Science
at Earlsmead

Deborah Cole

15TH JANUARY, 2025

Our Choice of Scheme

- We use the Collins 'Snap Science' scheme of work to teach science
- A complete long-term plan for science which fully covers the National Curriculum and is constructed to ensure clear progression of knowledge and skills year by year.
- Medium-term plans for each year group, organised as six modules where the learning has been broken into straightforward, cognitively appropriate steps to be taught and assessed lesson by lesson.
- Resources for subject leaders to guide them to support their colleagues to plan, teach and assess science effectively
- The Snap long-term plan provides subject leaders with a coherent curriculum for science, from Year 1 to Year 6. The National Curriculum has been broken into modules which are organised logically to ensure that all substantive and disciplinary knowledge is taught and learnt well, at an appropriate time of the year and in an order which is underpinned by a clear progression. Scientific ideas, skills and vocabulary have all been sequenced to make sure that children's learning builds on prior understanding.

Lesson Structure

1. Pop Quiz

2. Each lesson begins with a question- often an enquiry question (LO will be linked to this)

3. Tier 2 and 3 vocabulary introduced

4. New learning takes place- this can include: investigative learning teacher demonstration, direct teaching, enquiry-based learning, modelling, drama, outdoor learning, and methods to help pupils think and problem solve.

(Teaching is enriched with videos, interactives, slide shows, resource sheets and images).

5. Every lesson ends with a ‘reflect and review’ activity where children summarise their learning.

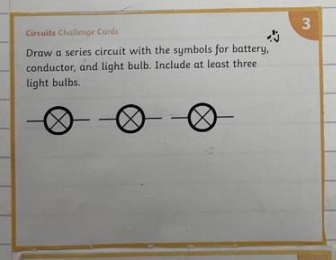
Examples of Work

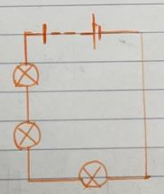
Wednesday 4th December 2024

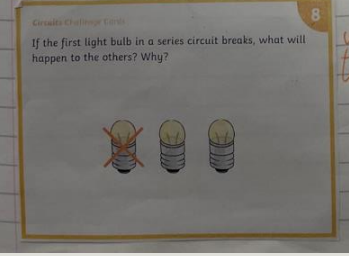
L.O: Observe the effect of changing diffent components of a circuit.

We investigated the changes that take place when we added and changed different components of a circuit. We set up a simple, control circuit with one bulb and one battery, and observed what happened. Then we changed one component at a time, and observed what changes took place. When we made a simple circuit (1 bulb and 1 battery), the light was brighter. This is because there was only one bulb which meant that all the battery's power was going to the bulb. When I added a motor with one battery, the light from the bulb was dimmer because there was only one battery where the power was being shared. However, when I added another battery there was enough power for both the bulb and the motor so the bulb was brighter and the motor was working perfectly.

NS:







The others will turn off as well because it would stop the electricity flowing.

Friday 13th December 2024

L.O: Understand the use of electric cars and their impact on the environment.

Red Chilli

Write down whether you agree with the statement below

Using electric cars will reduce global warming.

Remember to support your argument with research notes

Personally, I believe that using electric cars will massively reduce climate change and more or less make our environment cleaner than ever. They are far more efficient than your average petrol car, using electricity ⅓ more efficiently than conventional fuel-powered automobiles use petrol. These cars take electric energy from a power grid and convert it into mechanical energy by the motor. An electric vehicle motor will use ⅔ of the energy while conventional cars convert less than a third of the fuel.

Furthermore, the astronomical cost of fuel can be avoided by using an electric automobile. You still have to pay to charge your car but you can choose your electricity tariffs when charging at home. If you use public chargers at off-peak hours you can pay less. Many companies will let you sell excess electric energy to the grid, and some stores and car parks let you charge for free.

