One Teacher's Unique Experience Teaching Online During the Covid-19 Pandemic

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This paper explores the reflections of a primary teacher, Lisa, who began teaching her class just as Victoria entered a state-wide lockdown, prompting a shift to Emergency Remote Teaching. In professional interviews, Lisa evaluated the strategies she used during online instruction. She concluded that live sessions, interactive activities, small group workshops, and hands-on problem-solving tasks enhanced student participation and fostered more positive attitudes toward mathematics. Her experiences underscored the importance of building strong interpersonal relationships and adopting student-centred approaches to mathematics teaching.

In 2020, Victoria experienced its first lockdown due to the Covid-19 pandemic, leading to the closure of schools across Victoria. This lockdown prompted a sudden shift from face-to-face teaching to online learning, commonly referred to as Emergency Remote Teaching (ERT). ERT is defined as a temporary transition from standard teaching methods to online instruction in response to an urgent and crisis-driven situation (Hodges et al., 2020). ERT was a unique situation for everyone involved. While most teachers continued working with students they had previously taught in face-to-face classrooms, this article shares the story of one teacher who had a different experience teaching her students during ERT.

Lisa (pseudonym) had a unique experience teaching online, as she had not previously taught her students. Her school employed Lisa to teach her Year 5/6 class from the start of Term 2 in 2020, which coincided with the first day of Victoria's first lockdown. Although she had not taught the students before, she had spent an hour in their classroom at the end of Term 1, meeting them alongside their previous teacher. During this brief visit, Lisa noticed negative attitudes towards mathematics among the students. Lisa explained her school used Google Classroom, and Google Meets as their platforms during ERT. Online learning for her included live teaching, pre-made and teacher-created videos, and small group work.

Given her unique situation, Lisa prioritised student engagement. While other teachers could draw on their prior knowledge of their students to create an engaging environment online (Green, 2024), Lisa had limited information about her class. During an online professional interview, she described how she prioritised building relationships and getting to know her students to enhance their engagement and support them in developing a more positive mindset towards mathematics.

Lisa shared stories and anecdotes highlighting strategies she employed to build relationships and provide positive mathematical experiences. This article aims to support all mathematics teachers of young children (not just those teaching in online environments) by demonstrating how Lisa's focus on building strong relationships with her students first enabled her to implement strategies that encouraged more positive attitudes towards mathematics. Her story highlights that, regardless of how deeply ingrained negative attitudes may be, they can be transformed.

Background Literature

Student engagement has long been a focus of research. Over the years there have been many different definitions of engagement. For example, Bond et al. (2020, p. 3) described engagement as "the energy and effort that students employ within their learning community, observable via

(2025). In S. M. Patahuddin, L. Gaunt, D. Harris & K. Tripet (Eds.), *Unlocking minds in mathematics education. Proceedings of the 47th annual conference of the Mathematics Education Research Group of Australasia* (pp. 189–196). Canberra: MERGA.

any number of behavioural, cognitive, or affective indicators across a continuum." Pianta et al. (2012) reported on links between interactions and engagement in the classroom, noting that implementing strategies to increase the quality of relationships between teachers and students can increase student engagement and, in turn, their learning and development.

The loss of student-teacher and student-student interactions has been identified as one of the biggest challenges in teaching online (Ferri et al., 2020; Kalogeropoulos et al., 2021; Russo et al., 2021). With fewer opportunities for connection, teachers faced the task of actively creating meaningful interactions to foster engagement. Ferri et al. (2020) highlighted a clear link between interaction and student engagement, noting that the absence of social connection often led to disengagement. The goal was to maintain students' active participation in mathematics by encouraging collaboration and interaction to support successful online learning.

Engagement was a focus for teachers as they made the transition into online learning. Given this was a new experience for all, it was unknown how students would adapt to this new way of learning. Since the Covid-19 pandemic, several studies have been published that have brought attention to how students engaged in online learning during ERT (e.g. Aguilar et al., 2022; Bissessar, 2021; Khlaif et al., 2021). Khlaif et al. (2021) highlighted the impact student engagement has on students' learning during ERT. Factors such as teacher presence, quality of content, student attitudes, and home learning environments affected students' engagement online. These challenges were further amplified for a teacher with no prior knowledge of their students, making engaging students online even more complex.

