

Managing cognitive load through effective presentations

Developed by Concord High School and CESE

Centre for Education Statistics and Evaluation

In this presentation

1

Brief introduction to cognitive load theory

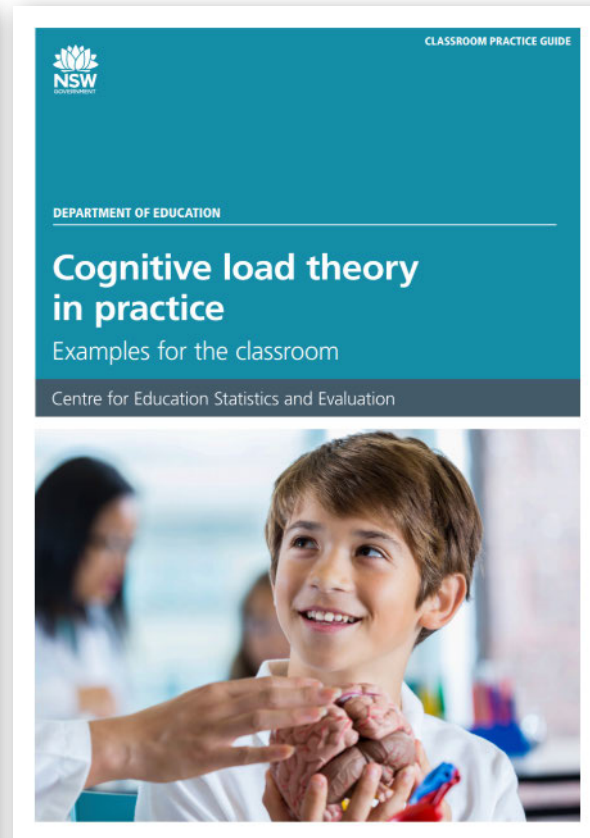
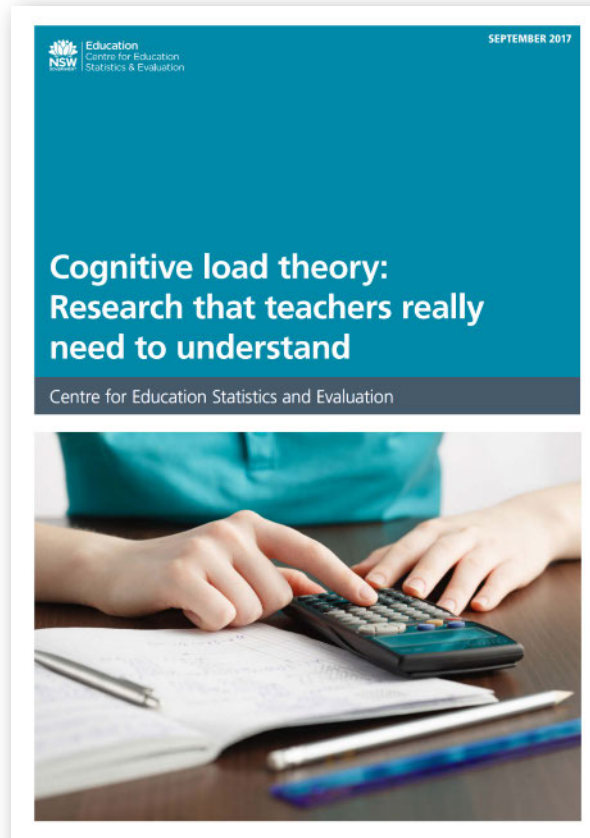
2

