Exploring the relationship between technology application and interaction: Reflection on the observation of music class in primary school in Nanjing

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Abstract

This paper explores the relationship between technology use and classroom interaction through a reflective analysis of a video-recorded primary school music lesson on Fengyang Flower Drum in Nanjing, China. Drawing on lesson observation and relevant literature, it examines how audiovisual resources support musical understanding, student participation, and interaction between teachers and students and among peers. The observation suggests that technology provides a shared musical reference for listening, questioning, demonstration, and feedback. When integrated with rhythm recognition, musical question-and-answer tasks, and group activities, these resources can create opportunities for active engagement. However, participation may remain uneven when interaction centers on individual students while classmates watch passively. The analysis therefore highlights the importance of pedagogical design in translating technological resources into meaningful classroom interaction. It recommends integrating technology with collaborative activities, whole-class responses, peer feedback, and opportunities for recorded performance and reflection. As a reflection on a single lesson, the paper offers context-specific insights rather than general evidence. It concludes that the educational value of technology depends on its integration with student-centred teaching strategies that support inclusive participation and collaborative musical learning.

Keyword

Technology integration; primary school music education; classroom interaction; student engagement; student-centred learning

Introduction

With the development of digital technology, technology has become an increasingly important part of music education. Tools such as projectors, multimedia presentations, audio playback and video resources can help teachers present musical knowledge, demonstrate musical examples and support students' listening and understanding. Liu et al. (2025), in their systematic review of digital tools in elementary music education, found that digital technologies can support students' musical skills and may improve their learning motivation and engagement. Similarly, Harper (2018) reviewed research on technology and teacher–student interactions in K–12 education and found that technology can facilitate collaboration and support students' exploration of learning content. Although previous research has examined the use of digital technology in music education, further attention is needed to understand how technology is integrated into everyday classroom teaching and how it relates to different forms of interaction. Chen et al. (2026) found that structured digital music activities can support primary students' engagement and music literacy development. However, the presence of technology does not necessarily guarantee that all students will participate actively. It is therefore important to examine not only the benefits of technology but also its limitations in promoting whole-class participation and interaction.This study aims to explore the relationship between technology application and classroom interaction through the observation of a primary school music lesson in Nanjing, China. It examines how technological resources are used to present musical content, support teaching activities and facilitate communication between teachers and students. It also considers the extent to which these resources encourage student participation and interaction among classmates. The observation suggests that technology can support music teaching by presenting audiovisual materials, helping students understand musical characteristics and providing opportunities for teacher–student interaction. However, when individual students answer questions or demonstrate activities, other students may remain passive observers. This indicates that technology alone cannot guarantee active classroom participation. Teachers should integrate technology with interactive activities, group collaboration and peer feedback to encourage wider student participation and promote meaningful classroom interaction.

Different learning model

Student-centered learning (SCL), often implemented through approaches such as Project-Based Learning (PBL), is a learner-focused educational model that emphasizes students' autonomy, collaboration, inquiry, and active engagement in the learning process. PBL encourages students to construct knowledge through real-world projects, problem-solving, reflection, and the use of digital technologies (Kokotsaki et al., 2016). Recent research suggests that PBL can improve students' engagement, learning experiences, and development of cognitive and collaborative skills by shifting

the role of teachers from knowledge providers to learning facilitators (Guo et al., 2020). Therefore, student-centered approaches promote deeper understanding, independent learning, and more meaningful educational outcomes.

Teacher-centered learning is a traditional educational approach in which teachers serve as the primary source of knowledge and control the content, pace, and methods of instruction (Smith, 2018). Students are positioned as passive recipients of information, while teachers focus on delivering knowledge and evaluating learning outcomes. In EFL contexts, this approach often emphasizes examination performance rather than learners' individual needs (Zohrabi et al., 2012).

The relationship between technology application and classroom interaction is not necessarily straightforward. Technology can provide additional resources for teaching and create opportunities for students to engage with learning materials, but its presence does not automatically lead to increased interaction. Yang et al. (2019), for example, found that higher levels of technology use did not necessarily produce more communicative teacher–student interaction, suggesting that the pedagogical use of technology is more important than the amount of technology used.

