



LEVEL	1	2	3	4	5
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Leaves Sort-up

THE LEARNING CONTEXT

The teacher's intended outcomes were for the students to:

- classify leaves according to observable features
- use observable features of leaves to create keys to group the leaves and name the groups.

The intended outcomes were aligned to the following "big ideas":

- Scientists classify things according to shared features.
- Scientists use labels to distinguish different groups.

The class went for a walk in the school grounds and gathered leaves. The teacher asked the students to group their leaves, using any classification system they chose. The students found it difficult to choose groups for the leaves, so the teacher set them an activity that gave them practice in classifying objects using everyday items. When they were ready, the teacher gave each student a set of the same leaves. She asked them to observe the leaves closely and suggest ways to describe them. This helped the class to discuss and agree on a common language to label the leaves.

During this process, the teacher introduced new vocabulary, such as "serrated". She then asked the students to divide their leaves into two groups and suggest a label for each group. The class repeated this process twice more until they each had eight subgroups.

The teacher encouraged the students to make more detailed observations at each step and, as the investigation progressed, she decided whether to proceed with the next grouping. She determined the students' prior understanding and used this to inform the teaching. She also introduced the structure of a simple key, a commonly used scientific convention, and modelled the sequential process of creating the key for this investigation.

Teacher-student conversation

Discussing Sam's findings:

Teacher: Tell me about the leaves you've collected.

Sam: They're green, mostly, but lots of different greens. These are big ones. This one's really little.

Teacher: What do they feel like?

Sam: Some are smooth, but some of them are serrated.

Teacher: What do you mean by the word "serrated"?

Sam: They have little prickles on them, like a saw.

Teacher: Were you surprised by any of your findings?

Sam: I thought there would be more smooth leaves, but there were nearly as many serrated ones.

WHERE TO NEXT?

To move Sam towards the next learning step, the teacher could help him to focus on:

- exploring the idea that changing the criteria for classification can result in different groupings using prompts such as "How could you divide the groups again?" and "If we started sorting again, could we sort the leaves in a different way?" (investigating in science)
- observing the features of the leaves more closely, for example, by carefully drawing one of the leaves and labelling the relevant features (developing and communicating scientific understanding).

The teacher could:

- allow Sam to ask his own questions for the next investigation
- return to the idea of observing and classifying items according to their attributes (for example, the physical properties of items in the Material World strand).



LEVEL	1	2	3	4	5
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Leaves Sort-up

CURRICULUM LINKS

Science in the New Zealand Curriculum
Achievement Objectives

Level 1: Making Sense of the Nature of Science and Its Relationship to Technology

Students can share and compare their emerging science ideas.
Science in the New Zealand Curriculum, page 26
http://www.tki.org.nz/r/science/curriculum/p26_27_e.php

Levels 1 and 2: Developing Scientific Skills and Attitudes
Information gathering: Students can:

- make observations and simple measurements
- talk about their observations and measurements.

Science in the New Zealand Curriculum, page 45
http://www.tki.org.nz/r/science/curriculum/p44_51_e.php

Level 1: Making Sense of the Living World

Students can share their experiences relating to the living world, and group the living world according to some of its attributes.
Science in the New Zealand Curriculum, page 54
http://www.tki.org.nz/r/science/curriculum/p44_51_e.php

Te Whāriki

Strand 5: Exploration

Goal 3

Children experience an environment where they learn strategies for active exploration, thinking and reasoning.

Te Whāriki: He Whāriki Mātauranga mō ngā Mokopuna o Aotearoa/Early Childhood Curriculum, page 88

Goal 4

Children experience an environment where they develop working theories for making sense of the natural, social, physical, and material worlds.

Te Whāriki: He Whāriki Mātauranga mō ngā Mokopuna o Aotearoa/Early Childhood Curriculum, page 90

REFERENCES

Ministry of Education (1993). *Science in the New Zealand Curriculum*. Wellington: Learning Media.

Ministry of Education (1996). *Te Whāriki: He Whāriki Mātauranga mō ngā Mokopuna o Aotearoa/Early Childhood Curriculum*. Wellington: Learning Media.



LEVEL 1 2 3 4 5

Leaves Sort-up

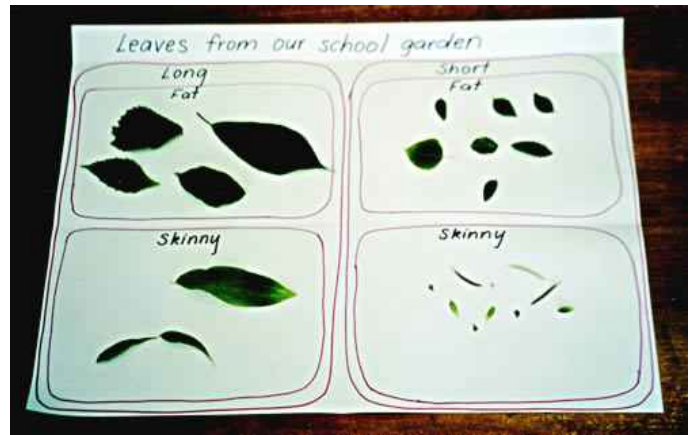
WHAT THE WORK SHOWS

The class used a classifying and identifying type of investigation to arrange the leaves into groups according to clear criteria.

Sam used his observational evidence to support the various subgroups that he made. He was able to identify two features each time he created two new subgroups.



Two subgroups of leaves



Four subgroups of leaves

Progress Indicator Investigating in Science

Exploring a situation

With support, Sam is able to identify observed similarities and differences in order to create new subgroups.

Using systematic approaches and scientific conventions

Sam collects and records simple data from his observations using a simple (concrete materials) key.

Progress Indicator Developing and Communicating Scientific Understanding

Using scientific vocabulary

Sam explores and uses new vocabulary and uses it to label observable features when he says, "Some are smooth, but some of them are serrated ... They have little prickles on them, like a saw."

Reflecting on their understanding

Sam is aware of changes in his own understanding: "I thought there would be more smooth leaves, but there were nearly as many serrated ones."