Strategies to optimise cognitive load in the classroom

3

Practical tips to consider when creating presentations

Cognitive load theory is a theory of how human brains learn and store knowledge

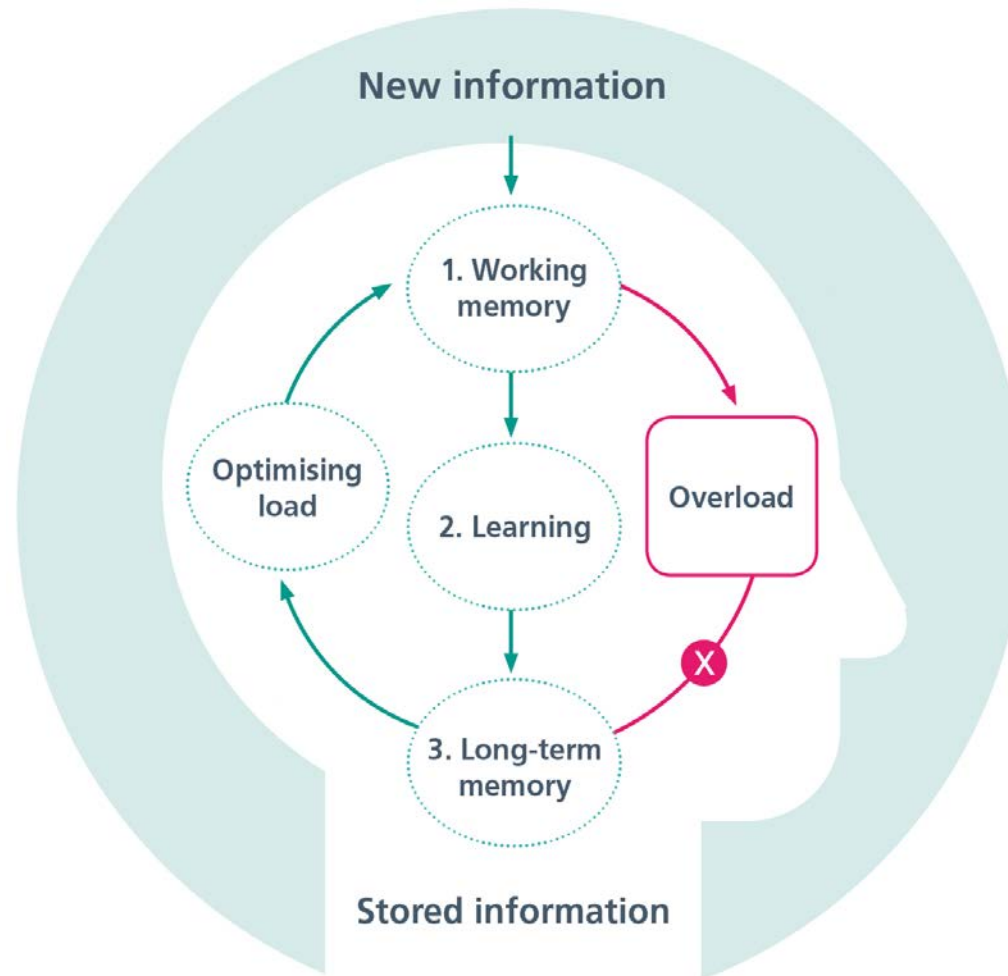


Limit to how much new information the brain can process at one time

No known limits to how much information can be stored in long term memory

Supports explicit models of instruction

The human brain can only process a small amount of **new** information, but can process large amounts of **stored** information



It's about optimising the load on students' working memories to help maximise learning



