via Digital Platforms

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ABSTRACT

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Introduction: Micro-teaching represents a critical component in the preparation of pre-service music teachers, requiring continuous adaptation to contemporary educational environments. Traditional teaching approaches in this domain face increasing constraints that limit their effectiveness in today's digital landscape. The integration of modern educational technology and innovative teaching models presents a significant opportunity to transform how teaching abilities are developed in music education programs.

Objectives: This study aims to explore the application and effectiveness of a three-phase blended learning model (before class, during class, and after class) that integrates information technology and digital resource platforms in micro-teaching courses. The research specifically focuses on identifying new strategies and methods for enhancing the teaching abilities of preservice music teachers through this blended approach.

Methods: The research employed qualitative methodology, conducting in-depth interviews with 12 music education students enrolled in micro-teaching courses at the university. The interviews focused on participants' experiences with the three-phase blended model, examining their perceptions regarding the integration of digital tools and resources in their pedagogical development.

Results: The findings revealed several successful methodologies for implementing digital platforms across the three phases of instruction. Participants identified specific obstacles encountered during implementation, including technical challenges and adaptation difficulties. The research also uncovered valuable opportunities for refinement in employing digital tools and resources specifically tailored for music instruction, highlighting the unique considerations for technology integration in this discipline.

Conclusions: This study provides evidence-based insights that can directly inform pedagogical practices, curriculum development, and teacher training programs in music education. The three-phase blended model offers a framework for creating more dynamic and effective learning environments for pre-service music teachers, equipping them with both traditional and digital competencies essential for contemporary music classrooms. Further research should explore the long-term impacts of this approach on teaching effectiveness and student outcomes in real-world settings.

Keywords: Digital Resources, Micro-lesson Teaching in Music, Online and Offline Teaching Models.

INTRODUCTION

The "National Medium and Long-term Education Reform and Development Plan (2010—2020)" explicitly states: "Information technology has a revolutionary impact on the development of education and must be given high priority" (Ministry of Education of the People's Republic of Chinaa[MOE], 2020)

In the face of the rapid development of an information society, teachers should consider how to better adapt to environmental changes and forge new paths in teaching for the digital age in order to fulfil their mission of teaching better and educating people (State Council of the People's Republic of China [SCPRC], 2010). With the release of the "Compulsory Education Art Curriculum Standards (2022 Edition)" (MOE, 2022), the importance of music education has been increasingly recognised, and there is an urgent need for more music teachers with strong information technology skills and professional competence (MOE, 2018).

Microteaching, also known as micro-class teaching or micro-perspective teaching, is one of the methods used in universities to train student teachers' teaching skills and serves as both the starting point and foundation for basic music teacher teaching skills. Its implementation directly affects the subsequent professional development of music teachers (Santoveña-Casal et al., 2023). Therefore, the music microteaching curriculum should keep pace with the times, continuously innovate, upgrade, and develop, moving from a single teaching model to a diversified online and offline teaching model suitable for the information age. It should combine traditional educational forms with information technology teaching methods, integrate advanced information technology into specific teaching activities, and immerse students entirely in digital information platforms. In a "subtle and imperceptible" learning environment, it aims to enhance music teaching skills and the ability to explore and solve problems using information technology (Bolívar-Chávez et al., 2021; Ma, 2022).

OBJECTIVES

This study investigates the implementation of a blended teaching model incorporating digital platforms in music education microteaching courses. The research objectives are:

To examine how the integration of digital resource platforms across three phases (pre-class preparation, in-class activities, and post-class follow-up) addresses traditional limitations in music microteaching, particularly regarding instructional capacity and feedback mechanisms.

To analyse how the blend of online and offline teaching methods influences pre-service music teachers' engagement, learning outcomes, and practical teaching skills development.

To identify the challenges and opportunities in implementing digital resource platforms such as Chinese University MOOC, Future School Normal Education Case Resource Library, and XueXiTong in music microteaching courses.

LITERATURE REVIEW

The effectiveness and application of micro-teaching in music education have been explored in various studies, highlighting its potential to enhance teaching and learning outcomes. For instance, McPherson et al. (2019) describe the development of a music practice microanalysis protocol based on self-regulated learning, demonstrating its utility in improving musicians' practice effectiveness. Essentially, Vasil (2019) analyses the integration of prevalent music and casual learning in auxiliary school music programs, underscoring the adequacy of teacher-initiated changes. Wang (2018) talks about the noteworthiness of micro-lectures in college music teaching, underlining its part in upgrading understudy learning intrigued and lesson proficiency. Miksza et al. (2018) investigate a microanalysis method for measuring instrumentalists' self-regulation propensities amid music hone, exploring its effect on teaching adequacy.

