Language of science (Specialised language)

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Using Language, symbols and texts is one of the five key competencies outlined in the New Zealand Curriculum. This document states:

People use languages and symbols to produce texts of all kinds: written, oral/aural, and visual; informative and imagainative; informal and formal; mathematical, scientific, and technical. (p. 12.)

The importance of language is also reflected in the science curriculum which has a strand entitled *Communicating in science.*

Learning the language of science

In learning the language of science, students need to learn not only a specialised vocabulary but how words go together and when to use this way of communicating. The challenge is to teach these "rules of the game" whilst still valuing the ways of using language that the students bring to the classroom. The role for teachers is to help students build bridges between their known and familiar ways of using language, and academic ways of using language.

What does the language of science look like?

(The following are examples of language features found in traditional science texts. However science texts, like all others, come in many forms; the genre is diverse and constantly changing and evolving.)

Text Organisation	Example
Text structure Information is presented in a logical order where meaning is built up step by step.	The gecko uses its detachable tail in two ways. It drops its tail if a predator grabs it, and it may also drop its tail if a predator is approaching. Evaporation occurs when water is heated. This involves...

| **Connectives**

Connectives link ideas so that claims about knowledge can be formed and | The gecko uses its detachable tail in two ways. It drops its tail if a predator grabs it, and it may also drop its tail if a |

about knowledge can be formed and justified. The place of connectives within a sentence varies.

predator is approaching.

Evaporation occurs when water is heated. This involves...

Other connectives include those used to clarify, sequence ideas, and present a condition or concession.

Language Feature	Example
Technical language Technical words are specific to a particular topic, field, or academic discipline. These words, i.e., their scientific meanings, are usually uncommon elsewhere. General words that also have different scientific meanings.	Indigenous, podocarp, regeneration; endangered, database, DNA samples, dorsal fin, habitats, Hector's dolphin, species, run-off pollution; Co_2; solution, periodic table. Potential, wastes, solution.
Academic language: Academic words are common to the range of academic disciplines.	Affect, analyse, assess, concept, conclude, consequent, define, design, estimate, formula, identify, indicate, interpret, major, method, process, resource, relevant, select, similar, specific, theory, transfer, vary. Averil Coxhead's full list of academic words: language.massey.ac.nz/staff/awl/awlinfo.shtml
Condensed language: Information is densely packed, i.e., several ideas are packed into just a small amount of text. **Nominalisation** condenses information by removing the person and sometimes	"Heavy rain causes the water to rise up high and spill over the banks" (an example of a child's use of everyday language to explain a process) is turned into "Heavy rain causes flooding" (an example of a more condensed form of language).

other details such as time. It is a process by which verbs, and sometimes adjectives, become nouns.	("...water to rise up high and spill over the banks" is written using mainly verb phrases – "to rise up high" and "spill over"; "flooding" is written as a noun). In this example, a lengthy explanation is turned into a single noun – "flooding".
Factual and objective: The focus is on things and processes. People's thoughts, feelings and opinions are not usually of interest. Personal pronouns such as "it" and "they" are reasonably common, especially in scientific reports, but "she", "he", "we", "I", and "you", are not.	Southern right whales do not have teeth. Instead they have filters, called baleen or whalebone, which...
Passive voice: The passive voice focuses attention on the action, not who did it. The subject of a clause receives the action (or state) of the verb, i.e., the subject is the target of the action. In contrast, the active voice is where the subject is the agent or actor of the verb.	Baking soda and vinegar [subject] were mixed [verb]. I.e., the baking soda and vinegar receive the action of the verb in that they *were mixed*. We [subject] mixed the baking soda and vinegar [verb]. I.e., "We" (the students) is the agent or actor of the verb in that the students *mixed* the baking soda and vinegar.
"Doing" and "linking" verbs "Doing" verbs express the action and happenings in a text. "Linking" verbs link pieces of information. These types of verbs are common in science texts. The verbs of inner consciousness such as feeling, thinking, believing, and seeing, are not.	"Doing" verbs, e.g., Geckos speed away whenever an enemy comes near. ("speed away" and "comes near" are verb groups.) "Linking" verbs, e.g., Hooker's sea lions are native to New Zealand ("are" links "Hooker's sea lions" with "native to New Zealand") and, e.g., Ants have six legs ("have" links "Ants" with "legs").

Learning about academic ways of using language is **one** way of helping students participate in new ways of learning, although this in itself, of course, will not automatically make the subject area relevant or meaningful to them.

References

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