New or complex information



Reduce load on students' working memories



Easy to understand information



Gradually increase complexity of lesson

Strategies to optimise cognitive load

1



Tailor lessons according to students' existing knowledge and skill

2



Use worked examples to teach students new content or skills

3



Gradually increase independent problem-solving

4



Cut out inessential information

5



Present all essential information together

6



Simplify complex information by presenting it orally and visually

7



Encourage students to visualise concepts and procedures they have learnt

Three of these strategies are especially important when creating presentations

1



Tailor lessons according to students' existing knowledge and skill

2



Use worked examples to teach students new content or skills

3



Gradually increase independent problem-solving

4



Cut out inessential information

5



Present all essential information together

6



Simplify complex information by presenting it orally and visually

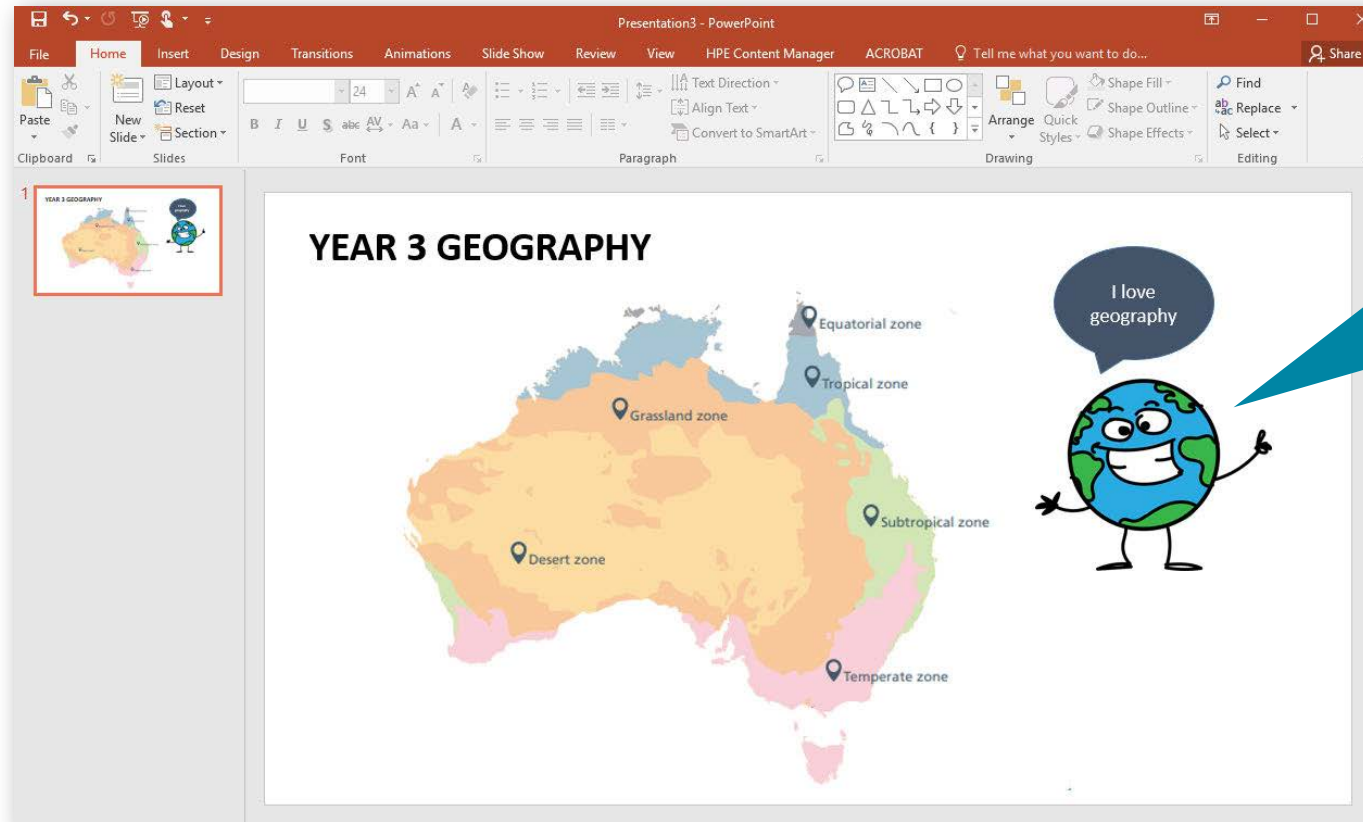
7



Encourage students to visualise concepts and procedures they have learnt

Practical ways to improve presentations and optimise load

Cut out inessential information



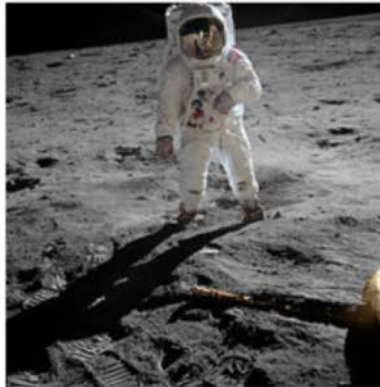
Avoid using
distracting images
or sounds unless
it contributes to
learning

Stick to key words – avoid blocks of text

Apollo 11



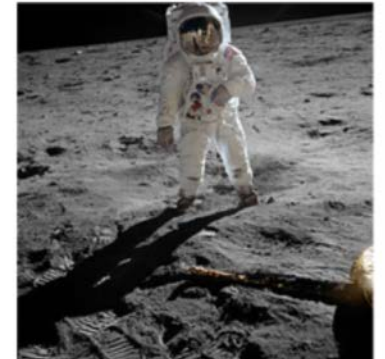
Apollo 11 was the spaceflight that landed the first two people on the Moon. Commander Neil Armstrong and lunar module pilot Buzz Aldrin, both American, landed the Apollo Lunar Module Eagle on July 20, 1969, at 20:17 UTC. Armstrong became the first person to step onto the lunar surface six hours later on July 21 at 02:56:15 UTC; Aldrin joined him 19 minutes later. They spent about two and a quarter hours together outside the spacecraft, and collected 47.5 pounds (21.5 kg) of lunar material to bring back to Earth. Command module pilot Michael Collins flew the command module Columbia alone in lunar orbit while they were on the Moon's surface. Armstrong and Aldrin spent 21.5 hours on the lunar surface before rejoining Columbia in lunar orbit.



Apollo 11 – the first moon landing



- July 20, 1969
- Launched from Florida, America
- Neil Armstrong – first person to step on the moon
- Buzz Aldrin joined him 19 minutes later



