Model Summary

dandolopartners

Remote Learning Delivery

Using video conference technology, experienced maths teachers can reach students that do not have access to local maths experts. Video conference technology can also be used to group students from multiple schools in virtual classes to receive maths teaching.

Which challenges does the model address?

- **Teacher capability and confidence** – Many schools (especially in regional and remote Australia) are experiencing a shortage of maths teachers. This applies both in primary schools where many teachers with low-confidence in maths are teaching the subject and in secondary schools where out-of-field teachers with limited mathematics training and experience are frequently assigned by school leadership to teach the subject. While taking steps to overcome this teacher shortage by training and employing more confident and specialist maths teachers in schools is the ultimate objective, progress on this challenge is potentially attainable via initiatives which bring maths teachers to schools where they are in short supply by leveraging technology.

- **Differentiation** – It can be challenging for teachers to effectively meet the needs of small cohorts in their maths classes who are high-achieving students or experiencing acute learning challenges. This model allows these cohorts of students to access specialist maths teachers to address their specific needs and form virtual classes with students at a similar level at other schools.

Target Groups

The most common cohorts of students targeted for this model are:

- Late Primary and Secondary students without access to specialist maths teachers at their local school for extension in the earlier years and for advanced maths subjects in later years.
- Students with a learning style that is better suited to online delivery of maths.
- Students with arts or sports careers, which means online delivery of maths is more practical and accessible.

How the model works

Remote delivery is currently used in virtual or distance education schools and has been for many years. Typically, remote learning delivery involves the use of a video conferencing software product such as Zoom, Teams or Google Meets which allows teachers to:

- Deliver **one-to-many content and instruction** to a **class** of students who may be in one location or several.
- Deliver **one-to-one instruction** to **individual students** to support their learning, provide feedback on assessments, determine and address misconceptions.
- Facilitate **student collaboration** in pairs or in small groups to work on a shared problem or project and to assist one another's learning by demonstrating tasks and sharing information.

The model also uses a learning management system to host and distribute teaching content, class activities and assessment tasks. These products also allow teachers and students to communicate with one another using chat functions and allows teachers to share marking with students. The model may also require a teacher aid on the student end to support the online learning or ensure administrative management.

Success factors

- It is easier for maths teachers to deliver remote classes if their students are using the same hardware and software package.
- Teachers need a high degree of confidence and training in teaching online.
- Teachers must communicate consistently with students to ensure that students are completing tasks and remain engaged throughout the class.
- Brain breaks at least every 50 minutes are essential as students can become distracted in online classes.
- Where possible, it is important to provide opportunities for students and teachers to periodically meet face-to-face to improve student engagement, peer relationships and teachers' understanding of student context.

Caution factors

- Remotely delivered maths teaching is very different to traditional classroom teaching and teachers must adapt their style, rather than try to duplicate traditional face-to-face teaching.
- On-site education support staff may be required to assist remotely located maths teacher for primary school year levels or cohorts of less engaged students.
- Under preparation can be particularly detrimental in remotely delivered maths classes as the risk of student disengagement is often higher due to the natural limitations of video conferencing.

We heard that students and teachers in a remote delivered maths classroom need:

- Reliable high-speed internet connections.
- Ideally two screens – one for administration and task completion, the other for attending video classroom or breakout groups.
- Access to a mix of technology tools, including learning management systems, fully-featured maths teaching and learning platforms, and various other utilities including graphing and simulation tools.

Cost

We heard that well executed remote delivery by specialist maths teachers with reliable internet connection and a good mix of software tools can achieve high-quality learning outcomes throughout the high school year levels, and for extension students at years 5-6 in primary schools. The precise cost depends on the specific mix of hardware and software deployed, the class size and the staffing model. It is generally slightly more expensive to deliver because class sizes tend to be smaller with a recommendation of no more than 15 students per remote teacher.