

# Pre-teaching or a fresh choice each day

## *Teacher data literacy in action*

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### KEY POINTS

- Moving past a focus on remediation can set students up for success in regular classroom lessons through strategies like pre-teaching and “fresh choice”.
- Pre-teaching (or “front footing”) involves teaching concepts to small, targeted groups of students before these concepts are introduced to the whole class.
- The fresh-choice approach requires students to self-assess their understanding of ideas through a pre-test and opt into small workshops based on their perceived needs.
- These time-efficient approaches enhance student agency: front footing helps build student confidence to contribute as “experts” in class and the fresh-choice approach supports their informed decision making.
- These “short and sharp” approaches are practical to implement and show potential for improving mathematics understanding, confidence, and social dynamics.

Data literacy enables teachers to use information collected about students and their learning to take data-informed instructional action. This article outlines two approaches developed by teachers to provide teaching targeted to the immediate needs of specific students that moved beyond “gap-filling”. The pre-teaching and “fresh choice” approaches led to increased student confidence and mathematics understanding. The approaches supported the development of student agency and provided teachers with opportunities to affirm and assign competence to learners. Students benefited by being more willing and able to contribute to classroom learning of their peers. Teachers valued positive feedback from students and family members.

## Introduction

All teachers face the challenge of how to respond to students who clearly have “gaps” in their knowledge and understanding in a dynamic and responsive way within a busy classroom environment. This article outlines two approaches developed by teachers who were part of the Teaching and Learning Research Initiative (TLRI) project: *Zooming out and Zooming in on Student Data: Developing Teacher Data Literacy to Enhance Teaching and Learning* (Edwards et al., 2022). The approaches are “front footing” (building from pre-teaching) and a “fresh choice every day”. Front footing is consistent with the approaches known as pre-teaching and front loading but the front-footing process, as the teachers conceptualised it, deliberately aimed to position students to proactively and confidently contribute to whole-class learning. The second approach, based on a teacher’s description of it, is the “fresh choice every day” approach. For this approach, students chose their working group for mathematics day by day based on their success in a short quiz on the topic of the day. In both instances, research data come from meetings where teachers reported on their classroom practice. In what follows, we outline and illustrate how teachers (including Mona, Kiri, Natalie, Rosa, and others) drew on their analysis and use of data to provide teaching targeted to the immediate needs of specific students.

## Pre-teaching as “front footing”

Pre-teaching, or what the “Zooming out and Zooming in” teachers referred to as front footing, involves pre-teaching concepts, usually one key concept, to a small, selected group of students before they encounter the same concept in a whole-class lesson, the same or

next day. To do this, the teachers analysed relevant questions from their students’ Progressive Achievement Tests (PATs) (<https://www.nzcer.org.nz/assessments/pats>) responses earlier in the year. PATs are multiple-choice question sets that are available to schools. Each question includes notes on the reasoning behind the different answers for each item, including research-based alternative conceptions. Teachers used these to design short, focused teaching sessions. We introduce the processes teachers used through Mona’s reflections on her practice.

Mona taught a Year 3 class. She examined her class PAT data to identify students who were “flatlining”—that is, not developing expected understanding of an idea in the upcoming topic—and invited them to be part of a pre-teaching group. She described her process as follows:

We pick up these students because they are flatlining [in their achievement] ... I feel that the targeted lessons with these children have worked ... but it is just a small group. What we’re doing in our school at the moment is withdrawing students, specific targeted groups of students based on data. Most of it’s from the PATs. They are very small, targeted interventions. We call them ‘fast-track groups’. Short and sharp. We are preloading before we do the topic. So, if it’s fractions later on, we’re doing some fractional work now to make sure or give them that little bit of confidence. (Mona)

As Mona notes, fast-track small-group instruction was a school-wide initiative with “groups that are fluid and first thing in the morning”. She described the purpose and outcome of working with small groups of students in this way as pre-loading: “We’ve just pre-loaded them. We’re hoping they’ve got a bit of a double dose.” From this quote we can see Mona considers the fast-track group work had reduced “the fear of not getting it right, or not knowing, or not

wanting to put their hand up”. Looking across Mona’s comments, we noted she identified both increased student confidence and knowledge as valued outcomes.

