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A Study on Enhancing Female High School Students' STEM Career Awareness through Career Education in Japan

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Abstract

In recent years, the gender gap in Japan's STEM (Science, Technology, Engineering, and Mathematics) fields has attracted significant attention. According to data from the Japanese Ministry of Education, Culture, Sports, Science, and Technology (MEXT), the percentage of women in STEM careers is below 20%, and the enrollment rate of female students in engineering and technology fields is significantly lower than that of males. This phenomenon not only limits women's career development opportunities but also hinders the full utilization of the country's talent pool. Addressing this disparity is essential for fostering workforce diversity and driving technological advancement. Preliminary research into high school career education has revealed that the high school years are crucial for the development of students' career interests and cognitive abilities. However, female high school students in Japan still have limited exposure to and understanding of STEM careers, which to some extent affects their perception and interest in STEM fields and reduces the likelihood of young women considering STEM as a viable career path. Therefore, this study aims to explore the key factors that can enhance female high school students' awareness and understanding of STEM careers. The study addresses three key research questions: 1) What is the current level of awareness of STEM careers among Japanese female high school students? 2) What cognitive biases or misunderstandings do Japanese female high school students have about STEM careers? 3) What factors limit Japanese female high school students' awareness of STEM careers? To address these questions, this study will use a questionnaire survey to collect data on the perceptions and views of female students in public high schools in Fukuoka City regarding STEM careers. Based on the findings, the current knowledge gaps of female high school students for STEM career can be understood. At the same time, female high school students' perceptions on STEM career also provide better understanding on the possibilities of gender biases when choosing career related to STEM areas. The findings will provide theoretical support for the development of STEM career education curricula and textbook aiming to offer new perspectives and recommendations for improving gender equality in Japan's STEM education, and encourage more female students to pursue STEM-related professions.

Keywords: STEM career education, career awareness, gender equality, female high school student, Japan