Using item analysis to understand the literacy and numeracy needs of a cohort

For: School leaders

NAPLAN provides opportunities for School Leaders to better understand the performance of their cohorts across the domains of Numeracy, Reading, Writing, Spelling, Punctuation and Grammar.

Scout provides several reports to support schools with this including the School item analysis reports. These reports support leaders to identify and monitor literacy and numeracy performance of cohorts and identified groups. This may assist school leaders to report on the progress of key literacy and numeracy initiatives in Strategic Improvement Plans.

To support the identification of focus areas across literacy and numeracy we recommend using a range of Scout data alongside internal data available to schools.

This Scout in Practice focuses on how users can use the School item analysis reports to identify areas of strength and areas for development across all NAPLAN domains for whole cohorts.

School item analysis report

The School item analysis report compares a school's performance against each NAPLAN item to other NSW government schools (DoE State). This report allows schools to analyse their performance in each item across all NAPLAN domains. There are two reports:

- School item analysis
- School item analysis (writing).

The School item analysis reports provides the following information for Reading, Spelling, Grammar & Punctuation and Numeracy:

- School % correct by syllabus area
- Test item details
- Test item syllabus details
- Student item map.

The School item analysis (writing) report provides the following information for writing only:

- Writing score distribution – school compared to DoE State
- Online writing rubric
- Student – writing response details.

Users can sort information Specific group type and Specific group. This means both leaders and teachers can use this data to focus on Custom Scout groups, Roll Class and Sentral Timetabled groups.

Care should be taken when interpreting results when the selected cohort has a small number of students. When sample sizes are small it is difficult to make generalisations about student performance across both syllabus outcomes and test items.
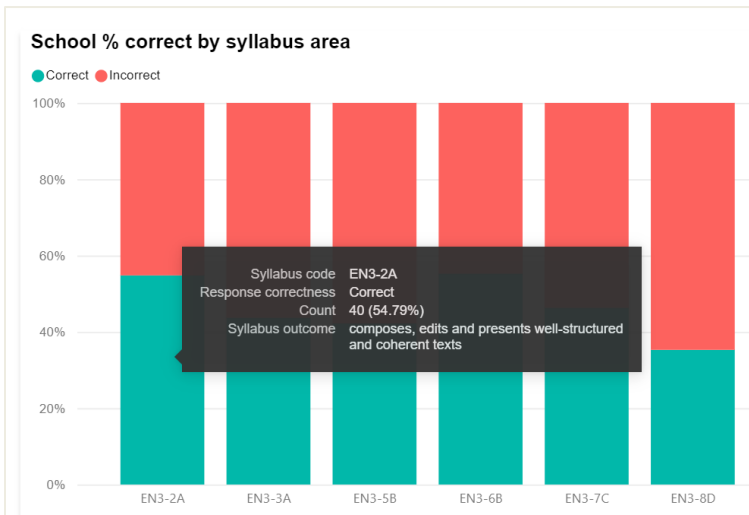
Scenario

As a school leader, you are leading the analysis of NAPLAN data to identify areas of strength and areas for development across all aspects of Literacy and Numeracy. The analysis will provide the starting point for professional learning for all teachers. This information will also be used alongside internal school data to measure progress toward improvement measures in the Strategic Improvement Plan.

Focus question: What are our areas of strength and areas for development in reading?
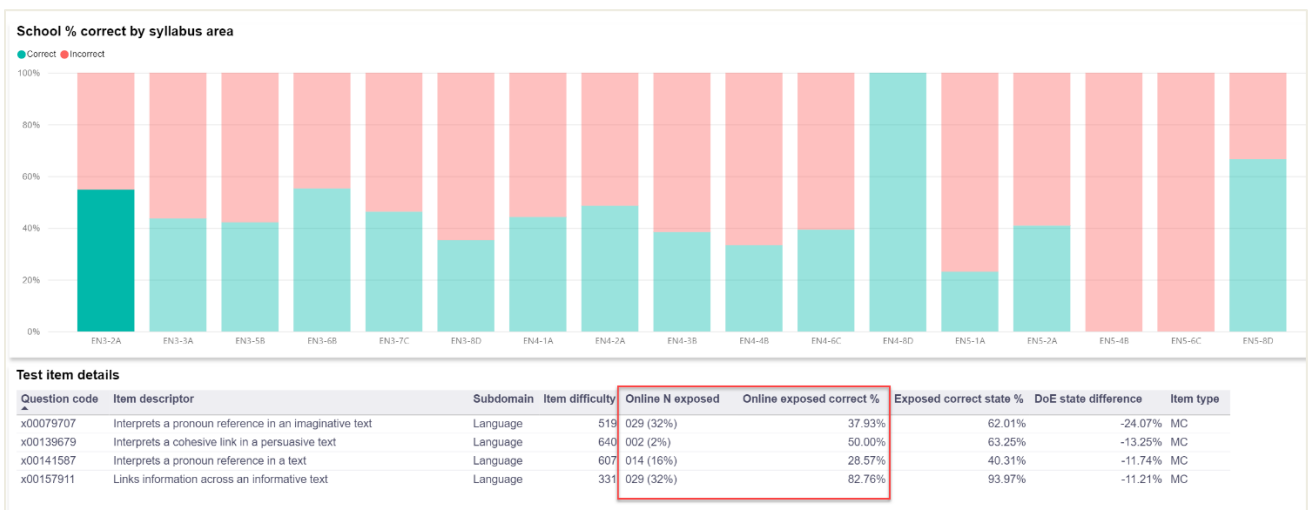
1. Open the School item analysis report.