This argument is particularly relevant to the observed music class at Nanjing University of Art. The projector and video provided shared visual and audiovisual resources that could support students' attention and engagement. In music education, technology has been shown to have potential to support student engagement and motivation (Serra-Marín & Berbel-Gómez, 2021). At the same time, classroom interaction can take different forms, including verbal, non-verbal, emotional and kinaesthetic interaction, and can be influenced by teachers' strategies, feedback and classroom facilities (Dukuzumuremyi & Siklander, 2018). Therefore, the projector and video should not be viewed merely as presentation tools. Their educational value depends on whether the teacher uses them to stimulate questions, responses, discussion and reflection.

From this perspective, the observed use of video was particularly important because audiovisual materials can provide students with a concrete stimulus for observation and discussion. When the teacher pauses a video, asks students questions, or encourages them to comment on a musical performance, the technology becomes a mediator of classroom interaction rather than simply a means of delivering information. Thus, the observation suggests that technology application and classroom interaction are related through pedagogical practice: technology creates possibilities for interaction, while the teacher's instructional strategies determine whether these possibilities become meaningful interaction.

Technology applied into music education

Recording technology can be used in music education to record students' singing or instrumental performances and provide opportunities for playback and reflection. By listening to their own

recorded performances, students can identify problems in areas such as pitch, rhythm, expression and performance technique. This process can also create opportunities for interaction between teachers and students, as teachers can use the recording to provide specific feedback and discuss students' performance with them. Therefore, recording technology can support not only musical practice but also self-assessment, teacher feedback and reflective learning. In relation to the present study, its value lies in creating an additional space for interaction: students can listen to, evaluate and discuss their own musical performance rather than relying entirely on immediate teacher evaluation.

Audio technology, particularly digital listening tools and recorded musical examples, can provide students with opportunities for independent listening, musical familiarisation, and the identification of performance-related problems (Wan et al., 2022).In a music classroom, teachers can use audio examples to introduce musical works, demonstrate different interpretations or draw students' attention to specific musical elements such as melody, rhythm, timbre and dynamics. Audio materials can also function as a stimulus for classroom interaction when teachers ask students to describe, compare or evaluate what they hear. In this way, audio technology changes listening from a passive activity into a more interactive learning process. It can therefore support teacher–student interaction by providing a common musical stimulus for questioning, discussion and feedback.

Interaction with these technology according to the video

The teacher used audiovisual resources to introduce the musical content and provide students with opportunities to listen to and observe the music.Rather than relying entirely on verbal explanation, the teacher combined technological materials with questioning, demonstration and classroom activities. This allowed the technological resources to function as a stimulus for students' musical learning. As Wan et al. (2023) suggested, audio technology, particularly digital listening tools and recorded musical examples, can provide students with opportunities for independent listening, musical familiarisation, and the identification of performance-related problems, which is aligned with the example above.

Following the use of the audiovisual materials, students responded by listening, observing, answering the teacher's questions and participating in musical activities. Their responses showed that technology helped attract students' attention and provided a common musical reference for the whole class. It has been suggested that technology helped attract students' attention and provided a shared musical reference for the whole class, allowing students to engage with the same musical material during classroom activities (Macrides & Angeli, 2020). From other aspect, the teacher could then respond to students' answers and adjust the explanation or activity accordingly. In this

sense, the interaction was not simply a one-way process in which the teacher delivered information through technology. Instead, technology provided a starting point for a cycle of teacher instruction, student response and teacher feedback. As Yee-King et al.(2019) said, technology served as a starting point for an interactive teaching cycle in which the teacher provided instruction, students responded through musical activities, and the teacher offered feedback to guide subsequent learning. However, how to use audio activity is a good question to explore further.

AI-assisted technology can provide additional ways to present musical knowledge and support classroom interaction. In the Fengyang Flower Drum music lesson, the use of AI-assisted teaching resources can be analysed in terms of how digital materials support the teacher's explanation and students' engagement with the musical content. When the teacher uses AI-generated or AI-supported audiovisual materials to introduce musical elements, students can observe and listen to the examples before responding to questions or participating in classroom activities. AI-assisted resources may support student engagement in music education by providing interactive and engaging learning experiences (Chen, 2024). When teachers use AI-supported audiovisual materials to introduce musical elements, these materials may provide students with opportunities to observe and listen to musical examples before responding to questions or participating in classroom activities. In this way, technology can serve as a stimulus for classroom interaction, although the actual level of interaction depends on how the teacher incorporates these resources into teaching activities.