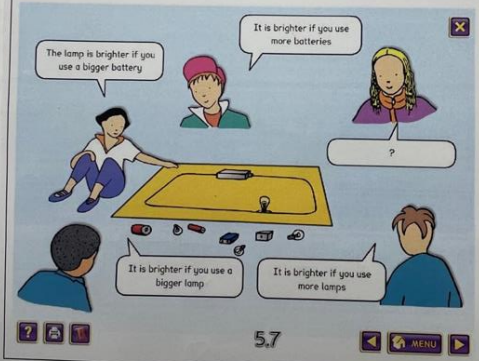
Electric cars don't emit direct emissions, which helps to reduce greenhouse gases and helps the global climate effort.

- If more cells or cells with more voltage are used the ~~lamp~~ buzzer will be louder and the lamp will be brighter. ✓
- If there are more batteries with more voltage lamps will be bright, buzzers will be loud and if the switch is off nothing will work. ✓

NS:

Making circuits and drawing circuit diagrams

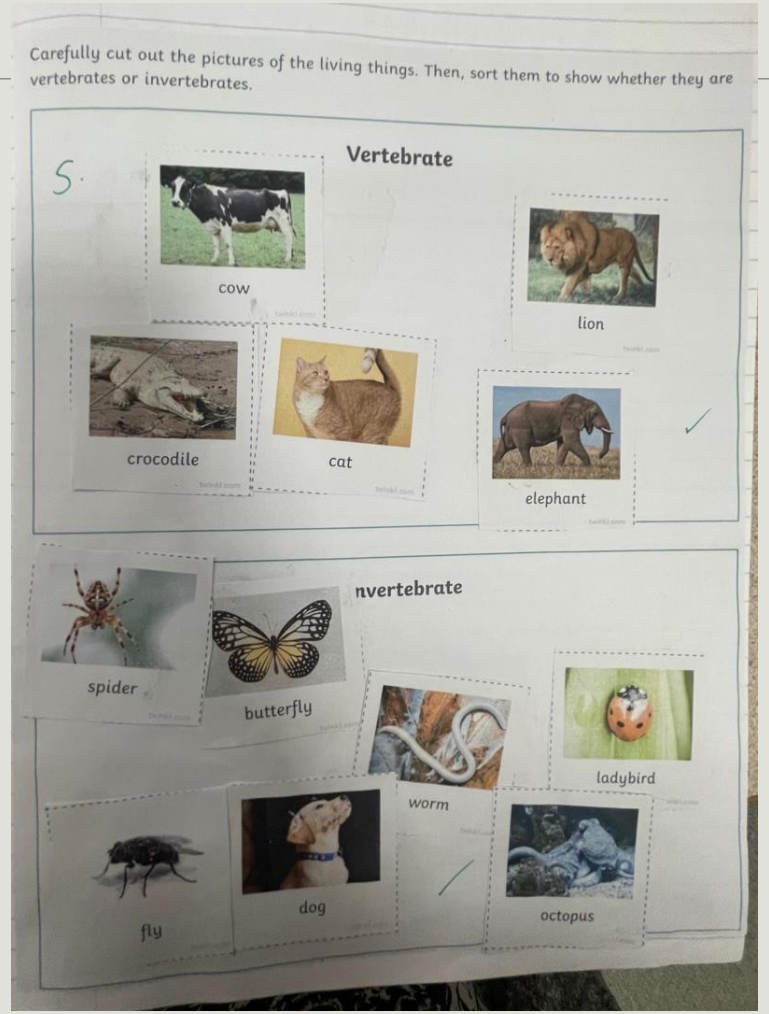
- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches

