



Nudging Pathways: The Role of Teacher Recommendations as Strategic Interventions in Senior Maths and STEM Extension Choices

Hazel Tan

Monash University
Hazel.Tan@monash.edu

Janelle Hill

Charles Sturt University
jahill@csu.edu.au

Teacher recommendations are often assumed to influence students' educational choices, yet their role in shaping mathematics and STEM pathways has received limited theoretical and empirical attention. We examined teacher recommendations through the lens of Nudge Theory and Choice Architecture (Weijers et al., 2021), conceptualising them as strategic interventions that shape how students perceive opportunities, risks, and their own suitability for advanced study. Drawing on two studies conducted in Victoria, Australia, we explore how teacher recommendations influence participation in advanced mathematics subjects and STEM extension programs.

In the first study, 838 Victorian students in Years 10-12 completed a survey to explore factors influencing senior secondary mathematics choices. Teacher recommendation was the third most influential factor for Specialist Mathematics students, after perceived academic ability and university entrance scores, and was more influential than peer advice and social factors. These findings indicate that recommendations serve as informational nudges, boosting confidence and reducing uncertainty in higher-level mathematics enrolment. In the second study, 65 alumni of a STEM extension program responded to a qualitative survey item on their enrolment decisions. Teacher or principal recommendation was the second most common reason for enrolment, cited by 25% of respondents and especially common among female students, who reported being personally encouraged to apply by educators.

Across both studies, teacher recommendations appeared to influence not only how students evaluated available options but also which opportunities became visible and accessible. Through a Choice Architecture perspective, recommendations can be understood as nudges that preserve student autonomy while guiding decision-making. Teachers act as trusted messengers whose expertise and authority help students navigate complex choices. Such recommendations may counter status quo bias and loss aversion by reframing advanced mathematics and STEM pathways as achievable and worthwhile.

These findings highlight the significant but often under-recognised role of teacher recommendations in shaping participation in advanced mathematics and STEM education. While recommendations can promote access and confidence, they also carry ethical responsibilities. Recommendations that are informed, equitable, and responsive to individual students have the potential to broaden participation, whereas biased or uneven recommendation practices may inadvertently constrain opportunities.

References

Weijers, R. J., de Koning, B. B., & Paas, F. (2021). Nudging in education: From theory towards guidelines for successful implementation. *European Journal of Psychology of Education*, 36, 883–902. <https://doi.org/10.1007/s10212-020-00495-0>

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