Lastly, Miksza(2018) discusses the importance of microteaching in music education and suggests ways to improve its effectiveness in normal colleges. These studies collectively suggest that micro-teaching and related pedagogical interventions can significantly contribute to the quality of music education, addressing both the challenges and opportunities for enhancing teaching and learning outcomes in this field.

In teacher training institutions, there is a prevalent situation of having many students but few teachers. This scarcity of course instructors leads to a significant lack of guidance during the implementation of course teachings, often resulting in a single teacher advising multiple student practice groups (Bakar & Mwila, 2022; Cook et al., 2016). Additionally, the limited number of class hours and the once-a-week schedule mean that each student only experiences micro-teaching once. To accommodate all students, it is impossible to ensure that every practice session for each student receives timely feedback from the teacher. Over time, this has become a formality, a "going through the motions," where students lose their regard for the course. Consequently, developing an interest in micro-teaching

training becomes challenging, leading to a situation where they fulfil obligations perfunctorily (Koc & Celik, 2015; Pisacreta et al., 2011).

As a critical component of pre-service teacher training, microteaching possesses a vital immediacy in its instructional practice, requiring timely feedback (Arsal, 2014). Delayed feedback can lead to various issues, such as a cooling of the enthusiasm for learning among both the presenter and the evaluators and the forgetting of certain teaching content or activities by evaluators, thereby affecting the effectiveness of student practical exercises. Influenced by factors such as a shortage of teachers, an abundance of students, and limited class hours, it is challenging to achieve comprehensive self and peer evaluation in teaching assessments (Mergler & Tangen, 2010). Supervising teachers' evaluations are primarily conducted and are limited in diversity and immediacy, preventing students from effectively improving their teaching skills within microteaching sessions (AL-Salahat & Saleem, 2016; Arsal, 2015).

Various digital resource platforms have emerged with the rapid development and widespread application of internet big data. Education and teaching models at all levels have broken through offline instruction's temporal and spatial limitations, moving from closed to open and from singular to diverse formats. The new era and circumstances present both opportunities and challenges for teachers and students. Thus, an urgent need is to experiment with and explore teaching models that adapt to "Internet+ education." Based on the music microteaching course, this paper attempts to investigate a new blended teaching model that utilises online and offline digital resource platforms, which is of significant importance for cultivating teaching skills in music education students.

METHODS

This study adopts a qualitative research design to explore the application of online and offline teaching models for micro-lesson courses in music education. The research focuses on the effectiveness and challenges of integrating digital resource platforms in teaching.

The study employed purposive sampling to capture diverse pedagogical approaches and institutional cultures across educational ecosystems, yielding comprehensive insights into both effective implementations and systemic challenges of blended microteaching models. The cohort comprised twelve (N=12) music education students actively enrolled in microteaching curricula at a tertiary institution, selected through dual criteria: demonstrated engagement with technology-enhanced learning platforms and voluntary participation commitment. This sampling methodology aligns with Mendaglio's ramework for practitioner development in skill-based disciplines, providing theoretical validation for targeting music educators with hybrid instructional experience(Mendaglio, 2003). The research design further incorporates Yazan's cross-contextual case study paradigm, ensuring methodological robustness for comparative analysis of pedagogical adaptations across cultural-institutional matrices(Yazan, 2015).

Data was collected through in-depth interviews with the participants. The semi-structured interviews allowed for flexibility in responses while ensuring that key topics were covered. Also, perceptions of the teaching sessions and teaching materials were investigated. Guaranteeing the secrecy of respondents is fundamental in this inquiry to ensure their personality and the judgment of the information collected. Following best hones sketched out within the writing, all meet information was anonymized, with any possibly distinguishing data evacuated or changed sometime recently investigation and distribution. The commitment to shielding member privacy is unequivocally expressed within the educated assent shapes, Also, perceptions of the teaching sessions and teaching materials were investigated. Guaranteeing the secrecy of respondents is fundamental in this inquiry to ensure their personality and the judgment of the information collected. Following best hones sketched out within the writing, all meet information was anonymized, with any possibly distinguishing data evacuated or changed sometime recently investigation and distribution. The commitment to shielding member privacy is unequivocally expressed within the educated assent shapes, Ensuring that all participants are fully informed of their rights and the procedural safeguards implemented to protect their welfare constitutes an ethical imperative in research design. This adherence to established ethical principles not only aligns with institutional review protocols but also cultivates a foundation of trust between researchers and participants. Such trust is a prerequisite to fostering transparent dialogue and equitable engagement-critical factors in maintaining methodological integrity and ensuring the validity of study outcomes (Kaiser, 2019; Petrova et al., 2014).

