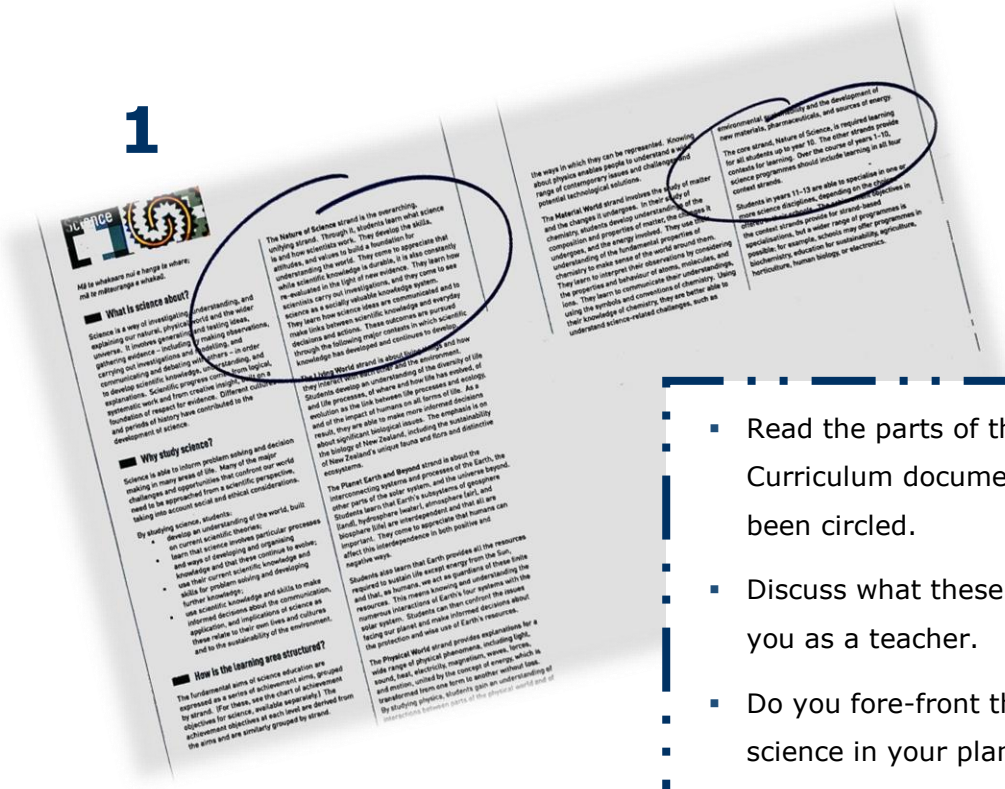
the Nature of Science

1



- Read the parts of the New Zealand Curriculum document which have been circled.
- Discuss what these sections mean for you as a teacher.
- Do you fore-front the nature of science in your planning and classroom practice?

2

Nature of Science substrands	Understanding about science • Learn about science as a knowledge system: the features of scientific knowledge and the processes by which it is developed; and learn about the ways in which the work of scientists interacts with society. ***When the focus in on scientists' work***	Investigating in science • Carry out science investigations using a variety of approaches: classifying and identifying, pattern seeking, exploring, investigating models, fair testing, making things, or developing systems. ***When the focus is on student investigations***	Communicating in science • Develop knowledge of the vocabulary, numeric and symbol systems, and conventions of science and use this knowledge to communicate about their own and others' ideas. ***Making meaning of scientific representations***	Participating and contributing • Bring a scientific perspective to decisions and actions as appropriate. ***Is about taking action***
Matching the science capabilities*	Gather and interpret data Use evidence Critique evidence	Gather and interpret data Use evidence Critique evidence	Interpret representations	
Level 1 & 2	• Appreciate that scientists ask questions about our world that lead to investigations and that open-mindedness is important because there may be more than one explanation.	• Extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models.	• Build their language and devel… understandings of the ma… natural world can be …	
Level 3 & 4	• Appreciate that science is a way of explaining the world and that science knowledge changes over time. • Identify ways in which scientists work together and provide evidence to support their ideas.	• Build on prior experiences, working together to share and examine their own and others' knowledge. • Ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations.	• Begin to us… symbols • Engag… and … wi…	
Level 5 & 6	• Understand that scientists' investigations are informed by current scientific theories and aim to collect evidence that will be interpreted through processes of logical argument.	• Develop and carry out more complex investigations, including using models. • Show an increasing awareness of the complexity of working scientifically, including recognition of multiple variables. • Begin to evaluate the suitability of the investigative methods chosen.		
Level 7 & 8	• Understand that scientists have an obligation to connect their new ideas to current and historical scientific knowledge and to present their findings for peer review and debate.	• Develop and carry out investigations tha… extend their science knowledge, including developing their understanding of the relationship between investigations and scientific theories and models.		

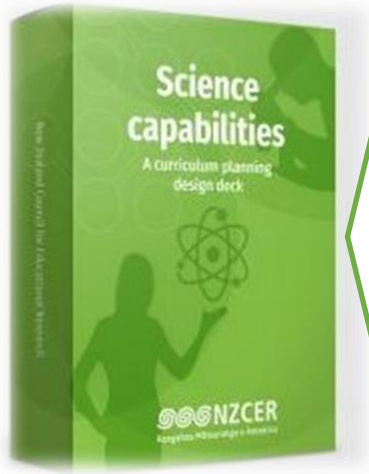
- What are the key differences between the four substrands of the nature of science?
- What are some of the ways you could/or have developed the skills attitudes and values described in the NoS achievement objectives at a particular level?

Science Capabilities

Building knowledge of science **content** and the **processes** of science is important, and so is building knowledge of the **nature of science**. Five science capabilities have been defined to combine learning in these three areas.

The science capabilities help students practice the types of thinking, questioning, and actions needed to become informed citizens. This helps build their knowledge and confidence to use their growing capabilities.

3

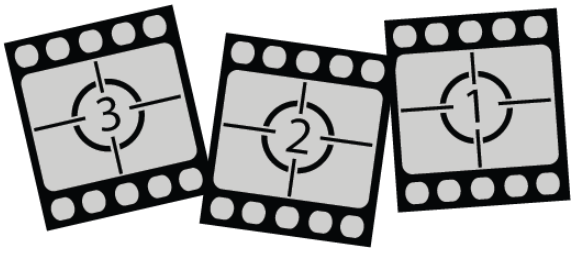


1. Shuffle the cards and spread them out white-side up.
2. Sort the cards into 4 sets of 7 to match 4 of the "science capabilities"
   - How familiar is the scope of each capability?
   - Are some statements more familiar than others? If so, why do you think this?
3. Flip the cards over to see if your grouping matches the capability on the back.
   - Discuss any that you sorted into a different pile.

   Actually, aspects of all the capabilities will overlap and blend so it is not surprising that there can be debate about where any one statement is best placed.

   These groupings for the cards are "on balance" judgements about aspects you might want to foreground when your focus is on a specific capability.

4



Complete the summary sheet ready to discuss with your home group:

- 3 key points
  - 2 interesting things
    - 1 question you have