TEACHING MODELS

Maths Pathway helps students to stick with maths

Data and personalisation help to improve maths participation, ***ET Staff***

Why don't people want to do maths? It's a question that definitely needs answering when you take into account the modest participation rates in senior school and university, not to mention the difficulty of finding teachers who work in the area.

Something needed to be done and Maths Pathway is doing its honest best to turn around the way that the subject is taught and experienced in schools, some 250 have signed up for the model and are reporting increased retention in middle school and higher numbers going on to senior maths.

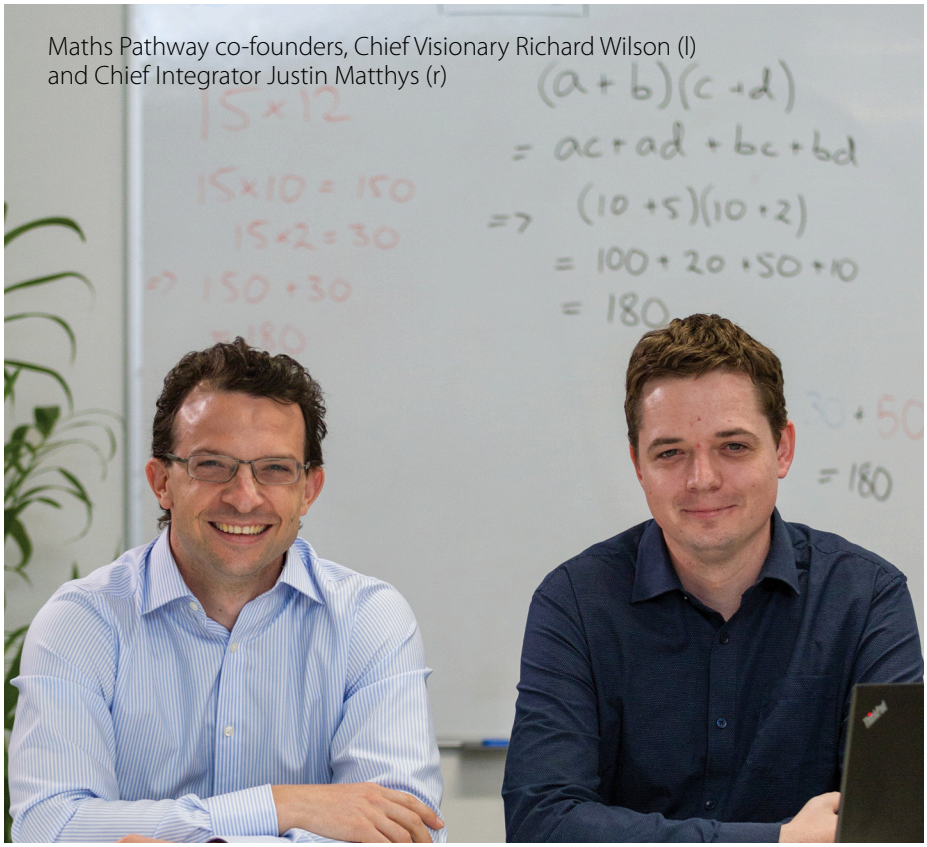
Fundamentally, the model is about a growth mindset, changing attitudes towards maths from fearfulness to positivity.

As Maths Pathway Chief Visionary and co-founder Richard Wilson puts it; "If you're faced with a whiteboard covered in calculus do you look at it and think 'there is no hope' or do you look at it and say 'I don't know what it is but I'm sure there is a set of steps I can follow to learn it'. If you have that mindset then suddenly you are unlocked."

"For so many kids and for so many adults maths is seen as a thing you have do in school, it's not a real thing, it's not something that has relevance on the outside but actually the world is full of numbers, we run on numbers, we run on patterns.

"Often when kids leave school they do it without knowing that maths is beautiful and has value, meaning and interest, our mission is to make sure the next generation doesn't have that problem," Wilson says.

Focussing on Year 5 to Year 10, maths is taught by leveraging technology, classroom best-practice and professional learning to enable teachers to target each student's point of need.



Maths Pathway co-founders, Chief Visionary Richard Wilson (l) and Chief Integrator Justin Matthys (r)

The model works on a fortnightly schedule, students complete a diagnostic test to determine what they know and don't know, then complete a series of targeted small group lessons with the teacher and some whole class rich tasks and then undertake individual learning. At the end of the fortnight there is a checkpoint assessment and time for feedback to identify what students know and what they need to do next.

"You take that information into your next fortnight of learning. It is about adaptive teaching so the activities will be slightly different and what the teachers do will be unique to their context, it all works within this unique adaptive system.

"We're hyper personalised in the way that we target what each student needs to learn," Wilson says.

All of this is underpinned by the software which was purpose written for Maths Pathway. Wilson describes the Maths Pathway software as a shared platform designed by the founders (Chief Integrator Justin Matthys a physicist originally and part of the team that discovered the Higgs Boson is the other founder) when they were both teachers. It collects and holds data, it collects learning activities and works in support of the holistic learning model, growing and changing with the model itself.

Wilson is a firm believer that every student can do maths if given the right kind of support.

He says; "It's not so much about maximising potential as increasing potential, a lot of kids don't think that they're good at maths and we actually know that everyone can manage. It doesn't matter if you're high income, low income, whether you're a boy or a girl, all our kids do fantastically, it's about meeting them where they're at.

"Mindset is huge in maths, as soon as a kid thinks they can't do maths then they probably can't, and the flipside is true, as soon as they think 'I can do this' they can."

The model is under constant improvement, using data to build upon what has been proven to work.

"One of our biggest underlying principles is that it is not a static model, we learn as a community of teachers and educators how to best teach various parts of the curriculum, how to best teach key concepts and that learning improves over time.

"Our approach is to deploy best practice at any one moment and make sure that we're working with our teachers to update that. The components evolve and the content evolves.

"There are a couple of really important elements to make that happen, we need to know where our students are at, what do they need to know next and that is informed by the curriculum and also by the specific student.

"Any teacher will tell you that two kids sitting next to each other in class can have very different learning. So we operate from the basis that you have to be very responsive to what students themselves need.

"Teachers use the data to collate small groups of students with very specific profiles. It looks a lot like traditional teaching, just a lot more targeted."

Another key part of the model is rich learning; deeply engaging, authentic real world investigations which students undertake. Rich learning promotes ways of working and thinking mathematically, which are important to encourage understanding and student enjoyment.

"I think every maths teacher is engaged and loves it but often they are constrained by the curriculum and the reporting requirements. Most teachers would love to do more of these kinds of activities and don't always have to time or the space in their schools."

"We don't have a teacher attitude problem it's more of constrained system problem, for such a long time the system has been set up as a one size fits all approach.

"If the teacher is required to teach every kid in the class the same thing you're really hamstringing the teacher be able to bring in all this other exciting stuff. Because you are limited to racing through curriculum dot points you don't have the opportunity to go through what 99% of teachers know and love which is actual maths. For many teachers the reality is super frustrating," Wilson says.

In the 250 schools where Maths Pathway is being used, encompassing most states and territories and demographics, there have been varying experiences but Wilson says that, overall, it is that essential shift in mindset which is taking place.

"If you give students opportunity to have success they respond really, really well. We are seeing far more enrolments in Year 11 and 12 maths which means two things: they believe they have the capability and they have the mindset to say 'Hey I'm going to choose maths'.

"Across every sector we're seeing growth in the amount and depth of maths that kids learn, roughly double what they are doing in traditional classrooms," Wilson says.