

Cohort-Specific, Culturally Relevant Content and Lesson Plans

Digital teaching tools that are designed to use culturally relevant pedagogies to engage and improve student outcomes in maths for culturally and linguistically diverse students.



Which challenges does the model address?

- **Differentiation** – Allows for content to be delivered to a particular cohort. Students from disadvantaged contexts and whose second language is English face particularly acute challenges in succeeding in school mathematics. Evidence shows that effective learning and retention in STEM pathways is directly impacted by the cultural context and background of students, and how much this is incorporated into teaching and learning. Incorporating differentiated learning and culturally relevant maths content can be digitised to promote access and reduce the cost of distribution.



Target Groups

The model of cohort specific models can be targeted to any group, particularly those who historically are disadvantaged in maths outcomes, such as:

- Aboriginal and Torres Strait Islander Australians
- Neurodiverse students
- Girls
- Students from culturally and linguistically diverse backgrounds.



How the model works

Using digital technology to provide culturally relevant lessons for students from backgrounds who typically report lower maths outcomes than their peers. To date, these groups, particularly Aboriginal and Torres Strait Islander students, have been underserved by digital technologies. Experts we consulted with believe this is due to a number of pre-conditions not being met for effective use of digital learning, notably:

- Poor or unreliable wi-fi and / or data bandwidth
- Access to devices, particularly 1:1 student to device ratio that can enable online learning or engagement
- Digital literacy.

These pre-conditions are typically not met in schools with a high concentration of Aboriginal and Torres Strait Islander students, such as remote and rural schools. Therefore, the Solid Pathways example should be considered in the context of significant deficits in digital literacy and broadband access for Aboriginal and Torres Strait Islander students and remote communities.

Solid Pathways

This Queensland Department of Education program engages with students using Traditional Ecological Knowledge in teaching STEM. It is an intervention strategy based on strong evidence, which has highlighted that Aboriginal and Torres Strait Islander students identified as being high achievers at some stage of their schooling do not sustain this throughout their schooling and beyond. It offers 4 course rounds throughout the year aligned to school terms. Each course consists of 9 to 10 lessons a week with students in a virtual class via the iSee platform. In addition to the lessons, STEM professionals are brought in to be virtual guest speakers explaining scientific inquiry or for a Q&A session. The intention is that STEM professionals are role models to inspire and encourage students to reach their full potential.



Success factors

The success factors may vary depending on the focus and delivery of the cohort-specific, culturally relevant content and lesson plans. The success factors for Solid Pathways are:

- Access to culturally appropriate content, which incorporates examples, context, places and people to which students can relate.
- Buy-in from school staff and the wider school community. Student to device ratio, as well as a reliable and secure internet connection.
- Effective collaboration with staff on site at the school to allow the remote teacher to focus on the delivery and engagement rather than IT troubleshooting.



Caution factors

We heard that the following factors can undermine the impact of programs like Solid Pathways:

- Poor or unreliable wi-fi and/or data bandwidth at the school.
- Inconsistent access to devices, or high student-to-device ratios such as 3 or 4 to 1.
- Limited digital literacy of students.



Cost

The cost of implementing a cohort specific model will depend on design and reach of each initiative. Solid Pathways is supported by the Queensland Department of Education, and it comes at no cost to schools to implement.