

Creating an interim mapping between the PATs and the Progress Descriptors

NZCER's methodology

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Purpose

Schools are required to report student achievement to parents and whānau using Progress Descriptors that describe performance in relation to curriculum expectations. Scores from standardised tests such as the Progressive Achievement Tests (PATs) can be used to inform how schools decide what Progress Descriptors are best suited for each student.

Because PATs provide scale scores rather than direct Progress Descriptor judgments, guidance is needed to support consistent decisions about which descriptor best fits with an achievement level.

This report outlines an interim approach for linking scale scores from PAT Pānui | Reading Comprehension and PAT Pāngarau | Mathematics to the Progress Descriptors.

The Progress Descriptors

The Progress Descriptors describe five levels of achievement in relation to curriculum expectations for a student's year level. They are designed to support clear and consistent reporting. Table 1 provides the Ministry's short definitions of each descriptor.

TABLE 1: The Progress Descriptors and their Ministry of Education definition

Progress Descriptor	Definition
Emerging	Students require support to meet curriculum expectations for their year level and/or goals as described in their personalised learning plan.
Developing	Students are making some progress towards curriculum expectations for their year level.
Consolidating	Students are meeting many curriculum expectations for their year level and are steadily strengthening their understanding across learning areas.
Proficient	Students are meeting curriculum expectations for their year level.
Exceeding	Students are exceeding curriculum expectations for their year level.

Method overview

The approach used by NZCER builds on the Ministry of Education's alignment of e-asTTle scores to the Progress Descriptors.

The method involved four key steps:

1. Anchor to e-asTTle proficiency expectations

Ministry-provided e-asTTle thresholds (Table 2) were used to estimate the proportion of students at each year level expected to score at a proficient level in reading and mathematics. The proportions were based on national reference data for e-asTTle (see Appendix A).

TABLE 2: e-asTTle proficiency thresholds in reading and mathematics, by year level

Year level	Reading threshold	Mathematics threshold
3	1243	1294
4	1294	1381
5	1347	1414
6	1398	1479
7	1446	1505
8	1502	1548
9	1556	1571
10	1618	1636

2. Smooth expected proportions proficient

The expected proportions for e-asTTle were smoothed to ensure changes from year to year were not abrupt. This was done by centring the estimations around the proportion estimated at Year 7 and then adjusting the change in proportion from year to year in relation to this (see Appendix B).

3. Map to the PAT scale

Using Term 4 PAT norms, the PAT scale score corresponding to the same proportion of students as e-asTTle for each year level was identified.

This establishes the PAT cut score for the proficient descriptor (see Appendix C).

4. Locate other descriptors relative to proficient

The remaining descriptors were positioned relative to the proficient cut score using a Rasch-based interpretation of the probability of correctly answering items that signal minimally proficient achievement (Table 3).

TABLE 3: Theoretical probability of answering minimally year level appropriate questions, by Progress Descriptor

Descriptor	Probability of correctly answering year level appropriate questions	Difference in scale location to proficient (PAT scale units)
Emerging	<25%	
Developing	At least 25%	-11
Consolidating	At least 50%	-7
Proficient	At least 67%	0
Exceeding	At least 85%	+10

PAT scale score thresholds for the Progress Descriptors

Tables 4 and 5 provide the PAT Pānui and PAT Pāngarau scale score thresholds corresponding to each Progress Descriptor by year level.

TABLE 4: PAT Pānui scale score thresholds by Progress Descriptor (PATR units)

	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Emerging	<14.2	<22.4	<30.9	<39.2	<46.2	<54.1	<60.6
Developing	14.2	22.4	30.9	39.2	46.2	54.1	60.6
Consolidating	25.2	33.4	41.9	50.2	57.2	65.1	71.6
Proficient	32.2	40.4	48.9	57.2	64.2	72.1	78.6
Exceeding	42.2	50.4	58.9	67.2	74.2	82.1	88.6

TABLE 5: PAT Pāngarau scale score thresholds by Progress Descriptor (PATM units)

	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Emerging	<15.0	<22.9	<28	<34.8	<39.4	<44.6	<47.3	<52.8
Developing	15.0	22.9	28.0	34.8	39.4	44.6	47.3	52.8
Consolidating	26.0	33.9	39.0	45.8	50.4	55.6	58.3	63.8
Proficient	33.0	40.9	46.0	52.8	57.4	62.6	65.3	70.8
Exceeding	43.0	50.9	56.0	62.8	67.4	72.6	75.3	80.8

Figures 1 and 2 shows the expected distribution of students across the five Progress Descriptors at each year level, based on the PAT Pānui and PAT Pāngarau cut scores, respectively.

