

# CONNECTING STUDENTS TO MATHEMATICS AS A MODERN HUMAN ENDEAVOUR

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**SUBTHEME:** Assessment/Experiential Learning

## PROBLEM

A common perspective among students from traditional Western secondary school education systems is that mathematics is a static tool for modelling and problem solving (Petocz et.al, 2007). Nowhere in the VCE Study Design (VCAA, 2022) is there mention of mathematics as being a modern human activity, complete with cultural norms, that can be undertaken purely for its own sake. A survey of learning outcomes in level 1 mathematics subjects in science degrees at a sample of Australian Universities yields no examples of subjects for which these ideas appear as a learning outcome. This is despite the fact the Australian Council of Deans of Science lists “*explaining the ways in which science is a social endeavour that influences and is influenced by society*” as a threshold learning outcome for science graduates in Australia (ACDS, 2023). This limited student perspective is potentially further entrenched by the usual nature of mathematics assessment. Space is rarely given in assessment to activities that engage students on issues related to the culture of mathematics. Within this educational paradigm it would be no surprise for students to complete their mathematical studies without appreciating that modern mathematics is an active human endeavour, complete with cultural norms.

## INTERVENTION

During the COVID-19 pandemic, many approaches were proposed to modify assessment in recognition of the extraordinary circumstances limiting opportunities for traditional assessment. One such proposal was given by Professor Francis Su (2020). His work inspired these authors to modify the format of the traditional problem set to give a consistent space across a semester for students to engage in reflective thinking about the nature of mathematics. Within the approach, reflective activities are chosen to connect with the cohort in the subject. For example, Indigenous students studying as part of an enabling course for a Bachelor of Science were, asked to read an article by Indigenous mathematician Professor Chris Matthews (2019) and to respond to the following prompt: *What aspects of mathematics do you view as objective/fixed, and what aspects do you view as influenced by culture and values?*

## OUTCOMES AND REFLECTIONS

To date, this approach has been taken in seven undergraduate mathematics subjects, reaching more than 2000 students. This activity is often mentioned by students during subject surveys as an interesting and thought-provoking part of the subject. Students consistently undertake this work authentically with the same (or even greater) care given to the traditional assessment tasks, regularly display nuanced insight and make connections between the reflective work and their studies in mathematics. The authors are currently undertaking a research project studying the impact of this reflective work on students' interest and engagement in their studies, their academic outcomes, and their desire to further their mathematical education.

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