Aguilar et al. (2022) and Kalogeropoulos et al. (2021) recommended the use of live, synchronous instruction to enhance student engagement and foster a sense of connectedness between teachers and peers in online learning environments. Synchronous sessions provided more immediate opportunities for interaction, allowing teachers to respond to students in real time and enabling peer-to-peer communication, both of which were limited during ERT. Aguilar et al. (2022) found a strong correlation between live instruction and increased student engagement in online settings. However, concerns about student engagement in mathematics extend beyond the context of ERT. A substantial body of research has explored the persistent challenges of engaging students in mathematics (Attard, 2012; Jansen, 2020; Skilling et al., 2021). These studies examine various dimensions of engagement, behavioural, emotional, and cognitive, and often link them to students' achievement levels. Despite these differences, a consistent message across the literature is the critical need to support and promote meaningful mathematics engagement for all students.

Negative attitudes toward mathematics can make it more challenging to engage students in the subject. Rojas et al. (2018) defined student attitudes toward mathematics as an individual's overall interest, curiosity, and contentment with the subject, focusing on emotional rather than cognitive dimensions. These emotional responses were particularly strained during ERT, when students' perceptions of learning were generally poor. Schmitt-Cerna et al. (2024) found that students reported low satisfaction with their online learning experiences during ERT, alongside similarly low attitudes toward mathematics. Such negative attitudes are not new. Not all students enjoy learning mathematics, and the experience of ERT likely exacerbated this for many. Reduced daily access to teacher support and limited opportunities for peer collaboration, both vital for engagement and confidence, may have deepened feelings of disconnection and frustration, especially for students who already struggled with the subject.

Research consistently shows that negative emotions toward mathematics tend to increase over the school years. By the end of primary school, more than half of students may present at-risk profiles in their relationship with mathematics (Hanin & Gay, 2023; Russo et al., 2023). While the timing and causes of this shift remain unclear (Hanin & Gay, 2023), Boaler et al. (2023) found that negative feelings toward mathematics are common. For some students, these

feelings can escalate into maths anxiety, which may lead to avoidance, reduced confidence, and diminished performance in the subject (Suárez-Pellicioni et al., 2016). To address these issues, teachers are encouraged to adopt a range of strategies that foster positive mathematical experiences and promote sustained engagement. These include connecting learning to students' interests, encouraging autonomy, providing effective feedback, linking mathematics to real-world contexts, and building strong, trusting relationships (Boaler et al., 2023; Skilling, 2014).

The Study

This paper is drawn from my doctoral study (Green, 2024) which investigated teachers' reflections on noticing as a key action of informal assessment in the primary mathematics classroom. The aim of the study was to identify what teachers notice that is meaningful for mathematical learning in different contexts and how the information gained through these moments can be used to enhance student learning. The study adopted a qualitative approach grounded in an interpretivist epistemological framework (Walter, 2019), emphasising the understanding of individuals' subjective experiences and the meanings they construct within their social contexts. The interpretivist lens provided depth and context, and highlighted the uniqueness of individual perspectives, aiming to uncover the complexities of human behaviour and social interactions.

Early in 2020, Victoria experienced its first lockdown due to the Covid-19 pandemic, which led to the introduction of online learning, commonly referred to as Emergency Remote Teaching (ERT). The eight teachers in the study participated in two semi-structured interviews via Zoom; the first in September, while teachers and students were still involved in ERT during Victoria's second lockdown of 2020, and the second in November, a few weeks after teachers and students had returned to the face-to-face classroom. These two interviews allowed for exploration and comparison of the two different learning environments.

Each interview was guided by four main questions, prompting teachers to recall recent mathematics lessons, highlight particular moments, describe any changes they had made, and share observations of specific students. The interviews were recorded, transcribed, and then coded using NVivo software. The aim was to identify instances where participants shared a response to a noticed moment. Thematic analysis was conducted to identify recurring themes and patterns in the data. Data was analysed using two noticing frameworks: the *Learning to Notice* framework (Van Es and Sherin, 2002) and the *Professional Noticing of Children's Mathematical Thinking* (Jacobs et al., 2010), as well as utilising a framework for engagement (Attard, 2012).

Three key themes emerged from the data: Adaptations to mathematical instruction—Teacher responsiveness, Student participation and dispositions, and Communication with families. This article focuses specifically on the theme of Student participation and dispositions, examining it across two contexts: the online environment during Emergency Remote Teaching (ERT) and the face-to-face classroom after ERT. These contexts are presented in this sequence, reflecting the order in which data were collected. Since no data were gathered prior to ERT, it is unclear whether the face-to-face data collected after ERT accurately represents pre-ERT classroom experiences. While all participants were teaching online during the first interview, Lisa was the only participant who had not met previously taught their students.