The collected data were analysed using thematic analysis. This included coding the information to recognise repeating topics and designs. The examination pointed to revealing experiences into the adequacy, challenges, and openings the online and offline teaching models displayed. The procedural administration of teaching exercises, which is

challenging to attain in conventional offline instruction, was viably executed through computerised stages, giving opportune and commonsense direction for understudies. The blended teaching model based on digital resource platforms can "highlight" the learning processes hidden in traditional offline teaching modes, thereby more effectively stimulating students' motivation to learn, greatly facilitating individual development, and enhancing their autonomy.

RESULTS

In response to these challenges, this study develops an online and offline micro-lesson teaching model for music based on digital resource platforms. The online and offline micro-lecture teaching model comprises pre-class preparation, in-class activities, and post-class follow-up. Students' primary platforms for online independent learning include the Chinese University MOOC (Massive Open Online Courses), the Future School Normal Education Case Resource Library, and the Repository of the Fifth National Excellent Lessons Selection for Primary and Secondary Schools. XueXiTong is the "bridge" for online communication between teachers and students, facilitating online teaching management such as assignment submission and feedback.

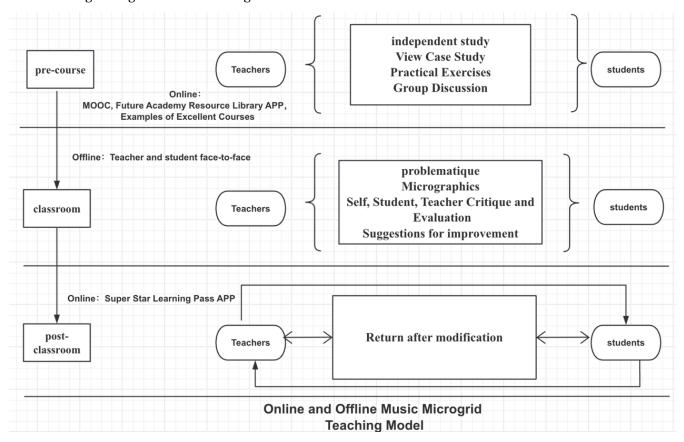


Figure 1 Online and Offline Music Microgrid Teaching Model

Figure 1 illustrates the "Online and Offline Music Microgrid Teaching Model," which presents a three-phase instructional approach. The model progresses sequentially through pre-course, classroom, and post-classroom phases, each with distinct delivery modes and pedagogical activities. In the pre-course phase, instruction occurs primarily online through MOOCs, the Future Academy Resource Library APP, and exemplar courses. During this stage, teachers guide students through independent study, case analyses, practical exercises, and group discussions, establishing foundational knowledge before face-to-face instruction. The classroom phase transitions to offline, inperson instruction where teachers and students engage directly. This phase centers on problematique exploration through micrographics and implements a multi-level critique system (self, student, and teacher evaluations). The process culminates in formative suggestions for improvement, allowing participants to identify specific areas for development. In the post-classroom phase, instruction returns to an online format utilizing the Super Star Learning Pass APP. This stage facilitates continued interaction between teachers and students, focusing on modifications and adjustments to previously developed skills. The bidirectional arrows between teachers and students in this phase

indicate the collaborative nature of refinement that extends learning beyond the physical classroom. The diagram's vertical flow represents the temporal progression of learning, while horizontal elements illustrate the interrelationships between instructors, learners, and instructional activities at each phase, creating an integrated system for music education delivery.

Integrating online and offline teaching models significantly enhanced student engagement and learning outcomes. Students reported higher interest and motivation when participating in online pre-class preparation and offline inclass activities. Using digital resources provided students with flexible and accessible learning opportunities, allowing them to review materials and practice skills at their own pace. Incorporating real-life recordings of primary and secondary school music classes via the Future School platform allowed students to understand frontline teaching and learning better, further enriching their educational experience. Some of the students' feedback is stated below:

Participant 3:

"Integrating online resources with offline teaching has significantly improved my confidence in delivering lessons. The pre-class online preparation allowed me to review and understand the material thoroughly before entering the classroom."

