

SPA-251

## **An Attempt of STEAM in Primary Education Through Ensemble Activities by Using a Music Creation Software "GarageBand"**

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### **Abstract**

As well known, STEAM is an acronym for the five areas of Science, Technology, Engineering, Arts, and Mathematics. STEAM has become widely recognized as a more prominent and effective approach to interdisciplinary learning. It has been pointed out that STEAM enhances children's creativity, problem-solving ability, memory system, motor coordination, and analytical ability. In Japan, the term "STEAM education" appeared in the e-mail newsletter of the Ministry of Education, Culture, Sports, Science and Technology in 2018. In addition, the 2019 governmental document clearly indicated that STEAM education should provide cross-curricular learning with each child to help him/her to solve problems in the real world.

In line with the educational trends, we conducted classes based on STEAM education and evaluated students' subjective experiences while attending the classes. Sixty-two students in the 6th grade of an elementary school attached to Nara Women's University participated in this project. We offered the students a special lesson which let them experience ensemble activities by using "GarageBand" (a music creation software). The score used for the lesson was a mass score developed by one of our collaborators, Chi-Hin Leung from the Education University of Hong Kong. We conducted two classes (29 students for one class and 33 students for the other) and most of the students had not used "GarageBand" until then. The aims of this project were that through the classroom activities, the students would learn how to make sounds of various musical instruments by "GarageBand," learn how to record created sounds by the software, and finally learn how to play the musical instruments installed in it in the ensemble fashion.

After each class, students completed a "Classroom Experience Form" to evaluate their experiences during the lessons. The results indicated that the students showed high levels of concentration, enjoyment, happiness, involvement, excitement, interest, and a sense of fulfillment. This tendency did not differ between students who had no music training outside of school and students who had music training of any kind outside of school previously or at that time of the project. However, it appeared that the students did not notice how important

“GarageBand” activities would be for their future. Implication of obtained findings was discussed in terms of positive potential “GarageBand” has as a tool for STEAM education.