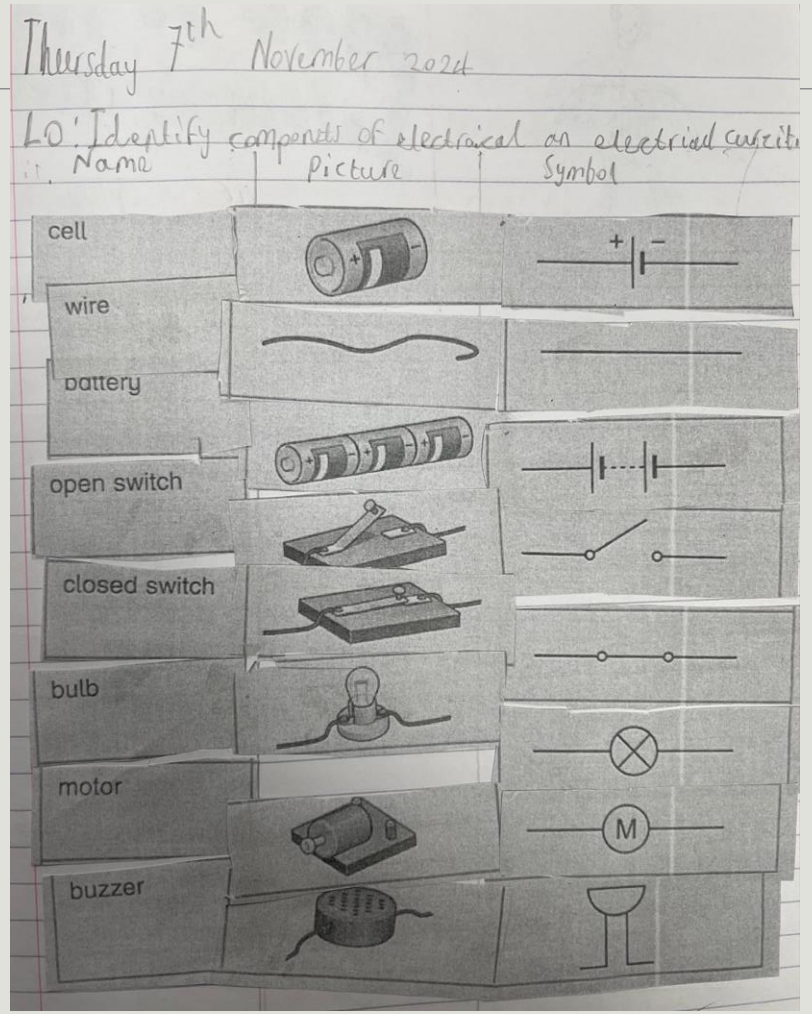


The children discussed the concept cartoon. Following on from this the children were asked to take one of the statements and gather evidence to support or refute it.

The kids in the back are wrong as the energy will be more diffused. ✓

Examples of adapted tasks





Spaced Retrieval- Pop Quizzes

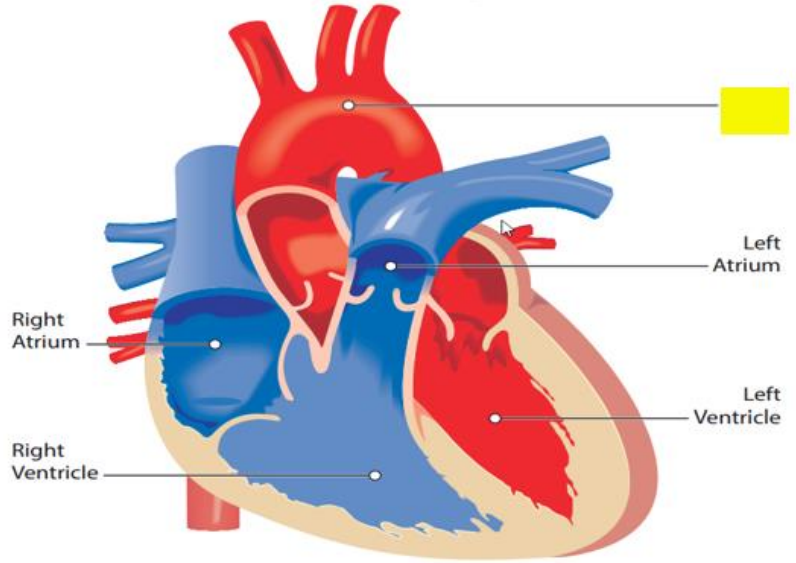
Science is the process of learning about the _____ around us through _____ and _____.