Present text in a way that is easy to read

Use dot points

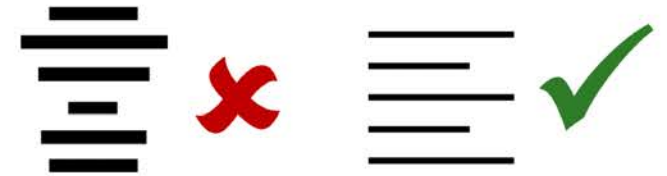
- _____
- _____
- _____

Avoid overuse
of capital
letters

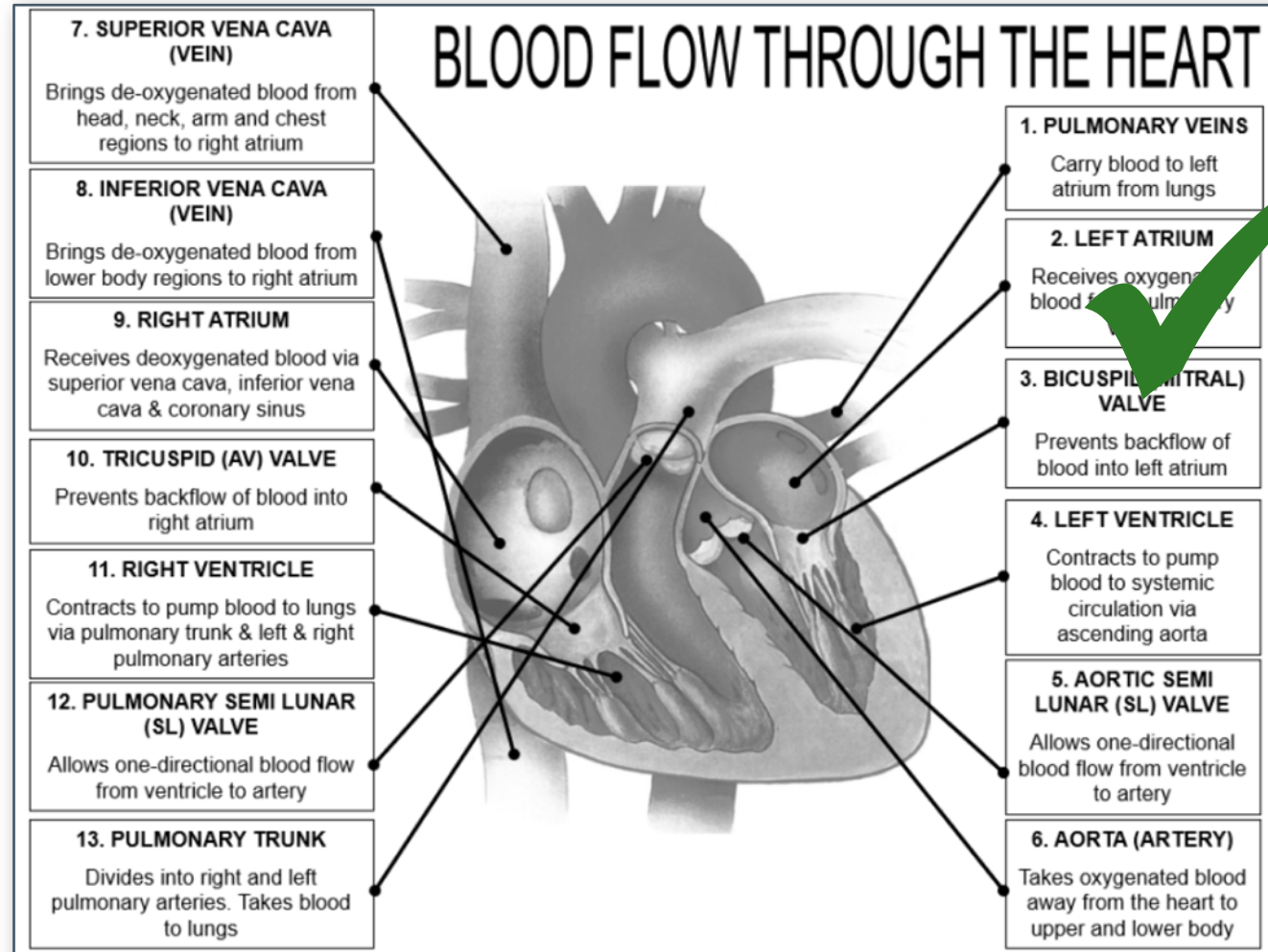
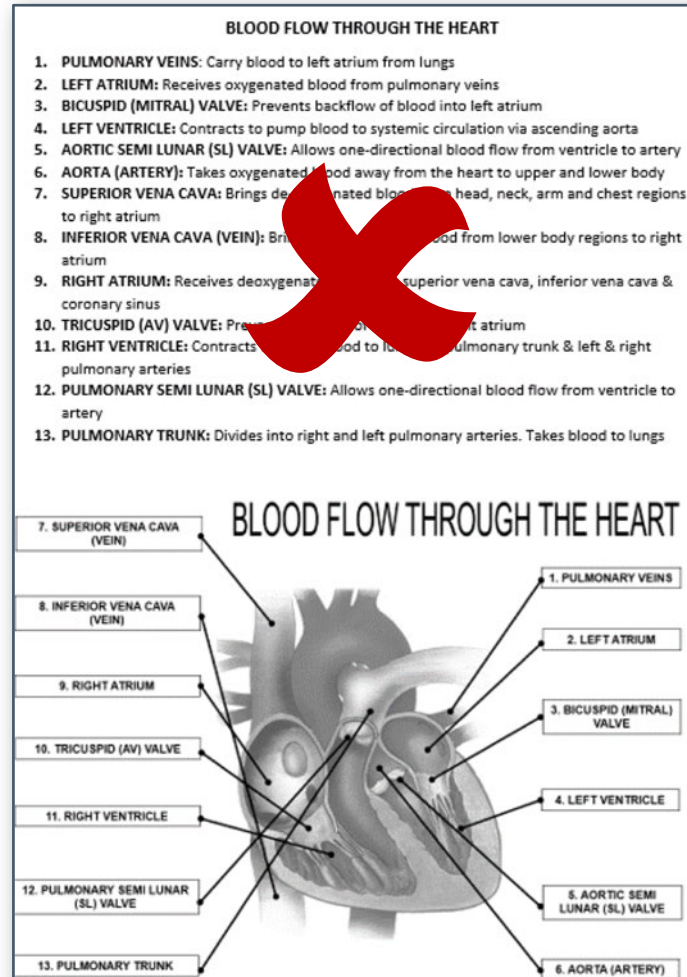
CAPITAL ✗

