

No one told me I needed mathematics for physics.

Sara Brice¹, and John Daicopoulos¹

¹College of Science and Engineering, James Cook University, Townsville, QLD, 4810, Australia

The presentation of preliminary results from a series of video resources we developed to supplement a low-stakes online mathematics assessment.

Preparatory Physics (PH1001) is the first of three physics subjects for our Sport and Exercise Science students, and a compulsory subject in our pre-degree diploma. A key learning objective for this algebra-based subject addresses how students compose mathematical solutions for various physics problems.

Our aims were to:

- 1) Develop and implement an online learning and non-invigilated assessment module to assist students with composing mathematical solutions.
- 2) Assess whether the online learning and non-invigilated assessment module improves student's confidence in their ability to compose mathematical solutions while reducing their mathematics anxiety.

A large number of students within our Preparatory Physics subject exhibit an inability to effectively compose mathematical solutions. To assist students with improving this skill a revised assessment restructure was created to include low stakes non-invigilated quizzes to allow

independent, frequent, and timely, examination of a mathematical skill.

Previously students have had little specific practice, assessment, or feedback on their ability to compose mathematical solutions – *traditionally that's for another subject*. We changed that premise by presenting them with mathematically-based online learning and assessment tasks immediately before those skills were necessary in the following lectures. The online aspect consisted of a video detailing how to use a particular mathematical procedure while applying it to a discipline specific problem. The accompanying assessment was a multiple choice quiz focussed on assessing the targeted mathematical skill presented.

We used this to identify deficiencies during the course of the semester giving staff and students the opportunity to address areas of concern prior to the semester's conclusion.

Pre- and post-surveys were given to harvest information on perceptions of their own ability to use mathematics and on the need for mathematics in physics.