# ARBs and the Science capabilities at Level 1 and 2

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The science capabilities are weaving tools that help teachers put the Nature of Science into the science curriculum. There are 5 science capabilities, e.g., Gather and interpret data, Use evidence, Critique evidence, Interpret representations and Engaging in science. New ARB science resources show ways to use them for weaving Nature of Science into the science curriculum. The table below shows how the science capabilities are related to the four Nature of Science substrands.

| Nature of Science sub strands | Understanding about science<br>*When the focus is on scientists work* | | | Investigating in science<br>*When the focus is on student investigations* | | | Communicating in science<br>*Make meaning of scientific representations* | Participating and contributing<br>*Is about taking action* |
|---|---|---|---|---|---|---|---|---|
| Matching science capabilities | Gather and interpret data | Use evidence | Critique evidence | Gather and interpret data | Use evidence | Critique evidence | Interpret representations | Engaging in science |

The new ARB resources model student questions that focus on each capability e.g.,

1. **Gather and interpret data** - Is it measurable? What did you see? (observation); What might that mean? (inference), Could there be another explanation for this data? etc.
2. **Use evidence** - How do you know that? What makes you think so? How could you check that? So an example of this would be… Can you think of an example when this wouldn't work? etc.
3. **Critique evidence** - How sure are you of your results? How did you get the data? What were the possible shortcomings of this method? How could you check your findings? etc.
4. **Interpret representations** - What does this representation tell us? What is left out? How does this representation get the message across? Why is it presented in this particular way?
5. **Engaging in science** - What action will you take? What are the alternatives? etc.

**Recent Science Resources at Level 1 and 2**

Recent Level 1 and Level 2 science ARBs show explicitly how the assessment focus on the Nature of Science and the relevant science capabilities. For example,

| Nature of Science (NOS) strand | Level | Science capabilities | Resources |
|---|---|---|---|
| ***Investigating in science***<br>*students are doing the investigating.* | 1 and 2 | ***Gather and interpret data***<br>Students are asked:<br>• What do you notice?<br>• What pattern do you notice? | What you can really see<br>A mystery photo<br>River in flood<br>Rubbish on the beach<br>Whose nest is this?<br>Moths and butterflies<br>Seed patterns<br>The monarch: chrysalis to butterfly<br>What makes you think that?<br>Amongst the sand dunes<br>Roads<br>The drain<br>A lamb on the farm<br>Dogs at the beach<br>Driving on the beach<br>Cattle |
| ***Investigating in science***<br>*students are doing the investigating.* | 1 and 2 | ***Using evidence***<br>Students are asked:<br>• Why do you think that?<br>• What is it? - to identify a moth or butterfly from the evidence | River in flood<br>A mystery photo<br>Whose nest is this?<br>Moths and butterflies<br>Seed patterns<br>What makes you think that? |
| ***Communicating in science***<br>*students are making meaning from scientific representations.* | 1 and 2 | ***Interpret representations***<br>Students are asked to interpret meaning from representations, e.g., graphs, evidence. | Which graph matches the picture? |
| ***Participating and contributing***<br>*students are recognising an action and making a judgement.* | 1 and 2 | ***Engaging with science***<br>Students are asked:<br>• What problems can you see? Which is the worst problem? | Roads<br>Amongst the sand dunes<br>Driving on the beach<br>Cattle<br>Dogs at the beach<br>The drain<br>A lamb on the farm<br>A mystery photo<br>Rubbish on the beach |

Note: Resources often  include most of the science capabilities but the assessment is specifically focussing on just one or two.