Kiri, from another school, affirmed Mona’s noticing that students who had been in the fast-track groups were more confident about sharing their ideas, when she explained student responses in her class:

Students come back into class and show what they have learned, they get to be the expert, further building their confidence by teaching other kids how to play that game, and teacher can see. (Kiri)

For Mona, it was significant that parents had reported that their children had appreciated and benefited from being part of the fast-track groups. She had interviewed the students she had worked with in this way a year later and had been surprised and pleased that they remembered working with her in a fast-track group. Students had commented that in this setting they did not need to worry about having the right answer:

They liked fast-track maths. They liked the small groups; they liked the fact that they didn’t have to get nervous about an answer ... The biggest thing for me is those children do not have the fear of not getting it right or the fear of not knowing, not wanting to put your hand up or not asking. I want to break those barriers down. (Mona)

Natalie, who worked with Years 7 and 8 students, emphasised that the focus of pre-teaching was “not on filling gaps. Stop filling gaps and start front loading.” She positioned this front loading/pre-teaching to her students in the following way:

Hey, guess what? In a day’s time we’re gonna be doing this so I thought I’d give you a heads up and let’s get on to it. And let’s talk about some of the vocabulary ... so that when you hear me talk about it tomorrow you will not need to worry about it. You’ll be like, ‘I’m just following it ... I can do this. I’ve heard of this before. I’ve seen it and it’s not so scary right now.’ (Natalie)

We can see that Natalie does not make a big deal about students being part of pre-teaching but rather positions it as an opportunity for a “heads up” about any vocabulary/new ideas so that these would not be “so scary”.

While all the teachers reported positive experiences with pre-teaching, they were also concerned about the extent to which this approach was sustainable. If pre-teaching was not a school-wide initiative, teachers were concerned that taking students out to work on their mathematics limited their access to other learning. There was a sense they were “robbing Peter to pay Paul” because students who struggled in mathematics also tended to need support in reading and writing.

## A fresh choice every day

The notion of “a fresh choice every day” arose as part of teacher exploration of data-informed approaches to whole-class teaching. In this case, rather than relying only on formal assessment data such as that from PATs, teachers used short pre-tests to gauge students’ understanding of ideas that were the focus of a lesson. Students used these to self-assess whether or not they understood the target ideas. If students assessed that they did not understand, they could opt to attend a short workshop on the ideas with the teacher. A benefit of this approach was that workshop group composition varied from day to day thereby avoiding the stigma attached to stable ability grouping for particular students:

I’ve just been carrying on with the quick pre-test, a few questions and then students choosing ‘Do I know? Do I need to work on this? Or, do I think I know?’ And in reality often the groups do tend to come out much the same in those who know and those who don’t know but it’s like a fresh choice [for the students] every day. And, you know, most of them are pretty good, really going ‘No, I don’t know this, I’m not sure how to do this.’ (Liana)

Teachers valued the dynamic nature of the groups and that choices were largely made by the children, with some “gentle” teacher guidance if the students were deemed to be choosing unwisely. In some instances, students joined a workshop and then recognised that they didn’t need additional support. When this happened, they could choose to leave the workshop:

I had a kid yesterday who I thought, ‘How is she in that group, how has she put herself in that group?’ But then she came up to me and said, ‘I didn’t need a lot of help from [them] really, but I do understand what I’m doing now.’ That was totally her decision. (Rosa)

Teachers appreciated that they needed to support students to develop the capacity to make informed choices. They viewed this as similar to helping students to make wise decisions about who to work with:

And I think also kids understanding the difference. You find someone to work with not to piggyback off and hang out with. I always say to the kids you remember you’re looking for someone to work with who’s going to challenge you or you’re going to both work well together. You’re not looking for your mate for this. (Natalie)

The caveat teachers had about the fresh-choice approach was that time spent in the fresh-choice group could mean students did not always have time to work independently on the application of ideas through word problems during a mathematics lesson.