Participant 7:

"I found the use of digital platforms like the Chinese University MOOC extremely beneficial. The real-life recordings of primary and secondary school music classes gave me valuable insights into practical teaching scenarios I could relate to and learn from."

The blended teaching model effectively bridged the gap between theoretical knowledge and practical teaching skills. Students engaged in peer assistance through pre-class online sessions, dividing into small groups to observe teaching examples, share insights, and complete learning tasks. This collaborative approach reduced the psychological pressure of teaching and increased students' confidence in their teaching abilities. In-class activities focused on student-led lesson demonstrations, where students took turns presenting their lessons and receiving immediate feedback from peers and instructors. This method facilitated a deeper understanding of micro-teaching techniques and fostered a supportive learning environment.

Some of the students' feedback is stated below:

Participant 1:

"The pre-class online modules have been invaluable in improving my teaching skills. They give a strong establishment of hypothetical information, which I can at that point apply amid the in-class sessions. This double approach has made me more sure and viable as a teacher."

Participant 5:

"The input sessions after our in-class showings are useful. Hearing helpful feedback from peers and teachers has been basic in refining my teaching strategies and approaches.

Participant 9:

"The utilization of computerized instruments in teaching has made me more versatile. I've learned to join different mechanical assets into my lessons, which makes the classes more locked in and upgrades my capacity to oversee distinctive teaching scenarios."

The new teaching model addressed several limitations of traditional microteaching, such as restricted class hours and insufficient feedback. By leveraging online stages for pre-class arrangement and post-class follow-up, understudies get more opportune and assorted evaluations. Teachers were able to supply ceaseless direction and screen understudy advances more successfully. This procedural administration guaranteed that all understudies got the necessary feedback to create their teaching aptitudes, in any case of the constrained in-class time. Some of the students' feedback is stated below:

Participant 2:

"The blended teaching model addressed several limitations of traditional microteaching. With the online sessions, I might plan completely and at my claim pace, which was not conceivable with the restricted lesson hours in conventional settings."

Participant 6:

"Using digital platforms for assignment submission and feedback has been a game changer. It guarantees that I get convenient and useful criticism, which is vital for my advancement as a teacher."

Participant 8:

"In the conventional setup, each understudy regularly had inadequate time to hone teaching.

The online components allowed for extended practice opportunities, ensuring I could refine my teaching techniques before the class."

Participant 10:

"Accessing various digital resources and real-life classroom recordings has broadened my understanding of teaching methods. This exposure was lacking in the traditional approach, where resources were limited."

Feedback from students and teachers highlighted the overall effectiveness of the blended teaching model. Students appreciated the flexibility and comprehensive nature of the digital resources, while teachers found the online platforms valuable tools for enhancing instructional quality. However, some challenges were identified, including the need for better integration of online and offline activities and the requirement for students to develop more vital self-discipline and time management skills to fully benefit from the online components. Additionally, the increased workload for teachers, particularly in providing timely feedback on online assignments, was noted as a potential drawback. Some of the students' feedback is stated below:

Participant 11:

"One of the main challenges is the lack of instant feedback in online courses. While these platforms facilitate learning, the lack of real-time interaction with the instructor sometimes left me unsure of my progress."

Participant 12:

"Effectively managing the time between online preparation and offline teaching is difficult. Balancing these tasks with other learning tasks requires better time management skills, which I must develop over time".

Participant 4:

"The blended teaching model can be further enhanced by incorporating more interactive elements in the online sessions. Real-time discussions and instant instructor feedback would make learning more engaging and effective."

Participant 5:

"Increasing the allocated time for offline classroom sessions would be beneficial. While online resources are valuable, more in-person practice sessions would help better apply the theoretical knowledge gained online."

The effectiveness of the blended teaching model in enhancing students' teaching skills depends on several factors, including the availability of digital resources, the student's ability to adapt to new technologies, and the quality of the instructional design. The students' feedback highlighted the importance of a well-structured integration of online and offline elements to maximise learning outcomes.

