Chapter 17
The Preliminary Study of a Multi-User Collaborative Musical Instrument Application for Middle School Students

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ABSTRACT

With its interactive and captivating learning experiences, touchscreen technology has become a particularly promising new direction for music learning in recent years. This paper reports the preliminary study which investigates the impact of a touchscreen-technology-based multi-user collaborative musical instrument application in middle school students' music learning. Four secondary school students were chosen as participants and participated in interviews and non-participant observation. The evaluation revealed that this application fulfilled the usability aspect; it was confirmed to be easy to use and contributes to fostering collaborative skills and increasing student engagement in music learning. As there is no existing mobile music instrument application for multi-users to support middle school students in music learning, this study would be considered a groundbreaking attempt. The insights provide valuable implications for educators and developers aiming to

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integrate touchscreen technology into music curricula, promoting more interactive and collaborative learning environments

INTRODUCTION

Sometimes rigid and less interactive, traditional teaching methods can lower student engagement (Lan, 2022). Instead of engaging in group activities that promote creativity and teamwork, students frequently work alone in traditional music classrooms. Teacher-led ensembles in the classroom, which are top-down, and students follow instructions from the teacher to complete tasks, may not provide enough opportunities to develop students' musical understanding or allow them to participate in any decision-making process (Webster, 2011). In research on the psychology of music learning, musical engagement has been defined as an intense social activity (Jorgensen, 1993). Jorgensen stated in his article "Music Education as Community" that one prevalent music education model is the community model (1995). A few years later, Luce (2001) surveyed the literature on collaborative learning in music education and concluded in his article that music as "essential creative communication permeates all cultures as a collaborative, communally-based expression of humanity" (p. 24). In the event that interactive and collaborative components are absent, students may become less motivated and interested in music because they will not be able to participate in the social aspects of music-making which can push students to cooperate, exchange ideas, and gain knowledge from one another (Luce, 2001). When it comes to retaining students' interest and encouraging a deeper understanding of music, creative methods that include interactive and collaborative components are frequently more successful.

The advent of new technologies has given music education a new focus in this age of rapid technological advancement. Technology is continually changing how people collaborate on music and is also making up for some of the flaws of traditional educational approaches. Like mobile and touchscreen technology, their convenience and interactivity bring infinite possibilities to music-collaborative learning (Courage, 2020). With its interactive and captivating learning experiences, touchscreen technology has become a particularly promising new direction for music instruction in recent years (Huang, 2021). The touchscreen technology inherent in tablets and smartphones provides an intuitive and engaging interface for music learning (Courage, 2020). According to research by Liu et al. (2023), in the discipline of music education, tablet computers are the most often used mobile device while other mobile devices are used less frequently. Compared with smartphones, tablets are equipped with larger screens, which makes them more practical in music education. Students can engage in interactive learning experiences with touchscreen technology,

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