

PROMOTING GROWTH AND EXCELLENCE IN DATA SCIENCE EDUCATION: DEVELOPING A MENTORING ECOSYSTEM

Di Warren, Garth Tarr, Ellis Patrick

Presenting Author: Di Warren (diana.warren@sydney.edu.au)
Mathematics and Statistics, University of Sydney, Sydney, NSW, 2006, Australia

KEYWORDS: Mentoring, innovation, data science

SUBTHEME: Experiential Learning

The growth of data science is going to continue, and, as educators, we must work to meet the growing demand and develop education that scales. (Donoghue et al, 2021).

The last two decades have seen a massive growth in data science education in the tertiary sector. While historically undergraduate students avoided and disliked 'statistics', data science is increasingly recognized as a fascinating, essential foundation for all fields. Consequently, introductory data science units are embedded in many academic pathways, resulting in large, diverse cohorts. How can we promote excellence in curriculum, while continually needing to increase the body of skilled educators? Our talk focuses on research that was first presented at ICME-15 (2024) and will be part of a monograph on "Rethinking statistics, probability and data science education: From Theory to Classroom" within the Springer Book Series "Advances in Mathematics Education" (2026).

We will focus on two flagship units in data science at the University of Sydney with very large enrolments. Since 2018, the units have grown from a total of 873 students to over 3200 students in 2025. Firstly, we outline data showing the challenges in providing educators for such large cohorts, which necessitated a new approach. Secondly, we explain the genesis of our mentoring ecosystem, in the context of related literature and best practice. Thirdly, we outline the main outcomes in terms of culture in the units, including embedded professional development and responsive innovation in learning and assessment. We will conclude with some challenges in implementing a mentoring ecosystem, and discussion on its suitability across different domains.

REFERENCES

Warren, D., Tarr, G., & Patrick, E (2024). Promoting excellence and growth in data science education: Developing a mentoring ecosystem. *Proceedings of the 15th International Congress on Mathematical Education (ICME-15), Sydney, Australia*. [Due to be published end of 2025]

Proceedings of the Australian Conference on Science and Mathematics Education, The University of Melbourne, 30 September - 2 October 2025, page 78, ISSN Number 2653-0481.