Lisa

This paper focuses on one participant from my study, Lisa, an experienced primary teacher with over fifteen years in the profession. Lisa began teaching her Year 5/6 class at the start of Term 2, which coincided with the onset of Victoria's first lockdown. As a result, Lisa entered ERT without having previously met her students, a situation that posed unique challenges. At the time, she was working at a government primary school in South-East Melbourne. The data

presented here are drawn from two interviews with Lisa. In the first, she reflected on her experiences during ERT, describing the strategies she used to get to know her students and engage them in mathematics, supported by illustrative examples. In the second interview, conducted after the return to face-to-face learning, Lisa discussed her continued focus on student engagement and how insights gained during ERT informed her classroom practice.

Finding and Discussion

Interview 1

Lisa's first interview took place late September in 2020, by which time Victoria had been in lockdown for over twelve weeks. The interview was conducted online via Zoom and focused on four key questions related to recent mathematics lessons and Lisa's observations of her students during those lessons. At the beginning of the first interview, Lisa discussed the challenges of teaching her students in an online setting, particularly as she had had not previously taught them in a face-to-face classroom setting:

> It's hard, because if you don't - you don't know their situations, do you? Some are saying, we're doing it, but it's not submitted and what do you do, you know… I don't know these kids. I don't know how to push them…. I've picked up on it, obviously, who's high and low and all that - But, to begin with it's harder to give feedback because I don't know if that's your best… I don't know if you should be doing the extension maths stuff or, yeah, I don't know if you are a better speller than that or whatever-you know? So, that kind of stuff was hard. The feedback was hard. But I do know where they sit now.

Lisa's uncertainty about whether the work submitted represents a student's best effort or aligns with their actual skill level highlights the difficulty of assessing students authentically without the context provided by face-to-face interactions. She was cautious about pushing too hard, as it could risk further disengagement from her students. This quote ultimately highlights the critical role of relationships and context in effective teaching and assessment, reinforcing the importance of connection and understanding in fostering student growth and success, particularly in challenging environments like ERT. Despite these challenges, Lisa commented in her first interview that she felt like she had really gotten to know her students. She stated that she had gotten to know them as individuals, learning about their families, their interests and who their friends are.

Lisa had worked hard at the beginning, wanting to get to know her students and build strong relationships with each one. She reported implementing specific strategies, including running fun sessions every day such as social meets, games and "minute to win it" challenges, activities designed to bring joy, reduce stress, and foster a sense of community. Ferri et al., (2020) reported that implementing such strategies can enhance student engagement by promoting emotional connection, increasing motivation, and helping students feel seen and valued. Lisa noted that the online environment required minimal behaviour management beyond reminders like, "Don't write that in the chat box", allowing her to focus on interacting meaningfully with her students and fostering connections. Lisa's primary focus during this time was less on teaching specific content and more on establishing positive relationships.

Lisa had met the students for just one hour before officially starting with them. During this brief interaction, she learned that they exhibited particularly negative feelings toward mathematics. After asking Lisa what her thoughts were on the subject, they stated, "Oh, we hate maths". Knowing these students had a negative mindset towards mathematics, Lisa wanted to change that. She described recognising the importance of building strong, trusting relationships with her students first (Skilling, 2014). One example that Lisa shared was a student she believed was more capable than his report had stated. Lisa met with the student and let him know that she could see that the mathematics tasks were relatively easy for him. She invited him to a

mathematics extension group she was running, afterwards he came along to every session. Lisa commented:

> Every time we do the maths extension group; I leave them with an additional task. So, we do a couple of activities and then I say, right, well, if you want an extension of what we just did, here it is. If you want to go ahead and try it and try and find the rest of the answer at home. And every time, without fail, he's done it. And so, I've dropped off a certificate at his house every week.

Lisa explained that she wanted to recognise and reward his work.

Once Lisa felt those close relationships were established, she focused on building the students' curiosity and interest, showing the students how enjoyable mathematics could be. Lisa shared examples of activities she implemented, including games, problem-solving tasks and hands-on lessons such as when teaching angles. One example was an inquiry project she implemented over two weeks where the students designed and constructed a box to hold two pyramids. Lisa had created a story to frame the task, explaining that the box was to send a package to their previous teacher, who was on holiday. She commented that it was well received, and the students really enjoyed it. Russo et al. (2023) noted that interesting tasks can be engaging for students and can lead to them seeing mathematics as useful and important.