## Linking teacher practices to data-informed instructional action

The use of data to inform and guide instructional decision making has emerged as a strong policy and research focus (Lai & Schildkamp, 2016; Mandinach & Gummer, 2016) with the current Minister of Education (2024) identifying “Greater use of data: Using data and evidence to drive consistent improvement in achievement” as one of six key education priorities (<https://www.beehive.govt.nz/release/education-priorities-focused-lifting-achievement>). This idea is encompassed by the notion of teacher data literacy. Mandinach and Gummer (2016) describe this as:

Data literacy for teaching is the ability to transform information into actionable instructional knowledge and practices by collecting, analyzing, and interpreting all types of data (assessment, school climate, behavioral, snapshot, longitudinal, moment-to-moment, etc.) to help determine instructional steps. It combines an understanding of data with standards, disciplinary knowledge and practices, curricular knowledge, pedagogical content knowledge, and an understanding of how children learn. (p. 367)

The Zooming out and Zooming in on Student Data: Developing Teacher Data Literacy to Enhance Teaching and Learning TLRI study (Edwards et al., 2022) explored the idea of teacher data literacy with 13 teachers from seven primary and intermediate schools over 3 years. This study was a partnership between teachers and researchers so they could figure out how to best use the data teachers were collecting. Regular meetings meant they could define the challenges more precisely and reflect on the effectiveness of data-informed teacher actions. The TLRI teachers reached a shared definition of teacher data literacy.

Data literacy involves collecting/gathering data, analyzing and understanding it and then using this understanding to take action. It includes the knowledge needed to decide if data is worthwhile and/or valid and the ability to share information to different groups (children, other teachers, principal, Boards of Trustees etc.).

For us ‘data’ is a wide range of information including student learning conversations, perceptions, observations, and products of learning, school processes, student demographics (after Bernhardt, 2018) and includes different levels of aggregation. (Cowie et al., 2021, pp. 6/7)

Teachers were emphatic that, to be optimally enacted, effective data use needs to be part of the school culture and, as illustrated through pre-teaching and fresh choice, the focus should not be on remediation in the sense of closing “gaps” or deficits in student learning. They were interested in the impact of proactive use of data as part of planned instructional action. Their focus was on setting up students who might otherwise struggle with specific ideas

to be confident and experience success as part of routine classroom mathematics lessons.

Through classroom practice, the TLRI teachers identified many of the attributes associated with pre-teaching identified by Trundle et al. (2017) in their work with 39 Years 1–6 teachers from 17 schools in England. Specifically, pre-teaching is effective when it is conducted by students’ class teacher and on the same day as the related mathematics lesson. Trundle et al.’s teachers also identified students’ increased confidence in themselves as mathematical thinkers in terms of students’ active engagement in class discussions and increased motivation and agency in learning. Usefully, they noted that, because teachers had recent experience of interacting with particular students, they were comfortable with calling on them to share ideas given they could anticipate the student would be happy and willing to share. Trundle et al. (2017) describe that as “Assigning competence” (p. 25) or as drawing attention to a child’s thinking as something that others can learn from. Like Trundle et al., our teachers reported that parents noted positive changes in their children’s attitude towards learning, adding evidence of the value of pre-teaching.

Teacher data literacy for instructional purposes is not only about teachers using data for their own instructional action, but is also about them supporting students to make judgements about their understanding using data and acting on insights gained. Through the fresh-choice approach, teachers recognised that the value of fostering student agency in using data is part of teacher data literacy. Student agency of this kind is reliant on teacher guidance about how and on what basis students might decide to seek additional help and the ability to revise their decision.

## Concluding comments

Data-informed teacher practice is advocated within New Zealand by the Education Review Office (2017, 2019) and the current Minister of Education (<https://www.beehive.govt.nz/release/education-priorities-focused-lifting-achievement>). While data-informed instructional action makes sense in principle, the challenge for teachers comes in how to operationalise this within a busy classroom environment. The TLRI teachers identified, trialled, and researched two strategies: pre-teaching and a fresh choice every day. These strategies are not necessarily new but what distinguished them in action was the teachers’ focus on supporting student agency, albeit this meant different things in the two approaches. Pre-teaching set up students to be more confident and willing to contribute their ideas in whole-class discussions. That is, students who might

have been expected to be struggling “get to be the experts” for that moment in time. With the fresh-choice approach, students were able to decide, with some guidance, if they needed support via small-group teaching. In both instances, flexible grouping meant students were not assigned a label of always needing remediation or being “dumb”. Just as importantly, both strategies were not onerous for teachers or students—they involved “short and sharp” sessions focused on one idea or practice only.

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