



# Science

## Curriculum Progression

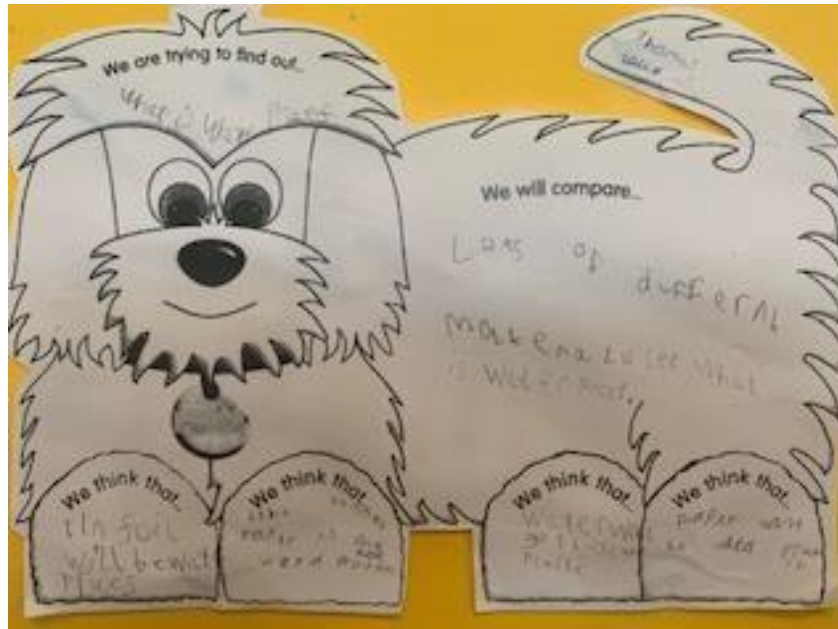
### Strand- working scientifically



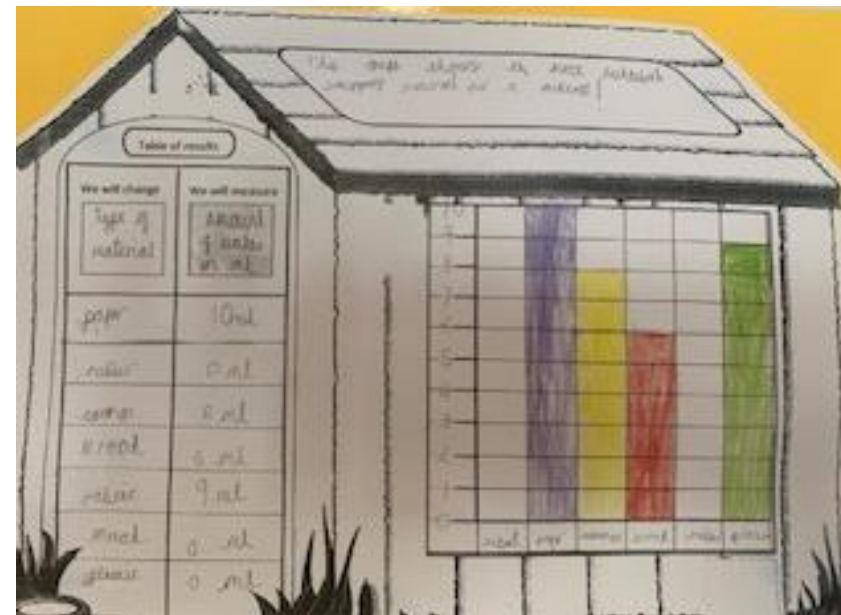
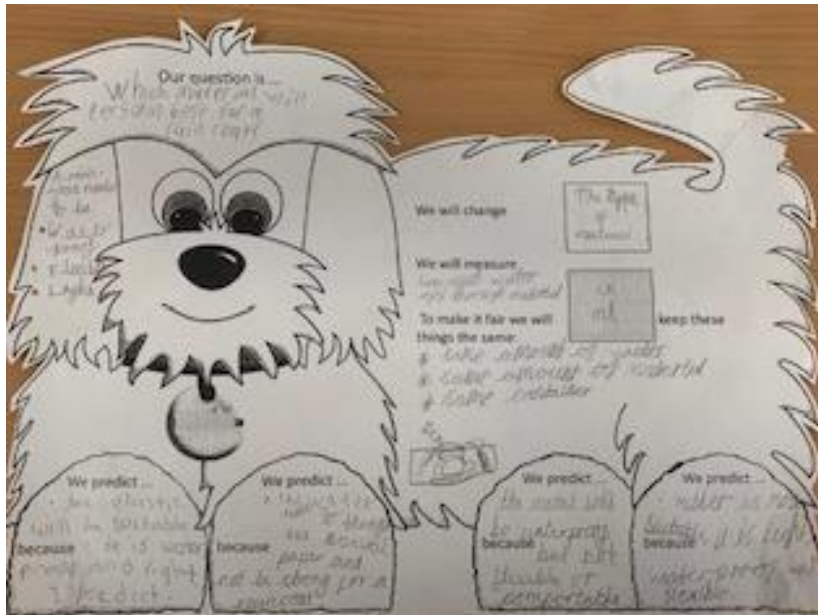
**Foundation Stage:** Children begin to ask and answer questions as a class. For example, which would be the most suitable material?

	Material	Prediction	Total
	Paper		3
	Plastic		11
	Wood		7
	Foil		3

Year 1: children perform simple tests.