The figures highlight several key patterns:

- The proportion of students at or above proficient decreases with increasing year level, reflecting rising curriculum expectations
- The proportion of students in the exceeding category declines steadily across year levels
- Most students are distributed across the consolidating and proficient categories in the middle years
- The emerging category is the “least likely” category at each year level

FIGURE 1: Expected percentage distribution across Progress Descriptors (PAT Pānui)

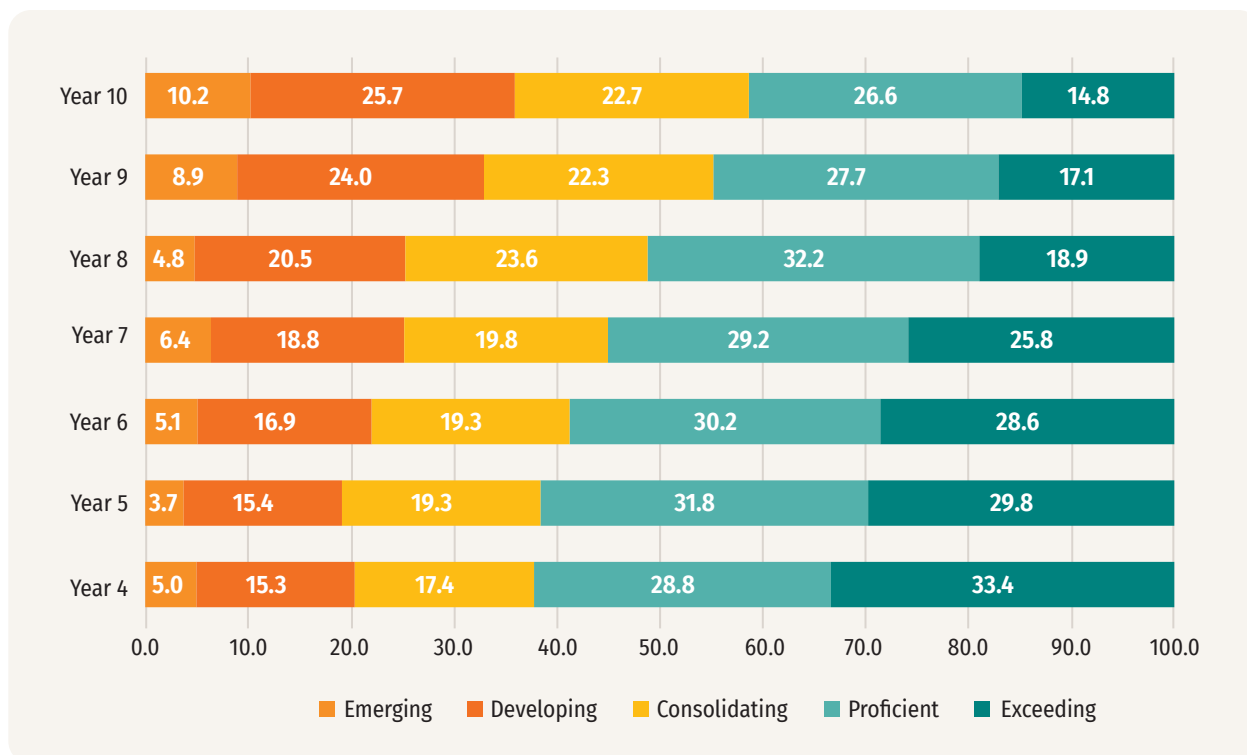
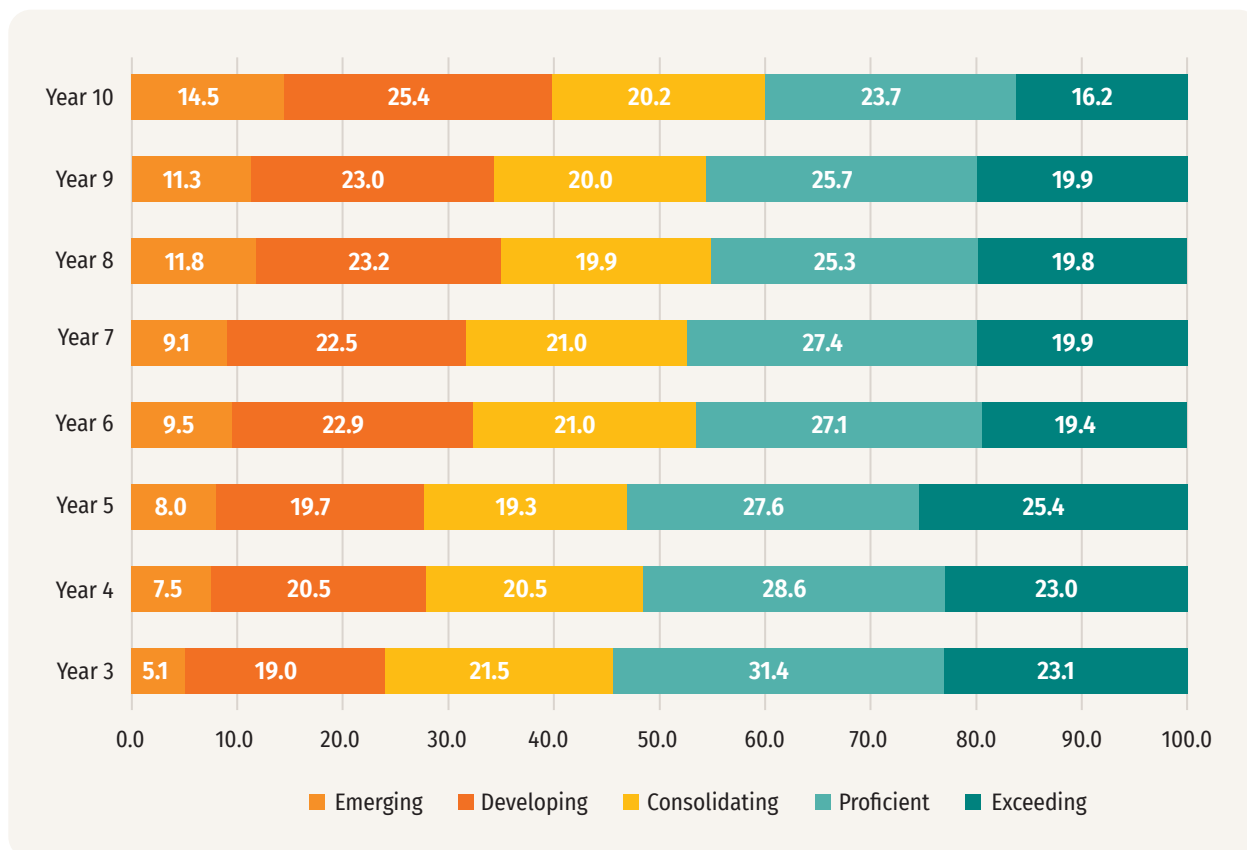