Wordbank

experimentation
world
observation

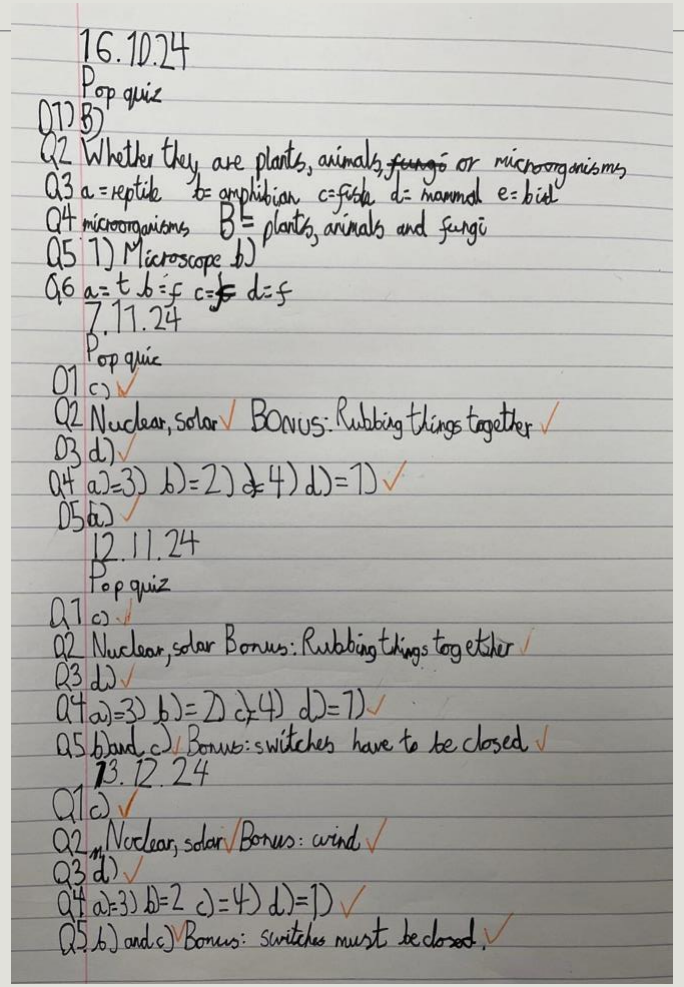
Spaced Retrieval- Pop Quizzes

Q1. Label the covered part of the heart below:

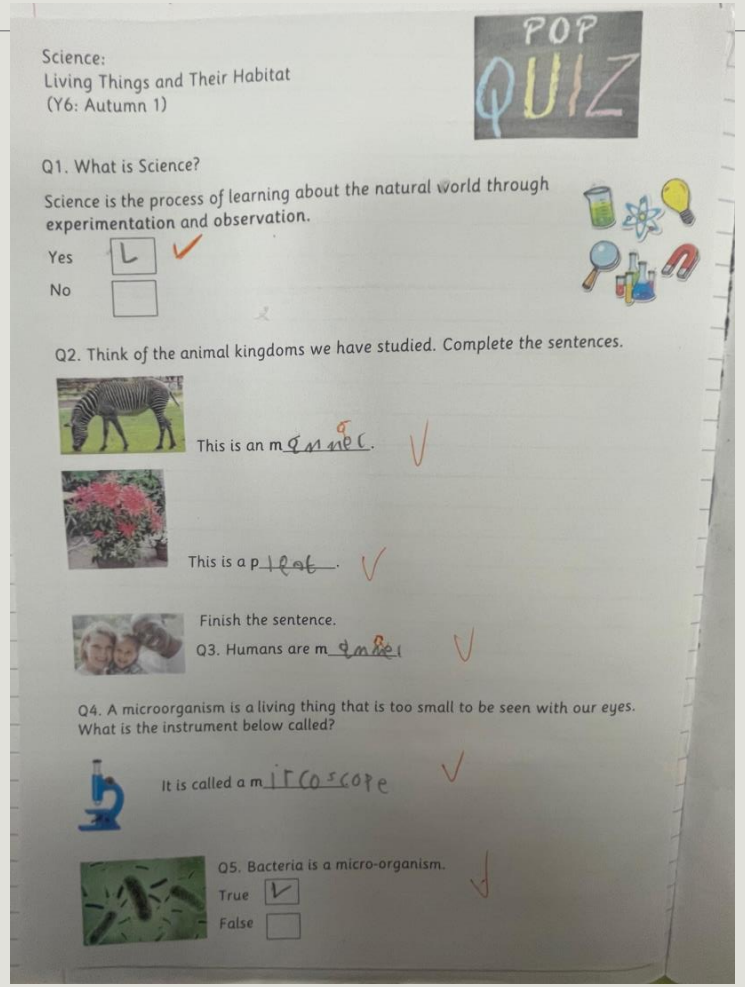


Bonus (Dojo): What is the function of this part?