Year 2: children use observations and ideas to suggest answers to questions. Then gather and record data to help in answering questions.



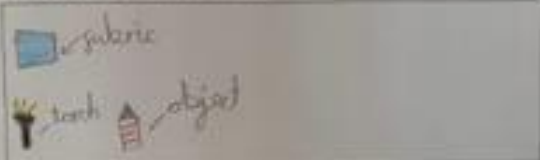
Year 3: children set up simple, practical enquiries and comparative and fair tests.

Investigation sheet

We want to find out which material is opaque

To make our test fair we are keeping these things the same: the place where we hold the torch, the object which makes the shadow.  
We are only changing the fabric.

To carry out our test we will need:-



A diagram showing a torch on the left, a blue square labeled 'fabric' in the middle, and a red and white striped object labeled 'object' on the right. Arrows point from the torch to the fabric and from the fabric to the object.

First we will get some fabric.

Then we will shine a torch through the fabric to see if we make a shadow.  
This is what we think will happen: we think the black fabric will be opaque and will not create a shadow.

We can record our results by using

diagram bar chart drawing table tally chart writing lists photographs

blue fabric	yellow cloth	dark cover	minky blanket
quite dark the shadow.	the shadow was grey. And the light was bright.	it did not make a shadow and it was dark.	it makes a dark shadow and it is light.

We found out that:- we found that the black cover was the best for Mr Brown's curtains.

We think this because:- the light did not shine through and it did not make a shadow. This means material is opaque.

**Year 4:** set up simple, practical enquiries and comparative and fair tests. Then make accurate measurements using standard units, using a range of equipment.

Investigation sheet

We want to find out which temperature do sugar cubes melt at best?

So that our investigation is a fair test we are keeping these things the same

We will keep the size of the container, the amount of water and the number of Sugar Cubes the same.

We will only change the variable we will change is the temperature of water.

We will need this equipment and these resources-

- 1 Thermometer
- 2 measuring container
- 3 water
- 4 3x cups
- 5 sugar cubes
- 6 Kettle

This is what we will do-

Firstly, I will measure 50ml of cold, hot and room temperature water. Next I will take the measurement of the temperature in degrees. Then I will add the sugar cubes at the same time. At this point, I will make careful observations to discover how quickly the sugar melts in each cup.

We predict that  
I predict that the sugar cube will dissolve quickest in the hot water.

We can record our results by using

room temperature 34°	dissolved 2nd
cold water 17°	dissolved 3rd
hot water 67°	dissolved 1st

We found out that-

My prediction was correct because I predicted that the sugar cube would dissolve quickest in the hot water and that is exactly what happened. The sugar cube was the worst at dissolving in the cold water.

We think this is because-

The hot water is a higher temperature so the sugar melts quicker.



Year 5: children plan enquiries, including recognising and controlling variables where necessary.

IBAT work sheet book

Question: How can we keep water warm for longer?

Response: If we want to make a cup of water with different materials I would try to see how long it stays warm for.

Method: We would have to make a hot water bag and see how long it stays warm for. We would have to use a thermometer to see how long it stays warm for. We would have to use a stopwatch to see how long it stays warm for.

Materials:

- Water
- Thermometer
- Stopwatch
- Insulation
- Boiling water
- Ice cream
- Wool
- Aluminum foil

Procedure:

I would first see how long it stays warm for. I would then see how long it stays warm for with different materials. I would then see how long it stays warm for with different materials. I would then see how long it stays warm for with different materials.

Results:

Time	Temperature
0 min	82.5°C
2 min	76.7°C
4 min	75.8°C
6 min	70.5°C
8 min	69.2°C
10 min	65.4°C
12 min	63.8°C

A graph to show how much water becomes in liquid form!

Conclusion:

When we put the water in the hot water bag it stays warm for longer. The water in the hot water bag stays warm for longer than the water in the hot water bag. The water in the hot water bag stays warm for longer than the water in the hot water bag.

Reflection:

I think that the water in the hot water bag stays warm for longer. I think that the water in the hot water bag stays warm for longer. I think that the water in the hot water bag stays warm for longer.

**Year 6:** children report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.

WHAT WAS SCIENTIFICALLY  
How does exercise affect heart rate?

Hypothesis  
 We believe that our heart rate will increase. We believe this because our bodies need more oxygen when we are running vigorously.

Method  
 Exercise for 30 seconds whilst wearing an electronic heart rate monitor. Our participants were given an electronic heart rate monitor which had to be set-up for 30 seconds, without stopping and at a constant rate.

Materials used  
 Electronic heart rate monitor/app - 3 separate and participants.

Prediction  
 We predict that the heart rate will increase so long as the participants jump at the same rate. We think this because our bodies need more oxygen when we exercise.

Independent variable: The amount of time we started for.

Dependent variable: Pulse/heart rate.

Controlled variable: Factors and the exercise completed.

Conclusion  
 In conclusion, from the graph we can see that heart rate increases rapidly when we begin to exercise. We know this because the graph shows a very steep curve at the beginning. However, towards the end of the experiment the graph begins to level out, showing as the heart rate was reaching its maximum. In our prediction we stated that the heart rate will increase so long as the participants jumped at the same rate. It is hard to say whether this happened or not but the graph did begin to level out.

Limitation  
 It is hard to improve the validity of this results. We could use more than one participant. Computers repeat readings so computer errors should be avoided. If we did any of this it would improve the validity of this experiment.