FIGURE 2: Expected percentage distribution across Progress Descriptors (PAT Pāngarau)



Expected distribution across descriptors

Tables 3 and 4 show the expected proportions of students achieving at or above each Progress Descriptor on the PAT Pānui and PAT Pāngarau respectively.

TABLE 6: Expected percentage of students achieving at or above each Progress Descriptor (PAT: Pānui)

	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
At least emerging	100.0	100.0	100.0	100.0	100.0	100.0	100.0
At least developing	95.0	96.3	94.9	93.6	95.2	91.1	89.8
At least consolidating	79.7	80.9	78.0	74.8	74.7	67.1	64.1
At least proficient	62.2	61.6	58.7	55.0	51.2	44.8	41.4
At least exceeding	33.4	29.8	28.6	25.8	18.9	17.1	14.8

TABLE 7: Expected percentage of students achieving at or above each Progress Descriptor (PAT: Pānui)

	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
At least emerging	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
At least developing	94.9	92.5	92.0	90.5	90.9	88.2	88.7	85.5
At least consolidating	75.9	72.0	72.3	67.6	68.4	65.0	65.6	60.1
At least proficient	54.4	51.5	53.0	46.5	47.3	45.1	45.6	40.0
At least exceeding	23.1	23.0	25.4	19.4	19.9	19.8	19.9	16.2

Interpretation

- We start with the theoretical assumption that the proficient thresholds for e-asTTle represent meeting curriculum expectations for the year level by being able to answer items that indicate a minimally proficient level of achievement.
- The cut scores for PATs are aligned to Ministry expectations via a smoothing of the e-asTTle expected proportions based on national achievement patterns followed by an equating process based on PAT norms.
- Movement between descriptors reflects meaningful differences in capability, based on increasing likelihood of success on year-level tasks that indicate minimum proficiency.

