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Developing Gifted Students' STEM Career Interest

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Abstract : To fully explore and develop the potentials of gifted students systematically and strategically by providing them with opportunities to receive education at appropriate levels, schools in Hong Kong are encouraged to adopt the "Three-Tier Implementation Model" to plan and implement the school-based gifted education, with Level Three refers to the provision of learning opportunities for the exceptionally gifted students in the form of specialist training outside the school setting by post-secondary institutions, non-government organisations, professional bodies and technology enterprises. Due to the growing concern worldwide about low interest among students in pursuing STEM (Science, Technology, Engineering, and Mathematics) careers, cultivating and boosting STEM career interest has been an emerging research focus worldwide. Although numerous studies have explored its critical contributors, little research has examined the effectiveness of comprehensive interventions such as "Studying with STEM professional". This study aims to examine the effect on gifted students' career interest during their participation in an off-school support programme designed and supervised by a team of STEM educators and STEM professionals from a university. Gifted students were provided opportunities and tasks to experience STEM career topics that are not included in the school syllabus, and to experience how to think and work like a STEM professional in their learning. Participants involved 40 primary school students joining the intervention programme outside the normal school setting. Research methods included adopting the STEM career interest survey and drawing tasks supplemented with writing before and after the programme, as well as interviews before the end of the programme. The semi-structured interviews focused on students' views regarding STEM professionals; what's it like to learn with a STEM professional; what's it like to work and think like a STEM professional; and students' STEM identity and career interest. The changes in gifted students' STEM career interest and its well-recognised significant contributors, for example, STEM stereotypes, self-efficacy for STEM activities, and STEM outcome expectation, were collectively examined from the pre- and post-survey using T-test. Thematic analysis was conducted for the interview records to explore how studying with STEM professional intervention can help students understand STEM careers; build STEM identity; as well as how to think and work like a STEM professional. Results indicated a significant difference in STEM career interest before and after the intervention. The influencing mechanism was also identified from the measurement of the related contributors and the analysis of drawings and interviews. The potential of off-school support programme supervised by STEM educators and professionals to develop gifted students' STEM career interest is argued to be further unleashed in future research and practice.

Keywords : gifted students, STEM career, STEM education, STEM professionals
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