



PaCT Explained

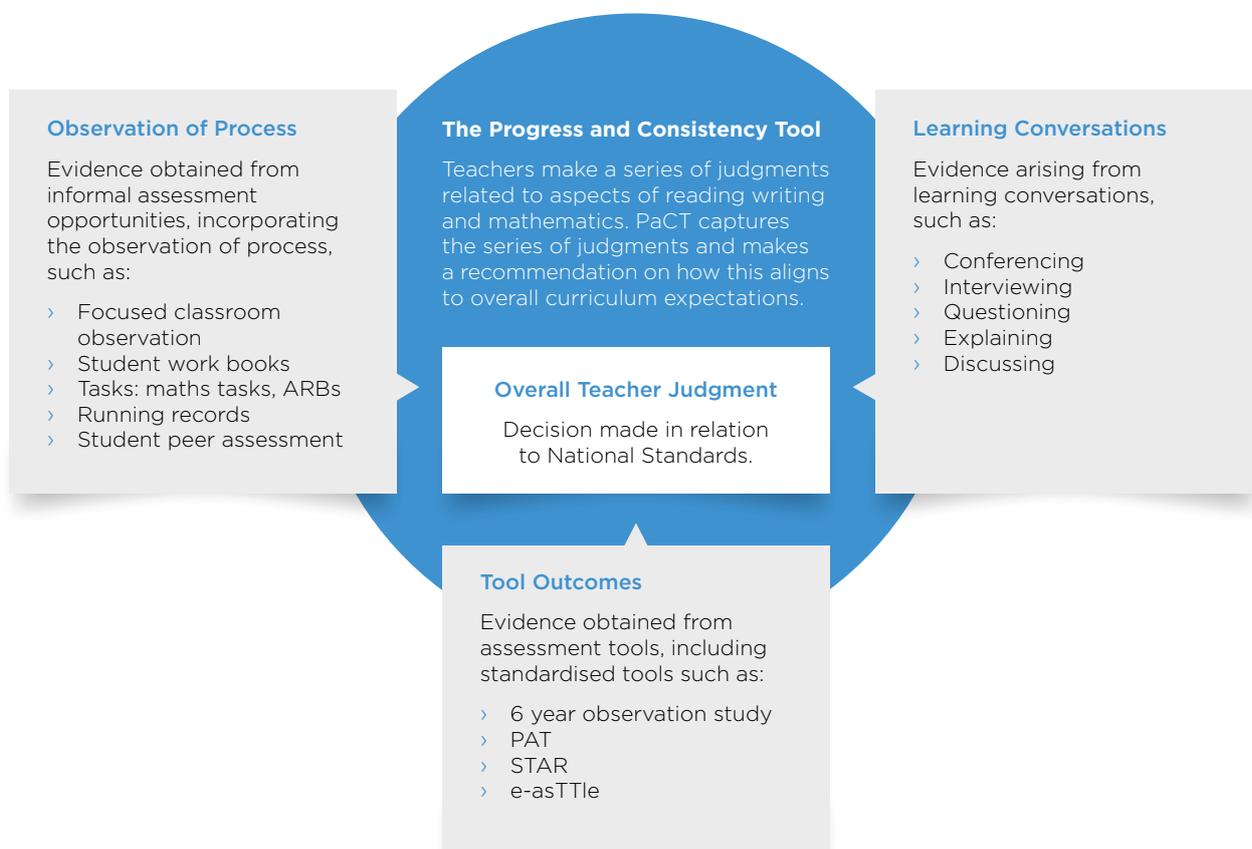
PaCT explained **A T P**

The PaCT has been designed to help teachers make dependable judgments on students' progress and achievement.

The PaCT is more than an online tool:

- › It supports the New Zealand Curriculum. It prompts teachers to notice what students know and can do across the breadth of mathematics, reading and writing. It helps teachers to understand the learning progressions set by the Curriculum and amplified by National Standards.
- › It supports moderation. It moderates individual teacher expectations through the frameworks and illustrations. It provides a common framework for teachers to discuss their judgment decisions with one another.
- › It also supports assessment for learning. The breakdown of mathematics, reading and writing into aspects gives greater clarity about what to notice when making observations of students, in learning conversations and through set tasks.

Making judgments using PaCT



The frameworks



The frameworks are a principal feature of the PaCT.

They break down mathematics, reading and writing into different aspects and illustrate the stages of learning in each aspect.

They prompt teachers to consider what students know and can do across the breadth of mathematics, reading and writing.

The frameworks are aligned to:

- › The New Zealand Curriculum
- › The Literacy Learning Progressions for reading and writing
- › The Number Framework for Mathematics

They were developed by experts in literacy, mathematics, education and assessment and reviewed and trialed by teachers.

The aspects

Each framework is designed with seven or eight aspects that enable teachers to focus on particular dimensions of student achievement. Together the aspects cover the breadth of mathematics, reading and writing.

The PaCT breaks each aspect into observable and distinct learning stages. The graphical representation of the frameworks acknowledges that learning is not linear and there can be wider 'gaps' between one stage and another.

The online engine

The engine of the PaCT is a psychometric calibration that captures teacher judgments on the aspects. Based on those judgments, the engine calculates a numeric score representing a student's overall ability level for this framework, along with a margin of error (known as the PaCT range).

It helps overcome the difficulties in making overall judgments for students who achieve highly in some aspects of mathematics, reading and writing, but not in others.

The PaCT range enables the tool to calculate useful information about student progress over time. The range (numeric score) is not a requirement for reporting to students and parents.