When asked to share a highlight from an online mathematics lesson, Lisa spoke about their Google meets. Every day at 11:30, she offered a "maths meet" or "drop-in session" where students could work on their tasks together and receive help if needed. This highly successful daily meeting of students echoed the findings of Aguilar et al. (2022) who found a strong correlation between live instruction and student engagement. Although initially, attendance was sparse, over time, more and more students began to join. Her goal was to create a space where students could feel comfortable participating, could enjoy the experience, and not perceive it as extra work. This links to the work of Boaler et al. (2023), who stated that small group work can lead to deeper engagement and more positive experiences with mathematics.

When asked if her strategies were effective, Lisa expressed confidence that they were and reflected on an email she had received from a parent regarding the small group sessions:

> One of the mums sent me a message just going, you know, he loves – he can't wait for his 11:30 maths meet... he's actually teaching his brother how to do fractions, who's in Year 7, and he's in Grade 5… he enjoys the maths now.

Another story Lisa shared was regarding Lucy, who she mentioned was probably the most negative of all the students when it came to mathematics:

> We've got a little girl, Lucy, hates maths. That was the first thing she told me. She was really reluctant to come along to the group sessions… really didn't understand that asking for help was a good thing. So, she came and… it was interesting to watch her become more confident of herself, just through coming, and being open to, well, I don't know, I'm going to come to the group…and then she was one of the ones who would actually share her ideas the quickest.

Lucy's initial reluctance and dislike of mathematics illustrate how negative attitudes toward a subject can create barriers to participation and learning. By building a connection through small group sessions and providing a supportive environment, Lisa was able to engage Lucy in mathematics, cultivate a sense of belonging, and nurture her growing confidence.

Lisa also spoke about a student named Felix. The previous teacher had informed her that he was quite strong in mathematics, so she was surprised when his parents mentioned he was struggling with the work at home. Felix began attending the 11:30 "maths meets", and it did not take long for him to get back on track and regain his confidence. Even after overcoming his initial struggles, Felix continued to join these sessions:

> He would just jump on at 11:30 every day and go… 'I've done it today', or 'It was so easy today', you know, or 'I've only got this little bit to go'. And he would share what he's done, every day. And then I'd go, 'Oh, that's awesome. Well, do you want to hang around and hear it again or are you,

> you alright to go?' And he'd go, 'No, I'm going but I just wanted to tell you that I've done it'. You know, so, he was checking in every day, just proud of himself that he'd done it.

Although Felix no longer required the support, he still wanted to connect in with Lisa and was excited to tell her about his progress. By implementing these strategies, Lisa shared that she was able to get to know her students individually and build strong relationships with them while teaching online during ERT. Lisa went on to say:

> It will be interesting…. at least I know now who to pull down for a small group… straight away I know I've got two boys in there who are Year 7 plus. They're in Grade 5. I do know who's pretty confident in it [mathematics] and I know who isn't. I will definitely be able to take what I've gained from remote [learning], back in there [face-to-face classroom]. It's not like starting over- I'll know straight away who to look out for.

She reflected on what she had learned about her students and how this information could be applied in the face-to-face classroom.

Interview 2

Lisa's second interview took place in November 2020, several weeks after schools in Victoria had returned to face-to-face teaching. Like the first, this interview was conducted online via Zoom and followed a similar structure, with four main guiding questions. Lisa reflected that her efforts to connect with students during Emergency Remote Teaching had been successful, noting that the transition back to the classroom was eased by the fact that she already felt she knew her students well:

> I felt like I knew them coming back and yeah had that connection with them, so that all felt really good. I guess it was weird the first couple of weeks seeing who their friends were because they told me, but it was hard for me to connect the friends, and so then seeing who are chatty with and who they get along with and yeah seeing them in a social way was a bit different.

She continued to prioritise engagement, considering the students' previous mindset towards mathematics and the extended period of time learning from home. Lisa was determined to show her students how enjoyable mathematics could be:

> I have been trying to make maths fun because they're all so negative about maths. One girl who is the most negative, Lucy, I said- 'you are my gauge, and every lesson I am going to ask you' and she is still really reluctant to give me much even though I know that it's better that she is liking it more. She will give me a bit, but she doesn't want to get too excited, but others are saying 'Oh maths is fun. I didn't realise maths could be like this.' So that's been really good.

