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THE IMPORTANCE OF INTEGRATING THE ARTS INTO STEM EDUCATION IN KOREA

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Synopsis:

In Korea, there is an ongoing effort to increase students' interest in and understanding of science and technology by integrating the arts to STEM and develop their STEAM literacy through problem-based learning. The aim of this research study is to develop a STEAM education program and determine its effectiveness in a high school science class.

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Lately, Korea has started to implement a STEM (Science, Technology, Engineering, and Mathematics)-like approach to education, titled 'STEAM,' to develop students to become the next generations of innovators. The Ministry of Education, Science, and Technology (MEST) of Korea integrated the fifth domain, the Arts, to STEM and transitioned from STEM to STEAM. STEAM education of Korea aims to develop students' integrated thinking and problem solving abilities through real-world applications. The national curriculum revised in 2009 and 2015 by MEST specifically emphasizes that students should develop an understanding of basic science concepts by exploring natural phenomena with interest and curiosity as well as cultivate their scientific competency needed to solve everyday environmental problems by developing the ability to think scientifically and solve problems creatively.

It is vital to foster the interest of middle school students to participate in the future STEAM workforce and to prepare them for such participation in STEAM-related careers because middle school level is especially a crucial stage in a child's development. In the 21st century, students should be prepared for a rapidly changing future. Therefore, the current study is important as it explores middle school students' attitudes towards STEAM subjects and examines the STEAM program's impact on students' STEAM content knowledge as well as their perceptions of STEAM content.

The methodology of this research is as follows: the STEAM program was implemented for ten weeks in a science class, which consisted of middle school students in Seoul, Korea. Employing a quasi-experimental design, the participants who participated in STEAM educational activities were measured on their STEAM knowledge and dispositions before and after their participation in STEAM activities.

The findings indicate that students who participated in STEAM activities not only reported gains in their STEAM content knowledge but also showed an improvement in their perceptions of STEAM subjects. Also, this improvement in STEAM perceptions was more pronounced for female middle school students than for male students. The results of this study suggest that STEAM programs in science classes are apt to contribute to STEAM literacy through the integration of the arts as well as develop creative problem-solving abilities by introducing new ideas.