



Riding the Wave of COVID-19: The afterMATH

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In this paper, we explored New Zealand secondary mathematics teachers' perspectives of teaching and learning during the COVID-19 pandemic of 2020–2023. There is already a large body of research that explored this period. We add to this research because we explored teachers' perspectives three years later. Through recalling the experience of an event, later reflection helps to evaluate the situation with further self-awareness and critical analysis.

The unique nature of mathematics means students need opportunities for discussion, and opportunities to seek help from others. An effective learning environment and positive relationships within the classroom community are therefore important as well as the co-construction of classroom social norms and socio-mathematical norms specific to the mathematical activity. Effective mathematics teaching needs to include the provision of strong explanations and a range of strategies to support students' learning. Also, because of the cumulative nature of mathematics, it is particularly difficult to catch up for students who have disengaged or are absent. We hypothesised that these characteristics meant the online teaching environment necessitated by the COVID-19 pandemic, and the resulting restrictions when students came back to school, would have been particularly difficult for mathematics teaching and learning.

Informed by narrative inquiry methodology, we conducted interviews where the mathematics teachers were asked about their teaching during the enforced COVID-19 lockdown, and their perspectives on how the pandemic impacted their mathematics teaching and their students' learning. The data were ordered into a chronological narrative, which provided the context for the specific focus on how teachers supported their students' mathematical learning and their perspectives on students' engagement and participation.

After the initial scramble to prepare for online teaching, the teachers adapted their programmes. Their students did not have equal access to devices or consistent internet connections and, in general, were not receiving the usual mathematical content. Returning to face-to-face teaching after the lockdown was stressful for students and teachers due to a combination of unprecedented complexities, in particular, the COVID-19 restrictions such as physical distancing and mask-wearing. Furthermore, absences were prolific.

The challenges caused by the pandemic serve to accent the importance of the essential elements of mathematics teaching. The teachers in our research described the ways they were limited in their ability to deliver mathematics effectively during that period. Their relationships with their students were affected, as was the co-construction of the learning environment, their ability to provide explanations, and their support of the students' learning because of not being able to be side-by-side with them. Teachers also described how their students' engagement and participation in mathematics were negatively impacted.

From the perspective of these secondary mathematics teachers three years on from the pandemic, this paper highlights that there is ongoing impact on teaching and learning in mathematics. This has implications for the mathematical community and, in particular, for the teachers and the cohort of students who were affected at the time.