Spaced Retrieval- Pop Quizzes



16.10.24
Pop quiz
Q1) B)
Q2 Whether they are plants, animals, ~~fungi~~ or microorganisms
Q3 a = reptile b = amphibian c = fish d = mammal e = bird
Q4 microorganisms B = plants, animals and fungi
Q5 1) Microscope b)
Q6 a = t b = f c = ~~t~~ f d = f
7.11.24
Pop quiz
Q1 c) ✓
Q2 Nuclear, solar ✓ Bonus: Rubbing things together ✓
Q3 d) ✓
Q4 a) = 3) b) = 2) c) = 4) d) = 1) ✓
Q5 a) ✓
12.11.24
Pop quiz
Q1 c) ✓
Q2 Nuclear, solar Bonus: Rubbing things together ✓
Q3 d) ✓
Q4 a) = 3) b) = 2) c) = 4) d) = 1) ✓
Q5 b) and c) ✓ Bonus: switches have to be closed ✓
13.12.24
Q1 c) ✓
Q2 Nuclear, solar ✓ Bonus: wind ✓
Q3 d) ✓
Q4 a) = 3) b) = 2 c) = 4) d) = 1) ✓
Q5 b) and c) ✓ Bonus: switches must be closed. ✓



Science:
Living Things and Their Habitat
(Y6: Autumn 1)

POP QUIZ

Q1. What is Science?

Science is the process of learning about the natural world through experimentation and observation.

Yes ☑ ✓
No ☐

Q2. Think of the animal kingdoms we have studied. Complete the sentences.

This is an mammal. ✓

This is a plant. ✓

Finish the sentence.
Q3. Humans are mammals ✓

Q4. A microorganism is a living thing that is too small to be seen with our eyes. What is the instrument below called?

It is called a microscope ✓

Q5. Bacteria is a micro-organism.
True ☑ ✓
False ☐

End of unit assessments

SNAPSHOT ASSESSMENT: WHAT REFLECTS BEST? QUIZ

Year group: 3 | Module 3: Can You See Me? Lessons 2, 3, 4

Question 1: What word can we use to describe objects that reflect lots of light?

1 Bright
2 Transparent
3 Shiny
4 Torches

Question 2: Why are some objects shinier than others?

1 They give out more light.
2 They reflect more light.
3 They don't reflect any light
4 They have their own batteries.

Question 3: Which group below has the most shiny objects?

1 mirror • white card • orange
2 mirror • CD • kitchen foil
3 pencil • black paper • mirror
4 plastic spoon • white paper • banana

Question 4: If you were in a completely dark room looking for a mirror, a metal spoon and a piece of black card, which ones would you be able to see?

1 Mirror and spoon
2 Just the mirror
3 All of them
4 None of them

Question 5: I have a mirror, a piece of scrunched up kitchen foil and a piece of brown card. Which is the correct order from shiniest to least shiny?

1 mirror • foil • card
2 foil • mirror • card
3 mirror • card • foil
4 card • foil • mirror

SNAPSHOT ASSESSMENT: SOUND TRAVELLING

Year group: 4 | Module 2: Good Vibrations. Lessons 3, 5, EL1

Curriculum statement:
Recognise that vibrations from sounds travel through a medium to the ear.

Activity instructions
The first part of this task can be presented to a group, but the questions to check understanding are for individual children.
Showing the image, tell the child that the mp3 player is turned up very loud and that the person is listening to it. Tell them to draw what happens to the sound from the mp3 player, including how the person hears it. Then tell them to explain their drawing to you. If the child only draws the sound travelling to the person, prompt them by asking: *Would someone in another part of the room be able to hear the sound? Does your drawing show that? What is the sound travelling through?* The child will probably draw the sound confined to the room. If the drawing does not show sound going beyond the room, ask: *Would people be able to hear the sound anywhere else in the house? Where do you think they would hear it? How would the sound reach them? What would it travel through?* Ask the child to give an example of an activity they have done in class that shows that sound can travel through solid materials.

