

Identifying enablers and barriers to Year 9 girls' success in STEM

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Women remain underrepresented in the STEM workforce globally including within Australia, where less than 30% of university STEM graduates are women (Office of the Chief Scientist, 2020). Many girls opt out of STEM before entering university (Jamieson, 2018). Flinders STEM Enrichment Academy is a grant-funded initiative, to help address this and to inspire young women to pursue STEM. We offer hands-on activities that combine role-model interventions allowing girls to perform and enjoy science in a supported environment. Despite evidence that attitudes are shaped at an early age by sociological factors such as parents' and teachers' roles, peer influence, role models, socio-economic status, and media (Wang and Degol, 2013), there is little information on the enablers and barriers to STEM participation among Australian girls. We identify the factors that influence girls' participation in STEM and the pursuit of STEM careers by collecting data before and after their participation in the enrichment activities. We used a modified STEM Career Interest Survey (Kier et al., 2013) based on the socio-cognitive career theory model to identify enablers and barriers (Wang et al., 2022) and evaluate the impact of role model interventions on the girls (n = 141 pre- and n = 119 post-intervention responses) who attended our three-day STEM Conference in 2023.

The barriers identified were gendered STEM identity, stereotypes, conceived maths difficulty, inadequate school support, and occasional lack of interest. The enablers identified were appreciation for real-world applications of STEM, enjoyment of experimenting and problem-solving, role models, and interests in specific fields such as medicine, bio-medical engineering, robotics, and psychology. After the role model intervention, girls reported learning that pursuing STEM careers is possible despite failures and that they can explore diverse STEM courses to pursue the one they enjoy most. Our findings provide novel Australian-specific insights into the factors that either hinder or support girls' participation in STEM and highlight the importance of targeted early interventions in improving female participation in STEM.

References

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