In practical terms:

- Students in the developing range are beginning to engage with year-level expectations
- Students in the consolidating range are demonstrating partial but strengthening understanding
- Students in the exceeding range are consistently successful with material beyond year-level expectations

Appendix A: Estimating proficiency from e-asTTle

The proportion of students expected to be proficient at each year level was estimated using two sources of e-asTTle normative information:

- Recent national data (2024–2025 means and standard deviations)
- Published historical norms

For each year level, the expected proportion of students meeting the e-asTTle proficiency threshold was calculated using both datasets and then averaged to produce a stable estimate.

TABLE 8: Estimation of percent proficient in reading by year level based on e-asTTle normative information

Year level	Mean score (data-based)	SD (data-based)	Mean score (norm-based ¹)	Percent proficient (data-based)	Percent proficient (norm-based)	Average percentage proficient
3	1317	70	NA	85.5	NA	85.5
4	1350	77	1333	76.6	69.4	73.0
5	1396	81	1390	72.7	70.2	71.5
6	1431	83	1426	65.5	63.2	64.3
7	1461	87	1453	56.8	53.2	55.0
8	1490	86	1494	44.5	46.3	45.4
9	1504	82	1519	26.3	32.6	29.4
10	1537	80	1567	15.6	26.2	20.9

TABLE 9: Estimation of percent proficient in mathematics by year level based on e-asTTle normative information

Year level	Mean score (data-based)	SD (data-based)	Mean score (norm-based)	Percent proficient (data-based)	Percent proficient (norm-based)	Average percentage proficient
3 ²	1367	64.61	NA	86.9	NA	86.9
4	1401	71.04	1389	61.2	54.5	57.8
5	1442	74.53	1430	64.6	58.5	61.6
6	1474	77.13	1466	47.4	43.3	45.4
7	1499	80.61	1500	47.2	47.5	47.3
8	1527	81.26	1535	39.9	43.6	41.8
9	1545	82.74	1567	37.8	48.1	42.9
10	1576	84.08	1601	23.9	33.9	28.9

¹ There are no published norms for Year 3 e-asTTle in reading and mathematics.

² The amount of data at Year 3 is low. This means the percentage proficient value is unreliable. For the purposes of this work the average percentage proficient was adjusted to 65%. This aligned it better with values for nearby year levels.

Appendix B: Smoothing across year levels

The estimated proportions proficient showed some variability across adjacent year levels.

To ensure a coherent progression, values were smoothed using Year 7 as a reference point. Adjustments at other year levels were applied to reduce abrupt fluctuations while maintaining the overall pattern of decreasing proportions proficient at higher year levels.

TABLE 10: Smoothed e-asTTle Reading expected percentage proficient and PAT Pānui equivalent scale score, by year level

Year level	Smoothed expected percentage proficient (%)	PAT Pānui Term 4 mean (PATR units)	PAT Pānui cut score (PATR units)
4	62.2	36.4	32.2
5	61.6	44.0	40.4
6	58.7	51.7	48.9
7	55.0	58.8	57.2
8	51.2	64.5	64.2
9	44.8	70.5	72.1
10	41.4	76.0	78.6

TABLE 11: Smoothed e-asTTle Mathematics expected percentage proficient and PAT Pāngarau equivalent scale score, by year level

Year level	Smoothed expected percentage proficient (%)	PAT Pāngarau Term 4 mean (PATR units)	PAT Pāngarau cut score (PATR units)
3	54.4	34.6	33.2
4	51.5	41.6	41.1
5	53.0	47.2	46.1
6	46.5	52.2	53.4
7	47.3	56.9	57.8
8	45.1	61.5	63.3
9	45.6	63.6	65.2
10	40.0	67.2	70.9

Appendix C: Mapping to the PAT Scale

Using Term 4 PAT normative data, NZCER identified the scale score corresponding to the same proportion of students expected to be proficient as estimated from e-asTTle.

This process established the PAT scale score for the proficient descriptor at each year level.

Appendix D: Locating descriptor boundaries

The remaining descriptors were defined relative to the proficient cut score using a Rasch-based interpretation of performance.

Proficiency was defined as approximately a 67% probability of correctly answering items representing minimum year-level expectations. Other descriptors were defined relative to this point:

Descriptor	Probability of success on year-level items
Emerging	Less than 25%
Developing	At least 25%
Consolidating	At least 50%
Proficient	At least 67%
Exceeding	At least 85%

These probabilities were translated into fixed scale score offsets, ensuring consistent interpretation across year levels.