Capital ✓

Keep text left-
aligned



Present all essential information together



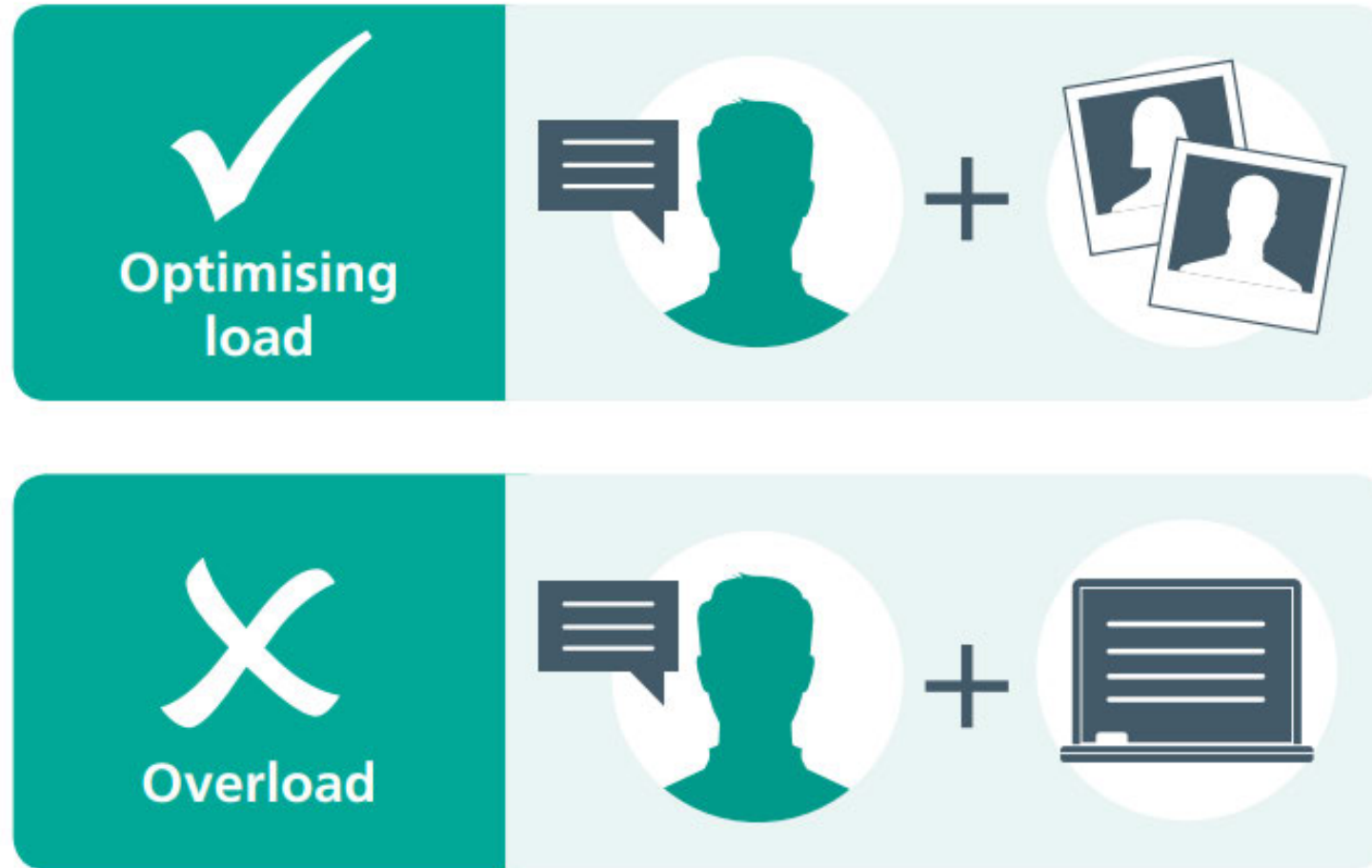
Simplify complex information by presenting it orally and visually