2. Select the following slicers:

- Assessment school
- Assessment
- Assessment year
- Domain

3. Focus first on School % correct by syllabus area. Click on the ellipsis in the top right-hand corner of the chart and then select sort axis and either syllabus code or count. This will reorder your syllabus areas.
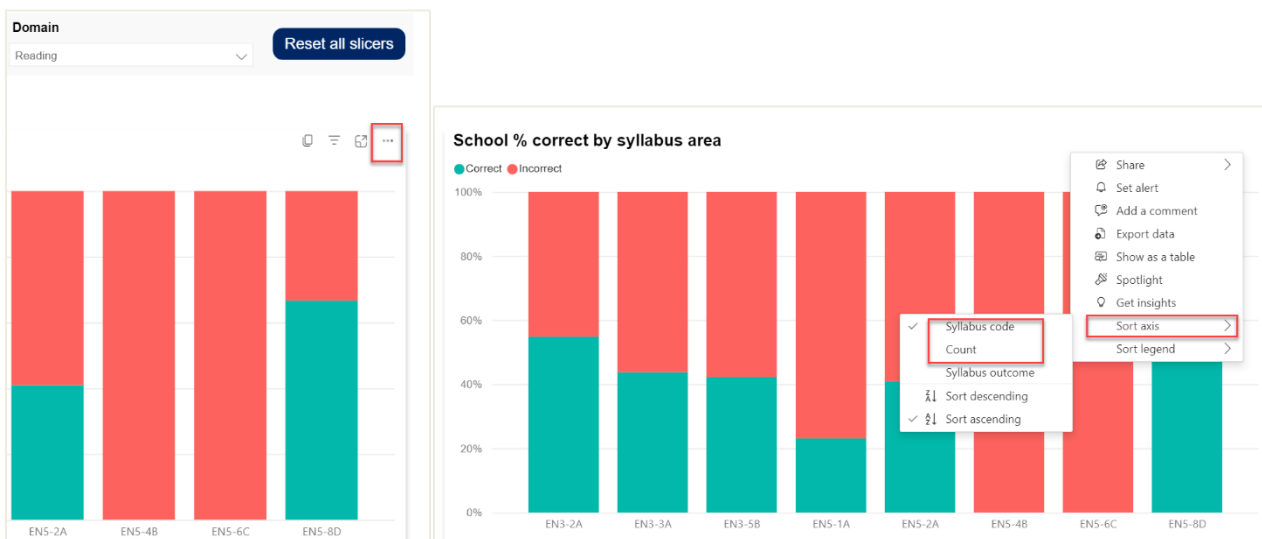
4. Hover over the green and red bars to see the count (the number and percentage of items answered correctly or incorrectly) as well as syllabus details. In the example below, the user hovered over the green section of EN3-2A. This showed that there were 40 correct responses for this syllabus outcome. This was 54.79% of all items for EN3-2A.

School % correct by syllabus area

● Correct ● Incorrect

Syllabus code	EN3-2A
Response correctness	Correct
Count	40 (54.79%)
Syllabus outcome	composes, edits and presents well-structured and coherent texts

5. To focus on the items associated with each syllabus outcome, click the syllabus bar. This will cross highlight into the Test item details table below, showing only those items associated with the selected syllabus outcome. In the example below, the user can see how many items students were exposed to, as well as the percentage correct.

School % correct by syllabus area

● Correct ● Incorrect

Test item details

Question code	Item descriptor	Subdomain	Item difficulty	Online N exposed	Online exposed correct %	Exposed correct state %	DoE state difference	Item type
x00079707	Interprets a pronoun reference in an imaginative text	Language	519	029 (32%)	37.93%	62.01%	-24.07%	MC
x00139679	Interprets a cohesive link in a persuasive text	Language	640	002 (2%)	50.00%	63.25%	-13.25%	MC
x00141587	Interprets a pronoun reference in a text	Language	607	014 (16%)	28.57%	40.31%	-11.74%	MC
x00157911	Links information across an informative text	Language	331	029 (32%)	82.76%	93.97%	-11.21%	MC

Consider:

- Which syllabus outcome(s) had the most items?
- Which syllabus outcome(s) had the least items?
- Where is there a high number or percentage of correct responses?
- Where is there a high number or percentage of incorrect responses?
- Does anything jump out as needing further investigation?