Questions to check understanding
How does everyone in the room hear when I am talking? What direction does sound travel in from a source? How does the person hear the sound? How does the sound get to the person's ears? Have you ever heard something making a sound when you couldn't see it? If you have taught enrichment lessons 3 or 4 you could also ask: Have you done an activity in class that shows that sound can travel through liquids? (They will know about how fish hear, and about the use of echolocation by dolphins.)

Curriculum statement is achieved if the child:
Can show and describe sound travelling from the sound source to the person's ear, in any way that is clear, such as arrows and wiggly lines. Can recognise that the sound travels in all directions from the source. Knows that the sound in the room is travelling through air. Can recognise that someone out of sight of a loud sound source in a different room will still be able to hear it because the sound can pass through the solid walls, floors etc. Can give an example of sound travelling through a solid material, for example tapping on the table, ear gongs from lesson 3 or the string telephone from enrichment lesson 1.

SNAPSHOT ASSESSMENT: CAN WE CHANGE IT BACK?

Year group: 5 | Module 6: Materials: All Change! Whole module

Curriculum statement:
Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

Resources
Label cards – reversible and non-reversible
Sticky notes and pen

Activity instructions
This activity is for individual children or pairs.
Show the headings to the child / pair and ask them to explain what the words mean. Show them the other picture cards and tell them to sort the cards into two sets using the headings.
Ask the children to label any changes they know the name of using the sticky notes. They may not be able to label all the changes but should name: boiling; melting; dissolving; burning; rusting. They may also label mixing and cooking (they may not see these as suitably scientific terms). Discuss and clarify any pictures that they sort or label incorrectly.
Focus on the reversible changes. For each one, ask: *How can you reverse this change?*
Look at the non-reversible changes. Ask: *How can you tell that this is a non-reversible change?* For the burning and rusting, ask: *What is needed for this change to happen? How might you stop it happening?*

Questions to check understanding
What might help you to decide if a change was reversible or non-reversible? What is changing? What is causing the change? What is being produced?

Curriculum statement is achieved if the child:
Can identify which changes are reversible or non-reversible. Can name some reversible and non-reversible changes. Can name or describe how a reversible change can be reversed. Can identify some indicators of a non-reversible change, for example, bubbles, colour change. Can recognise where a new material is being produced, for example, a gas, ash, cooked meat, rust. Can state that rusting happens to metals and needs air (oxygen) and water. Can state that burning requires fuel, oxygen and heat.

Current Data (Autumn 2)

Whole School	Attainment		Progress	
Groups	@ +	+	@ +	+
ALL	64%	4%	88%	12%
Boys	61%	6%	85%	10%
Girls	66%	2%	93%	13%
Pupil Premium	61%	4%	91%	15%
Non-PP	65%	4%	87%	10%
EAL	61%	4%	88%	12%
SEND	27%	3%	67%	13%

Pupil Voice

Science Pupil Voice – Analysis **07/10/2024** **20 x Year 2 – Year 6 pupils (1 =5%)**

1. I enjoy Science lessons:

All of the time	Most of the time	Some of the time	Almost Never	Never
40%	45%	15%		
85%			**0%**	

6. PoP quizzes in Science help me remember and learn important information:

All of the time	Most of the time	Some of the time	Almost Never	Never
45%	45%	5%	5%	0%
90%			**5%**	

Pupil Voice

8. Things I like about Science lessons:	
	Drawing
	Drawing
	Drawing
	Cutting and sticking
	Investigations
	Investigations
	Not sure
	Investigations
	Investigations
	Working in groups
	Not sure
	Experiments
	Fun things
	Working in groups
	Experiments
	Fun activities
	Experiments and group work
	Experiments and investigations
	Experiments
	Experiments

Next steps

- Continue to regularly monitor the quality of teaching and learning in science- planning checks, pop quizzes and assessment tasks book looks, pupil voice
- Review and revise formative and summative assessments
- Increase the amount of teacher demonstrating in Science (as per Ofsted report)
- Plan activities for a whole school Science Week (10th-14th March)

Any Questions?