

# Vignette 10 - Assessment

## SUMMARY KEYWORDS

assessment tools, procedural fluency, problem, students, learning progressions, assessment, solving, teachers, maths, looked, conceptual understanding, questions, adaptive, give, reasoning, opportunities, assess, mathematically, meaningful, terms

## SPEAKERS

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Kia ora and welcome to vignette 10, on assessment. A prerequisite for OTJ's is the statement we find in the New Zealand maths curriculum where it talks about the range of meaningful contexts. And teachers have been exploring this in terms of when we give a level or decide on the level, are we actually giving a range of meaningful contexts? Are we looking at thinking mathematically? And what sorts of problems are we looking at? So it links back to all the things we've looked at in vignettes one to nine. If we look at thinking mathematically, thinking mathematically, these processes involve the conceptual understanding and the adaptive reasoning. And we know there are a number of students who may not be at the right level in terms of procedural fluency, but they are certainly at the right level in understanding and articulating that through adaptive reasoning. And we need to get these ākongā opportunities to do that. We want them to explore and to question and to explain and to prove, and we want to make sure that we role model this in all the activities we do. We want to make sure that we select the right assessment tools that give us opportunities to find out how much of these skills and processes ākongā can actually do, and then decide where their strengths and weaknesses are, and look for opportunities to move their learning forward. In terms of solving problems, we also want to make sure that our assessment we use, uses a balance of questions. We go back to those four problem types we quickly looked at before. We know that exercises are very useful for anecdotal notes around procedural fluency. But in the terms of mathematical problem solving, we want to be eliciting evidence when students are exposed to application word problems, open ended and unfamiliar. Because these are going to be more meaningful situations for them, then we look at how they translate those into the maths language, symbols or representations. Then they will work their way looking at strategies to create a solution and check or evaluate their solution pathways. And then they're able to communicate their solutions and findings at the end.

We're giving them access to the process problem solving and we need to make sure assessment has the questions that allows them to do this. One place to go to help us with this are the actual learning progressions. So this can actually also support our own ability to assess on the run. So if we look, for example, at milestone five on multiplicative thinking, as teachers, we can look at the different questions that are meant to be exposed to students to find out if they can do this. Let's take dragon teeth. Straight away, I can see there are three dragons. Each dragon has 21 teeth, that's informed me initially around one of the sorts of questions, it also gives us student responses. From an assessment tool, we also get

some insights into what we're looking for. Because an authentic genuine assessment tool is going to have guides and annotations for teachers. We're looking for assessment tools with those and we don't just need to try and guess or estimate what sort of responses we're looking for.

If we then decide, okay, as a group of teachers, we're looking at end of level three, milestone five, we could take the first question, and we look at what's being asked, how do you do it? Why do you do it that way? There's also a second question that looks at the relay teams, and it's division, 120 divided by 40. Again, how did we do it? And why and what are we doing it that way? But to go further, there's also a question around fractions again, how did you do it? And why did you do it in that particular way? So by the time we've looked at all these is given us an understanding of these questions will get procedural fluency. They will elicit that evidence on conceptual understanding and adaptive reasoning. And yes, they are problem solving. They are application transparent problems, but they are a good form of problem solving. It would be better to complement this with a triangulation approach to assessment by having once or twice a year, a task like the NZ Maths rich learning or problem solving activities, were all ākonga have opportunities to individually have a go at an authentic problem to go alongside this. Schools are now playing in 2022 around looking at ways to balance a cycle.

By having data for learning from the rapid routines we looked at earlier, or the learning progressions from assessment on the run. Then there's data for their own records and report writing. Maybe PAT Maths can be one place schools use, looking at JAM or e-asTTle each term to give a guide and a mixture of assessment other than number. Also individual problem tasks from NZ Maths. And quite rightly, using gloss for those students where, as a teacher, we sometimes get a bit stuck deciding where they may be. So we're looking at a nice spread of assessment tools. A summary of how we can assess this is also there. Starting at the bottom here with productive disposition is another way of checking through, do our assessment tools bring all these things to life? Because if we can say that, we're giving the best opportunities to our students to explore and see these skills promoted, procedural fluency, conceptual understanding, problem solving, and adaptive reasoning.

Finally, if we can have a balanced approach by using those tools, want NZ Maths to help us assess, we can make sure we get that balance of all five proficiencies and give our students the best chance of journeying through mathematics as intended