6. An alternative approach focuses on the Test Item Details table. Users can sort the data in this table by hovering over any column header and clicking to sort. In the example below, item descriptors have been sorted into alphabetical order. Users can also sort items by Subdomain, Item difficulty, Online N exposed, Online number correct %, Exposed state correct %, State difference and Item type.

Test item details

Question code	Item descriptor	Subdomain	Item difficulty	Online N exposed	Online exposed correct %	Exposed correct state %	DoE state difference	Item type
x00077572	Analyses changes in a character across an imaginative text	Literacy	506	021 (23%)	33.33%	48.50%	-15.17%	MC
x00116024	Analyses the effect of a literary device in an imaginative text	Literature	602	006 (7%)	50.00%	54.94%	-4.94%	MC
x00116383	Analyses the effect of a literary device in an imaginative text	Literature	604	011 (12%)	36.36%	37.71%	-1.34%	MC
x00078555	Analyses the effect of a literary device in an imaginative text	Literacy	621	001 (1%)	0.00%	63.95%	-63.95%	MC
x00074240	Analyses the effect of a literary device in an imaginative text	Literature	662	008 (9%)	37.50%	38.06%	-0.56%	MC
x00063397	Analyses the effect of a persuasive device in a persuasive text	Literacy	493	016 (18%)	37.50%	42.16%	-4.66%	MC
x00139562	Analyses the effect of a persuasive device in a persuasive text	Language	509	006 (7%)	83.33%	79.84%	3.49%	MC
x00058039	Analyses the effect of a persuasive device in a persuasive text	Language	735	006 (7%)	0.00%	20.77%	-20.77%	MC
x00076346	Analyses the effect of contrast in an imaginative text	Literature	642	001 (1%)	0.00%	61.33%	-61.33%	MC
x00116377	Analyses the effect of figurative language in an imaginative text	Literature	585	011 (12%)	36.36%	44.23%	-7.87%	MC
x00137568	Analyses the effect of figurative language in an imaginative text	Language	689	001 (1%)	100.00%	44.23%	55.77%	MC
x00079705	Analyses the effect of language choices in an imaginative text	Language	580	029 (32%)	41.38%	47.20%	-5.82%	MC
x00116376	Analyses the effect of punctuation choices in an imaginative text	Language	587	011 (12%)	63.64%	44.56%	19.07%	MC
x00192234	Analyses the effect of vocabulary choices in an informative text	Language	420	025 (28%)	48.00%	73.52%	-25.52%	MC
x00141532	Analyses the effect of vocabulary choices in an informative text	Language	501	024 (27%)	41.67%	50.13%	-8.47%	HT

7. This data can also be exported into an excel spreadsheet. Click on the ellipsis, then select export.

Consider:

- Which test items had the highest and lowest exposure?
- Which test items had the highest correct and incorrect responses?
- Look for patterns across item descriptors. Are there particular areas where students have performed well? Are there areas where further investigation is needed?
- Look for patterns across the types of texts. Do students find a type of text more challenging than others?
- Sort data by State difference. Are there areas where the difference between the cohort and the State is significant? How many students were exposed to these items? Is it a need for the cohort or potentially only for some students?
- Sort data by item type. Do students find some types of questions easier than others?
- Does anything jump out as needing further investigation?

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8. To drill down further into individual test items, select the item in the Test item details table. This will provide users with additional details including Teaching strategy link, Curriculum link and Exemplar.

Test item details

Question code	Item descriptor	Subdomain	Item difficulty	Online N exposed	Online exposed correct %	Exposed correct state %	DoE state difference	Item type
x00092041	Analyses the structure in an informative text	Language	593	031 (34%)	19.35%	44.05%	-24.70%	MC
x00072759	Analyses the voice of an imaginative text	Literature	552	031 (34%)	35.48%	54.66%	-19.17%	MC
x00092042	Evaluates the representation of a topic in an informative text	Literacy	558	031 (34%)	38.71%	51.89%	-13.18%	IM
x00163107	Identifies supporting evidence in a persuasive text	Literacy	545	031 (34%)	22.58%	54.32%	-31.74%	MC

Test item syllabus details

ⓘ Click on a line in the **Test Item Details** table above to see the corresponding Syllabus details and Student Item map below. You can select multiple line items by pressing **Shift** and selecting the lines.

