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Academic numeracy is critical for success in a wide range of disciplines and in the workplace. Despite this, a significant number of students fall short of numeracy expectations throughout their studies. To effectively address this issue, it is essential to adopt a concerted approach at the individual, course, program, and university levels to develop academic numeracy in tandem with course content. This approach contrasts with current practices, which often result in multiple, disconnected and ultimately ineffective numeracy development initiatives in tertiary institutions.

The Academic Numeracies Framework (Framework) supports the systematic embedding of academic numeracy across domains. It has a combination of distinctive features, including its focus on tertiary education, its intended purpose as a teaching and learning tool and its multidisciplinary nature. In summary, the Framework considers specific mathematics competencies, while being general enough to be applicable to different disciplines. This feature makes it well suited to facilitate the embedding of numeracies across tertiary institutions.

The Framework facilitates mapping of the target, assumed and actual numeracy of students. It informs curriculum design and the development and delivery of learning support initiatives. Importantly, the Framework facilitates effective conversations between educators and learning development and support staff to arrive at a shared understanding of student numeracy needs and how to best address these needs.

We are committed to delivering a future version of the Framework that also addresses the physiological barriers to success, notably maths anxiety, as this factor can adversely impact student outcomes, with students often becoming disengaged with maths and its application, even if they are mathematically competent. We aim to support numeracy development in learners with diverse maths skills.

This study is also timely, as the Australian Government higher education support amendment bill 2023 requires higher education providers to implement policies to identify at-risk students and support them in completing their studies. We believe the Framework is an effective tool to assist with this requirement.

We are appreciative of the 2024 funding received from the Association for Academic Language and Learning (AALL), in order to produce an interactive version of the Framework (based on an existing [static version](#)). This interactive format will significantly enhance the effectiveness of the Framework and promote its use by providing an intuitive interface that steps users through its elements and provides guidance on its use. It will also enable the efficient and reliable capture, aggregation and analysis of data, both to inform users and to mature the tool.

We have presented this research at the Students Transitions, Achievement, Retention & Success (STARS) Conference (2023), the International Congress on Mathematics Education (ICME, 2024) and the Adults Learning Mathematics (ALM, 2024).

Academic Numeracies Framework

Introduction

Click here for more information about how to use the Academic Numeracies Framework



Introduction to the Academic Numeracies Framework

Communication

Mathematising

Representation

Reasoning and argument

Devising strategies

Using symbolic formal and technical language and operations

Using mathematical tools

Contact information and feedback