The aspects explained

Mathematics

The mathematics standards, and therefore the PaCT aspects, focus on how well students' use their mathematical knowledge and skills to solve mathematical problems.

The aspects are organised according to the strands of the mathematics and statistics learning area of the Curriculum. Four aspects address the number and algebra strand, two relate to the measurement and geometry strand and two to the statistics and probability strand.

Reading and writing

Most Curriculum tasks involve reading and writing.

The reading and writing standards, and therefore the PaCT frameworks, focus on how students are using their knowledge and skills to meet the reading and writing demands of all areas of the New Zealand Curriculum.

Therefore the PaCT reading and writing aspects, and illustrations, are designed for cross-curricular use. They use tasks that are drawn from different areas, for example tasks from science and social sciences.

Mathematics

- › Additive thinking
- › Multiplicative thinking
- › Patterns and relationships
- › Using symbols and expressions to think mathematically
- › Geometric thinking
- › Measurement sense
- › Statistical investigations
- › Interpreting statistical and chance situations

Reading

- › Making sense of text: processing system
- › Making sense of text: text structure
- › Making sense of text: vocabulary knowledge
- › Making sense of text: reading critically
- › Reading to organise ideas and information for learning
- › Acquiring and using information and ideas in informational texts
- › Reading for literary experience

Writing

- › Writing meaningful text: encoding
- › Writing meaningful text: text features
- › Writing meaningful text: vocabulary knowledge
- › Using writing to think and organise learning
- › Creating texts to communicate knowledge and understanding
- › Creating text for literary purposes
- › Creating texts to influence others

The illustrations

The steps of learning in each aspect are linked to sets of illustrations. The illustrations depict everyday classroom practice.

They describe students working on a range of problems and tasks in a variety of contexts. Teachers select the set of illustrations for each aspect that best 'fit' what students know and can do.

Examples of illustrations from Set Four in Measurement Sense

Matchstick rulers

Annotation
Dylan can create and use a simple measurement scale. He understands that he is measuring in matchstick lengths and that he must begin measuring from the start of the first matchstick, where he has correctly marked 0, and not the end point of the ruler. Dylan's answer of 3½ matchsticks for measuring the black strips shows that he understands that a unit can be partitioned.

Problem: Matchstick rulers
The teacher asks the student to make a matchstick ruler and shows the student two coloured cardboard strips. Then the teacher asks:
Could you use your ruler to measure how many matchsticks long these two strips are?

Student Response
Dylan lines up his matchstick ruler and starts measuring from the start of the first matchstick, which he has marked as 0.



Dylan: It is 5 matchsticks.

Then Dylan measures the second strip.



Dylan: This one is 3½ matchsticks.

The bench seat

Annotation
Jack is able to read and use the measurement scale on the ruler to measure precisely. He demonstrates that he understands that a single unit (1 metre) can be repeated. He can accurately report his ruler when he is required to measure a length that is longer than the ruler. He understands that, if he has used two different units to measure, he needs to name both units in his answer.

Problem: The bench seat
The teacher gives the student a metre ruler and shows the student a bench seat that is longer than a metre. Then the teacher asks:
How long is the bench seat?

Student Response

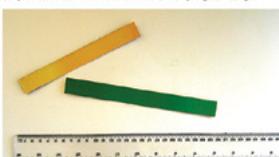


Jack: It is 1 metre and 69 centimetres.

Measuring strips

Annotation
Courtney is able to select an appropriate scale on a ruler for measuring a particular set of objects, and she begins measuring from the start of centimetre units. She is able to read a numbered graduation on the scale and communicate her answers by identifying that they are centimetre lengths.

Problem: Measuring strips
The teacher gives the student two coloured strips and a 30-centimetre ruler and asks:
Which one of the strips is longer?
Can you measure each one in centimetres and tell me if your guess was right?



Student Response

Courtney: The green one looks longer.

Courtney selects the centimetre scale on her ruler and begins measuring the first strip by aligning the end of the strip to 0 on the ruler.

Courtney: The green is 20 centimetres, and the yellow is 17 centimetres. The green one is longer.

Measuring milk

Annotation
Benj reads the litre and millilitre scales on a measuring jug and shows his understanding of 1 litre by correctly identifying a 1-litre container.

Problem: Measuring milk
The teacher shows the student three commonly used containers: a 1-litre plastic milk container, a 500-millilitre drink can and a coffee cup. Then the teacher asks:
Which container holds 1 litre?
Finally, the teacher shows the student a measuring jug and asks the student to indicate what mark the milk from a full 1-litre plastic milk container would fill to if it were poured into the jug.



Student Response
Benj identifies the plastic milk container as holding 1 litre. He looks at the scale on the measuring jug and points to the 1 L and 1000 mL marks.

Onions

Annotation
Carlos is able to read a scale to a numbered interval. He shows that he has a sense of the size of a kilogram by using large onions (10) as he seeks to measure 1 kilogram. He understands that he is able to exchange items of different weights in order to be more precise in his measuring.

Problem: Onions
The teacher tells the student that the supermarket sells onions in 1-kilogram bags and asks the student to weigh out 1 kilogram of onions on the kitchen scales.



Student Response
Carlos looks at the scale and then starts adding onions to the pan. He begins by adding large onions and, as the measuring needle comes closer to the 1-kilogram mark, he looks more frequently at the needle. He exchanges one large onion for two smaller onions to ensure that the needle settles exactly on the 1-kilogram mark.

Carlos: That's 1 kilogram.



Each set of illustrations has a descriptor or 'big idea'. Teachers can view the 'big ideas' as they review the sets of illustrations.