Question code	Item descriptor	Learning progression	Syllabus code	Syllabus outcome	Teaching strategy link	Curriculum link	Exemplar
x00092041	Analyses the structure in an informative text	UnT10.5: applies and articulates criteria to evaluate the language structures and features for relevance to purpose and audience	EN5-2A	effectively uses and critically assesses a wide range of processes, skills, strategies and knowledge for responding to and composing a wide range of texts in different media and technologies	🔗	🔗	▦

9. Repeat for the relevant remaining domains as needed.

10. To view results of writing, open the School item analysis (writing) report. Select the following slicers:

- Assessment School
- Assessment
- Assessment year
- Criteria.

Note there is the ability to focus on different prompts. It is recommended to look at whole cohort data without selecting a specific prompt.
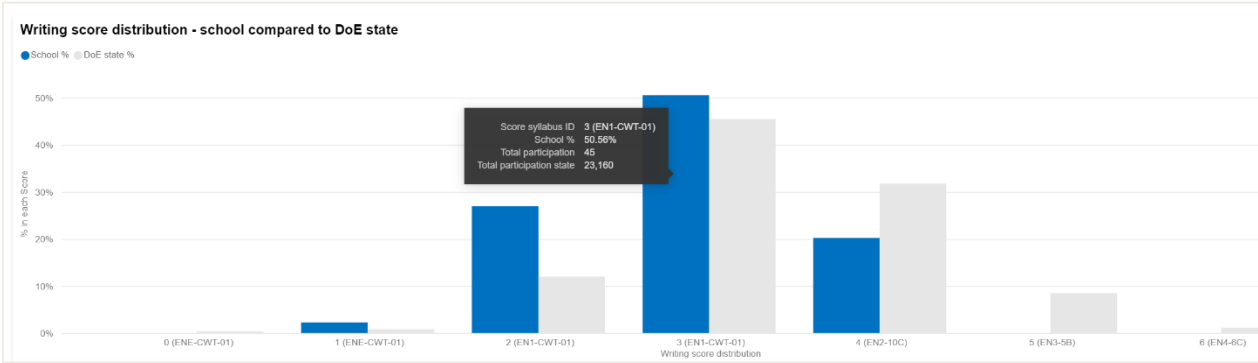
School item analysis (writing)

School performance directorate	Principal network	Assessment school (required)	Assessment (required)	Assessment year (required)	Criteria
All	All			2023	Audience

Test version	Link to stimulus	Genre
Prompt 1/Alternative Prompt	View stimulus	Narrative
Prompt 2	View stimulus	Narrative

Reset all slicers

11. Hover over each bar to understand where students in the cohort are achieving.

Writing score distribution - school compared to DoE state

School % ● DoE state %

Score syllabus ID 3 (EN1-CWT-01)
School % 50.56%
Total participation 45
Total participation state 23,160

12. The Online writing rubric provides additional information. Consider where students have achieved and how this compares to the State. Repeat for each criterion to find areas of strength and areas for development.

Online writing rubric

Criterion	Criterion description	Score	Description	Syllabus ID	NSW syllabus outcomes	Teaching strategy	School %	State %
Audience	The writer's capacity to orient, engage and persuade the reader.	3	Develops a shared understanding of context	EN1-CWT-01	plans, creates and revises texts written for different purposes, including paragraphs, using knowledge of vocabulary, text features and sentence structure	🔗	50.56%	45.44%
Audience	The writer's capacity to orient, engage and persuade the reader.	4	Attempts to engage reader	EN2-10C	thinks imaginatively, creatively and interpretively about information, ideas and texts when responding to and composing texts	🔗	20.22%	31.77%
Audience	The writer's capacity to orient, engage and persuade the reader.	5	Supports and engages reader through use of narrative devices	EN3-5B	discusses how language is used to achieve a widening range of purposes for a widening range of audiences and contexts	🔗		8.48%
Audience	The writer's capacity to orient, engage and persuade the reader.	6	Influences or affects reader through use of narrative devices	EN4-6C	identifies and explains connections between and among texts	🔗		1.11%

Where to next?

It is recommended that Scout data is used in conjunction with other data sources. Triangulate findings from these reports with other available internal and external data. This could include student data from internal class and cohort assessments as well as external sources such as the Check-in Assessment. Depending on the context of the school, it may also be relevant to look at attendance and engagement data alongside student performance data.

It may be useful to focus on the Cohort proficiency report to identify which proficiency levels students are working at. This may assist school leaders in drilling into the data to focus on achievement of students working at different levels.

Qualitative data sources including document analysis, observations and focus groups may also provide additional insight into teaching strategies and programs that are influencing student achievement.