DISCUSSION

The micro-lesson teaching method in music, leveraging the convenience and flexibility of digital resource platforms, promotes a diversified teaching model. The "Arts Curriculum Standards for Compulsory Education (2022 Edition)" (MOE, 2022), emphasises that teaching should focus on all students, centring on them as the main subjects to invigorate classroom teaching vitality. This requires music teachers to break from conventional practices and transform their teaching concepts. To actualise the transformation of teaching philosophies and processes, teachers

need to shift from the traditional model of "teacher lecturing and students passively listening" to one that emphasises organising, guiding, and addressing students' questions. This shift aims to truly place students at the centre, enabling them to engage in autonomous learning and practice, thereby significantly enhancing the practical efficiency of micro-lesson teaching in music. However, teachers must utilise platforms like Superstar Learning to ensure the effective implementation of the online and offline micro-lesson teaching model. They must provide timely guidance on students' learning outcomes and monitor their online learning processes in real time.

Educational competence requires teachers to focus on enhancing their professional knowledge and skills in music, improving their teaching abilities, and cultivating an enlightened character. It emphasises the study of modern educational theories and the strengthening of practical teaching skills; it calls for attention to traditional teaching fundamentals and the application of modern educational technologies. Therefore, as music teachers in the new era, it is not enough to "play, sing, perform"; one must also focus on the comprehensive enhancement of core competencies in professional development. For instance, teachers must continuously strengthen their learning, establish a lifelong learning mindset, and enhance their teaching competence. In the face of the digital teaching era, to ensure the effective implementation of blended learning models, it is necessary to continuously enrich the knowledge of digital and network information technology, master the operational skills and methods of digital information technology, and constantly try and explore teaching management strategies suitable for various courses. Learning educational philosophies and teaching methods applicable to online and offline music modes lays a solid foundation for practising and reinforcing students' music education, teaching knowledge, and skills.

In most higher education music programs, most students focus on learning music performance skills and lack a consciousness for autonomous thinking in studying music theory knowledge and education teaching knowledge and skills. When encountering problems in theoretical studies, their first instinct is to seek solutions from teachers, and if the issue is not addressed in class, it often remains unresolved. With its vast learning resources, the advent of the digital age demands that students quickly adapt to the digital learning environment, enhancing their ability to learn independently and their consciousness and spirit of inquiry. As long as students possess a thorough inquiry consciousness and put it into action, their growth will be rapid. Therefore, to effectively implement blended online and offline micro-class teaching in a digital resource environment, students must shift their learning mindset, moving away from dependence on teachers and establishing a concept of autonomous and collaborative learning. This involves coordinating study and practice time among peers, strengthening peer discussions, and stimulating divergent thinking. Secondly, group collaborative learning should be purposeful and planned. For example, students should consult online resources for knowledge not fully mastered after class and repeatedly practice unfamiliar teaching skills. They also need to study diligently, pay attention to knowledge that benefits them, and develop the habit of taking notes at all times. Additionally, peers should supervise and remind each other. Where conditions allow, students can use digital devices like computers and smartphones to observe elementary and secondary school music teaching lessons, learn from digital platform teaching materials and new music teaching methods, integrate and analyse the differences between video teaching cases and actual music teaching, and increase their mastery of teaching information, making micro-class teaching in music more convenient and flexible.

CONCLUSION

In essence, the blended online and offline music teaching model based on digital resource platforms has strengthened post-class learning and practice management for students. It has increased the frequency of students' practice sessions to a certain extent. A quantitative change is essential for a possible qualitative transformation, thereby deepening students' understanding and recognition of teaching patterns. During the course implementation process, it has enhanced teachers' dominance and students' subjectivity. To some degree, large-class teaching can also achieve personalised instruction, and group cooperation can focus on cultivating students' comprehensive abilities. However, digital teaching is a double-edged sword, presenting certain flaws and deficiencies. For instance, an abundance of post-class tutoring invisibly increases the workload for teachers, who may use their rest time for online grading and guidance after class. If teachers cannot provide timely feedback on students' post-class learning and practice, it can also affect the effectiveness of student learning. In offline classrooms, if teachers cannot seamlessly connect online and offline teaching rhythms, it can severely impact the quality of instruction.

Additionally, some students with poor self-discipline may become addicted to the Internet. Therefore, the blended online and offline teaching model demands higher moral and professional standards from teachers. Teachers must possess a strong sense of responsibility and dedication, be proficient in digital teaching techniques and methods, and

continuously learn to summarise time-saving, efficient, and effective online and offline teaching management models. Only by doing so can the potential of the online and offline teaching model be fully realised.

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