Lisa shared a few specific examples from enjoyable mathematics lessons she had implemented in the face-to-face classroom:

> …the Lego shop they loved that… that was a massive hit early in the term and then like you know volume and capacity – took them out in the sand pit – always a fun thing to do. Just trying to make it – show them that it can be interesting.

Lisa continued looking for ways to include more hands-on lessons, problem-solving tasks and games to engage the students (Russo et al., 2023). Lisa used the game "Buzz" as an example where students stand in a circle and go around the circle saying numbers in a counting pattern. After introducing this game to the students, they would ask to play it every day. When asked if she felt she was winning the students over, Lisa responded: "Getting there, they are at least commenting 'That wasn't so hard' or 'That was fun'… yeah there's a bit of a way to go. Obviously, they have had this [negative] mindset for a long time."

Although it took some time to get up and running, Lisa continued to run the extension group she initiated during ERT in the face-to-face classroom. The students thoroughly enjoyed these sessions:

> They sit out on this table together and they work through their own, the rest of the lesson and then myself or the integration aid will touch base with them at the end, and they love it. They are just like 'Oh we love maths so much now'. I said to Dean, 'Have you learnt something new?' I said, 'Was

> there something today that you didn't know already?' and he is like 'Yep' 'Oh are you sure? Because I don't know if there is much that you don't know' and 'He's like yep I know' – he's like 'Yep there was something' and they have just been thriving off it.

By offering tailored opportunities that both challenge and excite, Lisa successfully engaged the students in meaningful mathematics learning (Boaler et al., 2023). This approach fostered a genuine love for the subject, with students thriving as they felt challenged, supported, and valued in their progress. Establishing a positive and supportive learning environment was key to transforming their attitudes toward mathematics.

Feedback can assist in developing connections between teachers and students and lead to enhanced motivation. Lisa found it important to debrief with the group after the lesson. She shared a story from a conversation after one particular lesson:

> Adrian was like we spent 10 minutes on one question talking about it, and I said, 'You guys were on task talking for 10 minutes about one question?' and he was like 'Yes'. I said 'That's amazing. I am so happy to hear that'. I said, 'Really? Were you guys on task talking about that for 10 minutes?' – 'Yes, because we were all different on it and we had to get like our ideas out' and yeah, they just were really thriving off it and I contacted a couple of parents and said 'Look I am doing this for them' and they were like, 'Yeah we know we've heard – they come home and they are so excited about it'.

These students enjoyed their mathematics experiences so much that they went home and shared them with their families. Lisa recounted a story about one student who joined the group after overhearing a classroom conversation. Curious about the activities, he asked a peer what they were doing and eventually approached Lisa himself to ask if he could join. Lisa recalled being surprised, as this was a student who had previously done only "the bare minimum" during ERT. She was impressed by his willingness to challenge himself and his confidence in asking to join. At the end of his first lesson, she offered him feedback: "That was really great that you wanted to do that. You challenged yourself, stayed focused, and stuck with it without getting distracted." This moment highlighted his growth, showing his willingness to step outside his comfort zone and take ownership of his learning. Lisa had created a safe and supportive environment where he felt comfortable enough to seek out a new challenge.

Conclusion

Lisa's experience highlights the critical importance of building strong relationships as a foundation for student engagement, particularly in challenging and unfamiliar contexts like ERT. Despite not having met her students prior to lockdown, Lisa prioritised connection and trust, using live interaction, engaging activities, and personalised support to shift her students' negative attitudes towards mathematics. Her success demonstrates that meaningful engagement is possible even in online settings when teachers are responsive, reflective, and committed to understanding each student as both a learner and an individual.

Positive teacher–student relationships are central to fostering engagement and learning, and this is especially critical in mathematics, where student attitudes and self-beliefs can be fragile (Boaler, 2016; Attard, 2011). Lisa's story offers a powerful reminder that fostering positive dispositions towards mathematics begins with seeing and valuing students, something that holds true in both online and face-to-face settings. While her experience is just one example and cannot represent all contexts or student experiences, it does illustrate the potential impact of relational teaching. Every interaction, whether virtual or in person, is an opportunity to notice, connect, and nurture a love for learning mathematics.

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