This creates opportunities for interaction between the teacher and students, as well as discussion among students. However, the effectiveness of AI-assisted technology depends on how it is integrated into teaching activities. If students only watch the materials passively, interaction may remain limited; if the teacher uses them to encourage observation, questioning and discussion, AI-assisted technology can become a mediator of classroom interaction.

Game-based learning can be used in music education to increase students' engagement and encourage active participation. In the observed *Fengyang Flower Drum* lesson, classroom games can be analysed as a teaching strategy through which the teacher encourages students to engage with musical knowledge in a more interactive and enjoyable way. By incorporating game-like activities, such as musical question-and-answer tasks, rhythm recognition or group participation, the teacher can encourage students to listen carefully, respond to instructions and communicate with their classmates. These activities can create opportunities for teacher–student interaction through questions, guidance and feedback, as well as student–student interaction through cooperation and shared participation. Game-based activities can provide opportunities for students to engage

actively with musical content and interact with their teachers and peers. In music education, digital game-based learning offers ways to integrate musical tasks with interactive learning experiences (Weatherly et al., 2024). Through activities such as rhythm recognition, musical question-and-answer tasks and group participation, teachers can encourage students to listen carefully, respond to instructions and collaborate with classmates.

From the perspective of this study, games are valuable not simply because they make the lesson more entertaining, but because they can transform students from passive listeners into active participants. However, the effectiveness of game-based learning depends on how the teacher designs the activities and encourages students to participate. Therefore, classroom games can serve as a bridge between teaching strategies, student engagement and classroom interaction. Game-based learning can enhance student engagement and promote social and cognitive skills, suggesting that well-designed classroom games can connect instructional strategies with students' active participation and collaborative learning (Li & Kushairi, 2025).

Findings

The observation of the lesson suggests that technology can enrich music teaching by presenting audiovisual materials that help students listen to musical examples, observe relevant information and develop an initial understanding of the song’s musical characteristics and cultural background. These resources provide a shared reference for classroom learning, allowing the teacher to introduce musical content, ask questions, explain musical concepts and provide feedback based on students’ responses. When combined with activities such as rhythm recognition, musical question-and-answer tasks and group participation, technology can encourage students to engage with the music and create opportunities for both teacher–student and student–student interaction. However, the observation also highlights several limitations in classroom participation. For example, when one student goes to the front of the classroom to answer a question or demonstrate an activity, other students may simply watch without actively thinking, responding or contributing. As a result, interaction may be concentrated between the teacher and a few individual students, while the participation of the wider class remains limited. Furthermore, if technology is mainly used to display information or play audiovisual materials, students may become passive recipients of information rather than active participants in the learning process. To address these limitations, the teacher could make better use of interactive digital tools to encourage all students to respond simultaneously, invite students to discuss and compare the musical features they hear, and organize group performances, rhythm exercises and peer feedback. Recording technology could also be introduced to allow students to listen to their own performances, identify areas for improvement and

reflect on their progress. These approaches would help connect technology with active learning rather than using it solely as a presentation tool. Overall, the lesson demonstrates the potential of technology to support musical understanding and enrich classroom activities, but its effectiveness depends on how well it is integrated with student-centred teaching strategies. By creating more opportunities for all students to participate, collaborate and provide feedback, teachers can use technology more effectively to promote meaningful classroom interaction and improve the learning experience.

Conclusion:

It can be found that various technology can be applied into music education, which can enhance interaction between teachers and students. Specifically, The lesson observation shows that technology can enrich music teaching by providing audiovisual resources, supporting musical understanding and creating opportunities for teacher–student and student–student interaction. However, classroom participation may remain limited when students mainly watch demonstrations or receive information passively. To address this issue, teachers should integrate interactive digital tools, group activities, peer feedback and recording technology to encourage active participation and self-reflection. Overall, the effectiveness of technology depends not only on the resources used but also on how they are integrated with student-centred teaching strategies to promote meaningful interaction and collaborative learning. In this sense, although some effect can be obvious, this research still has some shortages needed to be explored further. This research can be good source for future study in related area.

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