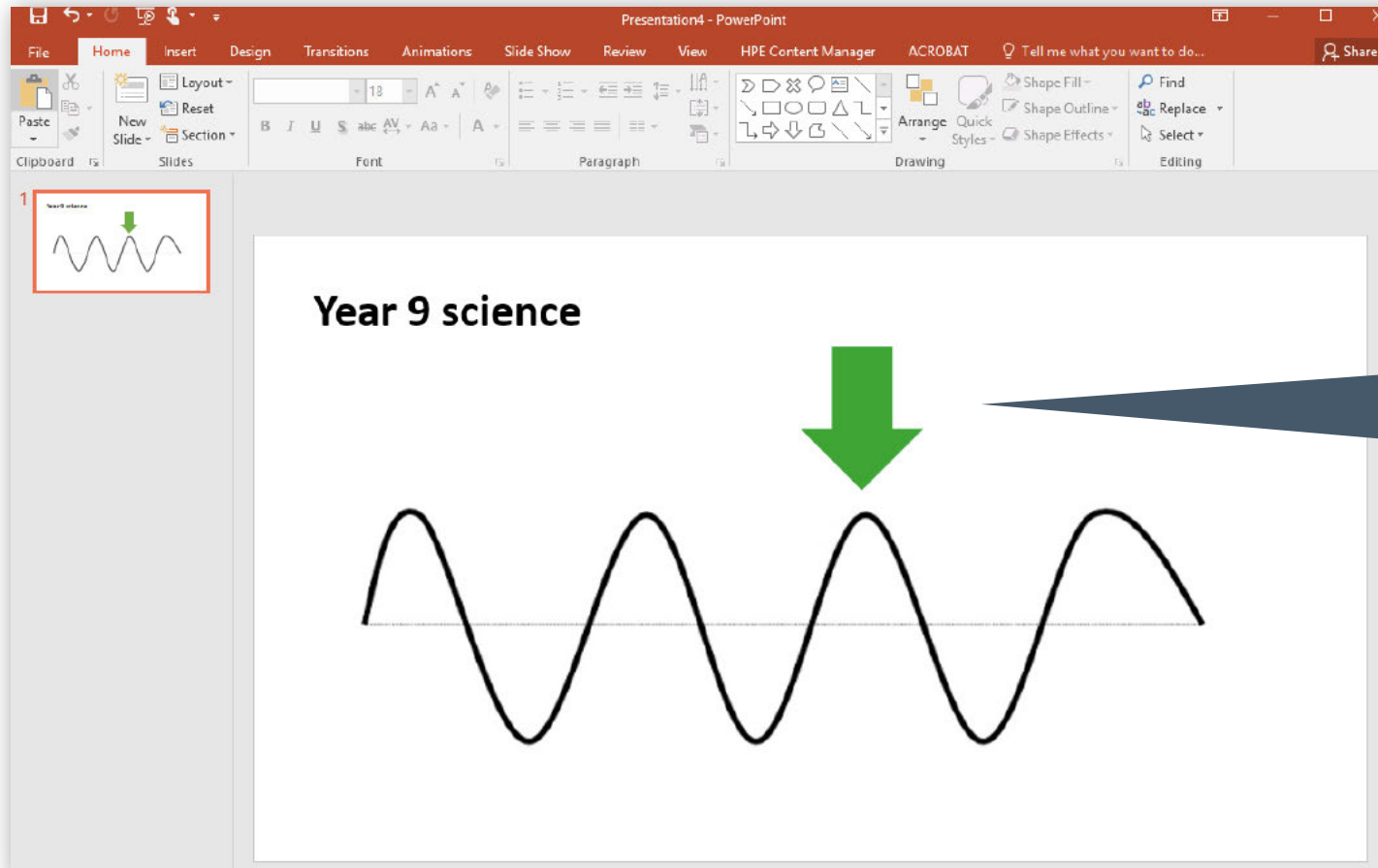
"The top number means..."

"The bottom number means..."

If there's text on your slides, let your audience read it themselves
or move the text to the 'notes' section

