

# THE CHALLENGES OF STEM STUDENTS' RESEARCH PRESENTATIONS BETWEEN TWO COUNTRIES AND ITS IMPLICATION FOR FUTURE STEM LEARNING MODEL

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## THEME:

STEM education in diverse contexts

## BACKGROUND AND AIMS

In Japan, research into STEM/STEAM education began in 2013 with the initiation of the Next Generation Science Standards (Lead States, 2013) in the US, however, research specific for implementation of STEM teaching and learning were developed after 2016 in accordance with the "Science and Technology Basic Law of 2016". Included in the 5<sup>th</sup> iteration of this law was the "Science, Technology and Innovation Basic Law of 2020". This edition encouraged research between Science, Technology, Innovation and Society, with development of STEM education.

Shizuoka University received special competitive funding from Japan Science and Technology Agency (JST) to create the "Shizuoka STEM Academy" as part of "Fostering the Next Generation Human Resources" programs. The Shizuoka STEM Academy provides informal STEM learning for 5-9<sup>th</sup> grade students and has been in continuous operation since its opening.

## PROCESS(ES) UNDERTAKEN

This presentation focuses on descriptive processes detailing international student exchanges via e-learning regarding student generated research. This international student exchange began with a request from Dr. Thomas Meagher to provide opportunities for presentations among STEM students in the US with Shizuoka STEM Academy students. Four candidates were nominated and helped with the English presentation by the Shizuoka University staff. On November 28<sup>th</sup>, 2021, the STEM café of Shizuoka STEM Academy was conducted between Shizuoka, Japan and Owatonna, MN, US. After those presentations, we collected data from students who presented their own research. Survey data collected from Owatonna students demonstrate that their attitudes towards STEM education is positive, and higher among students who participated in international STEM research presentations.

## RESULTS AND CONCLUSIONS

This paper explores data showing positive effects among participants who presented STEM research projects between the US and Japanese students. Through the contexts of communicating students' STEM research, it was found improved motivation for students to engage in their own research. Also, students who made efforts to present their own research via Zoom conference showed higher assessment results. Students who attended the STEM café also enrolled in the Shizuoka STEM Academy for 2022. US students who participated in international research collaboration enrolled in more STEM courses at Owatonna Senior High School and sought to participate in more international STEM research partnerships. STEM

students graduating from Owatonna schools showed interest in pursuing STEM related post-secondary education with a focus on international study in STEM fields.

These results show interesting outcomes that encourage development of a STEM education model involving collaboration among students from many countries to share original research.

## **REFERENCES**

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