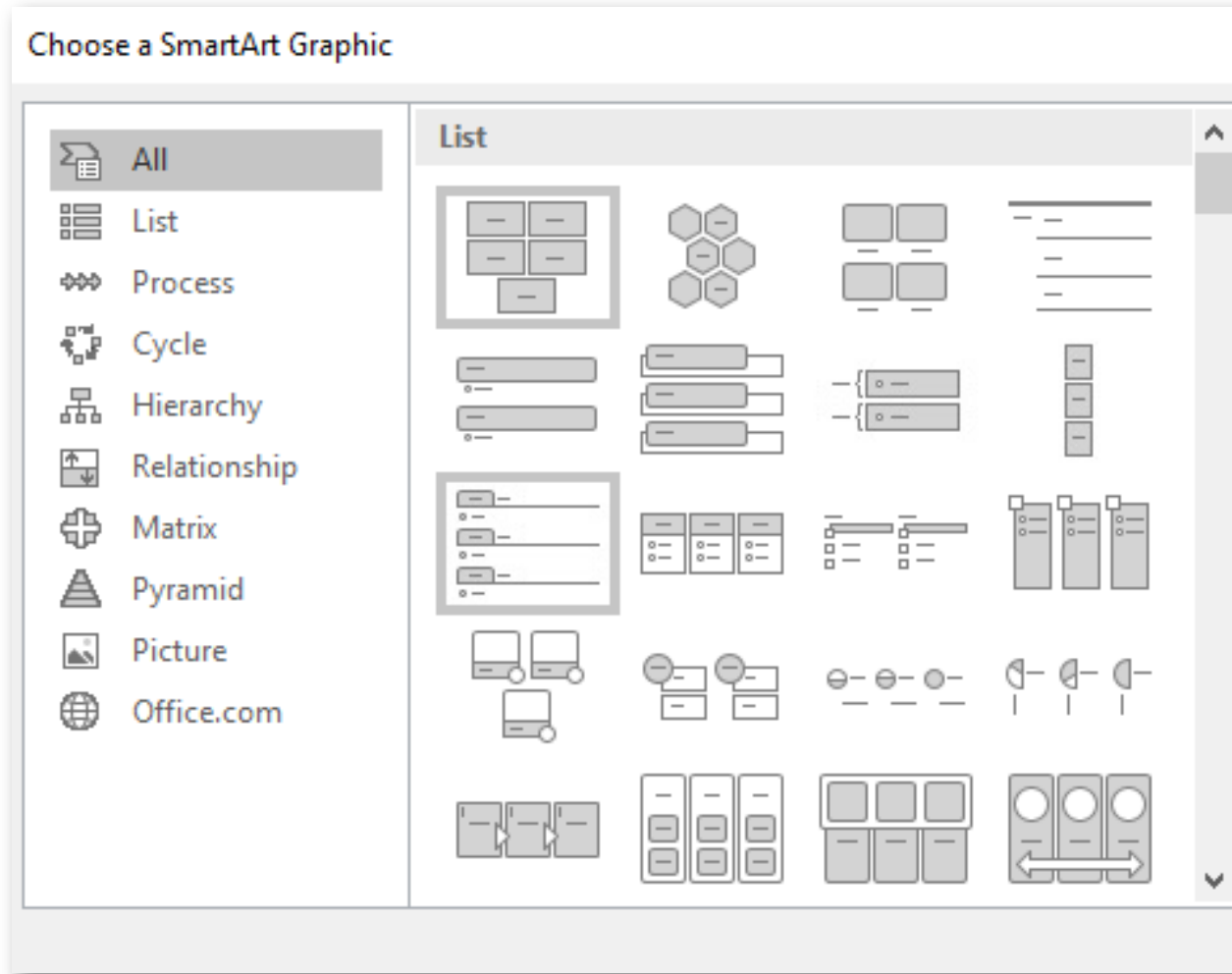


Use symbols or text to highlight important information



The arrow helps draw students' attention to the crest of the wave

Inbuilt 'SmartArt' or diagrams can help with displaying information visually



In Microsoft PowerPoint, go to 'Insert', then 'SmartArt'

In Google slides, go to 'Insert', then 'Diagram'

Break information into parts

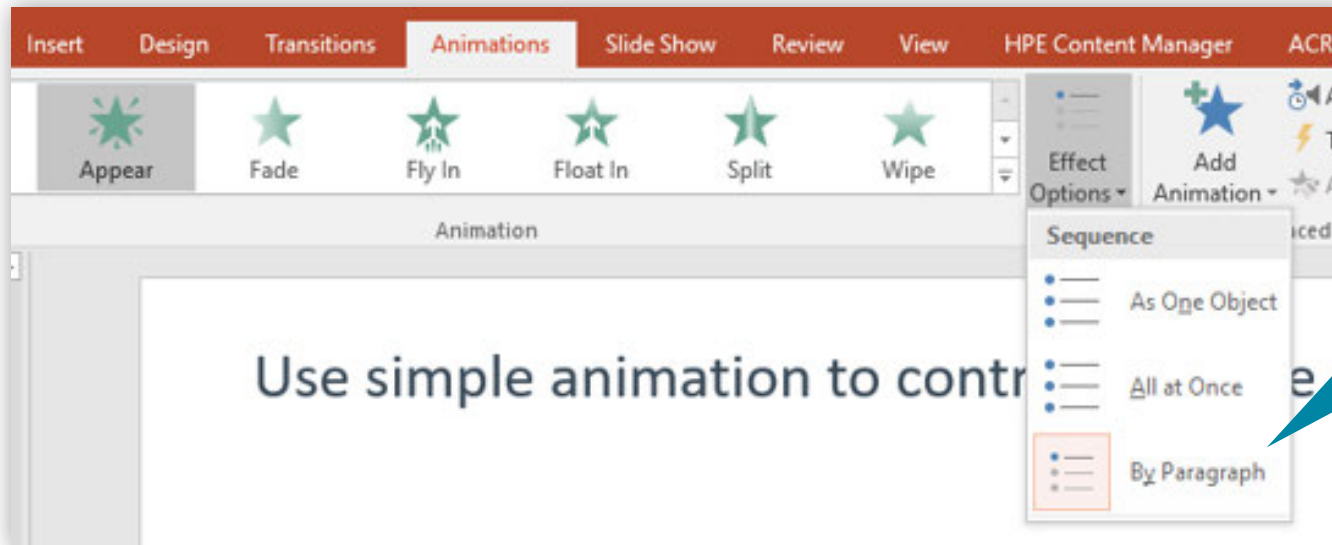


When using videos, try:

- ⏸ Pausing
- ✂ Cutting into segments
- ⋮ Asking questions in between segments

Use **simple** animation to control the pace of information

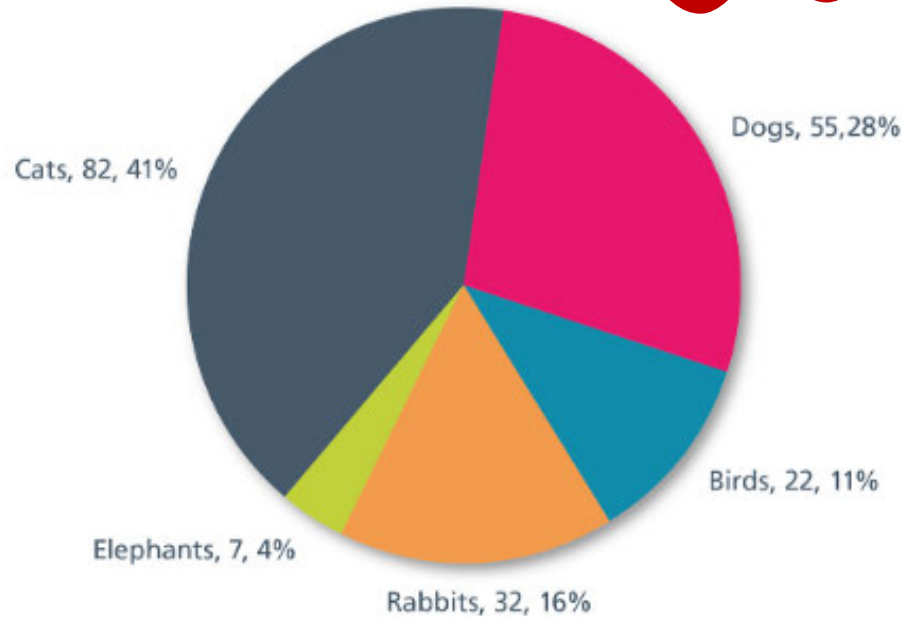
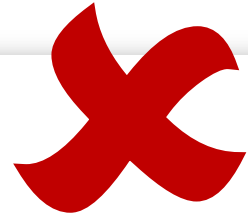
- Try revealing one dot point at a time
- Pause to let students read the information
- Ask questions to ensure the information has been understood before moving onto the next point



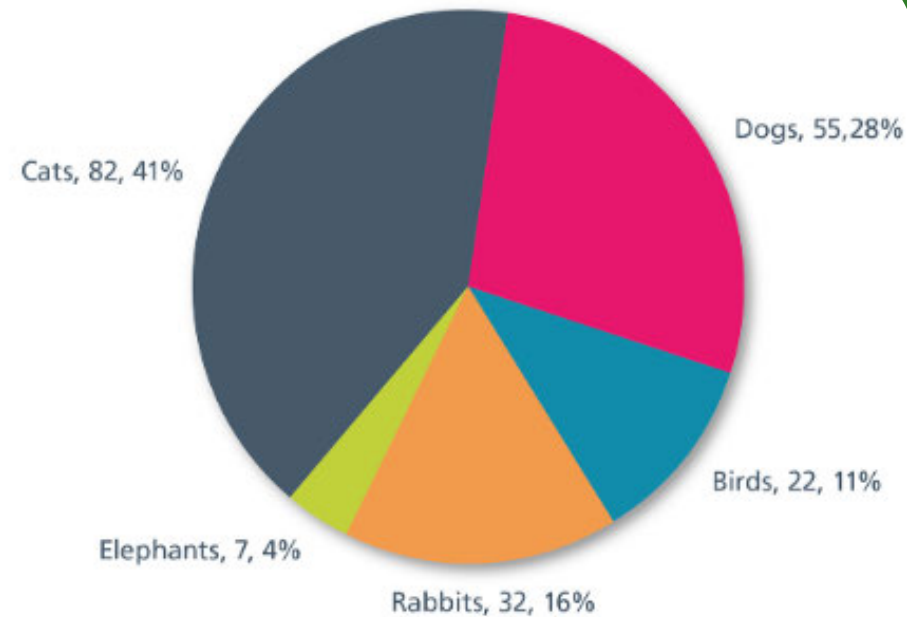
There are settings to help you do this in Microsoft PowerPoint

Write clear headlines that summarise or tell a story

Students' pets



In our school, 41% of students had pet cats



When assigning tasks, leave the instructions up for students to refer to





Activity

1. Choose a presentation that you use in your practice
2. Use the checklist to review it
3. What could you change?
4. What should stay the same?

Checklist

- ☐ Cut out inessential information
- ☐ Stick to key words
- ☐ Use dot points
- ☐ Avoid overusing capital letters
- ☐ Left-align text
- ☐ Present all essential information together
- ☐ Move text you plan on reading out into the notes section
- ☐ Use symbols to highlight important information
- ☐ Try to display information visually
- ☐ Break complex information into parts
- ☐ Control the pace of information
- ☐ Tell a story with headlines
- ☐ Keep instructions visible

For more cognitive load resources



Search '**cognitive load theory**' on the CESE website: www.cese.nsw.gov.au

Get in touch with CESE



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This resource was created thanks to Victor Newby and Alice Leung from Concord High School.

Their original presentation on cognitive load informing the use of technology at their school was the basis on which this presentation was created.