




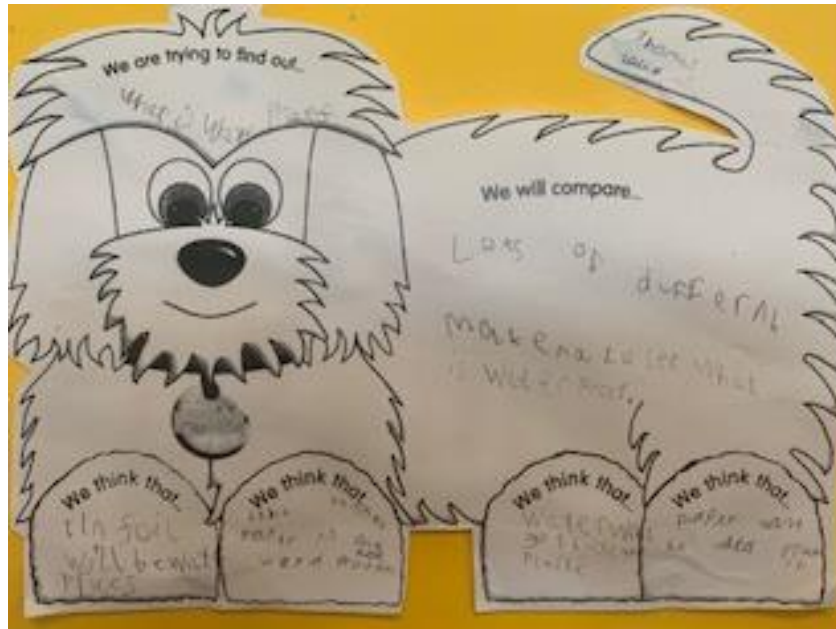
Science Progression Booklet
Strand: Working Scientifically



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.



Our question is...
Which animal will
be the best at
keeping the
water in the
can?

We will change
The type
of material

We will measure
the water
in the can

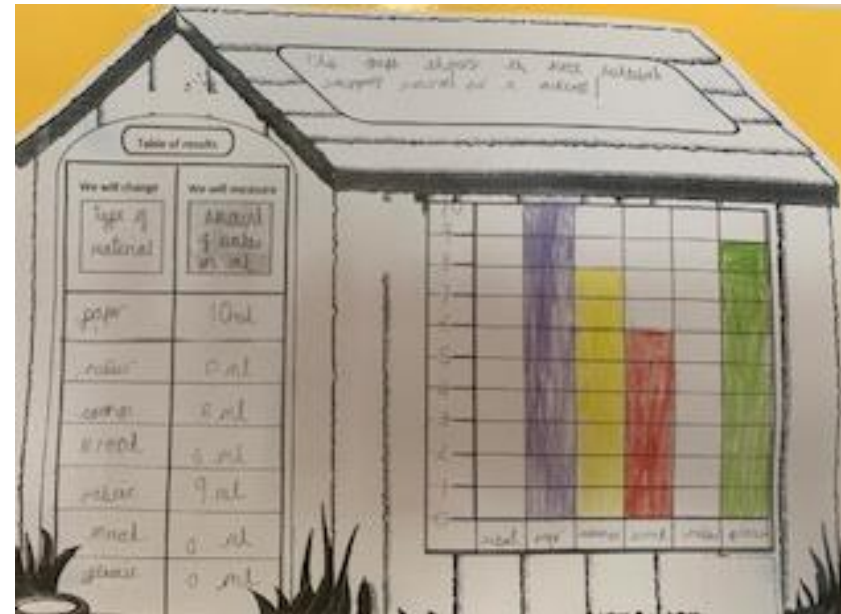
To make it fair we will
things the same
the same amount of water
the same amount of material
the same container

We predict...
the water will
be waterproof
because it is light
and soft
thick or
comfortable

We predict...
the water will
be waterproof
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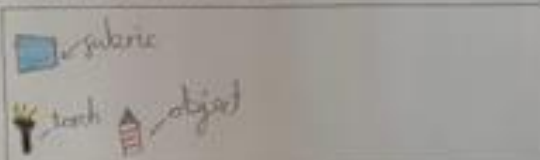
Year 3: children set up simple, practical enquiries and comparative and fair tests.

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 made the shadow.
We are only changing the fabric.

To carry out our test we will need:-



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 cast a shadow.

We can record our results by using

diagrams bar charts drawings tables tally charts writing lists photographs

blue fabric	yellow cloth	dark cover	rainbow 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 temperature of water.

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

hypothesis	variables	design	name	materials	writing	time	preparation
hypothesis	variables	design	name	materials	writing	time	preparation

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 fastest in the hot water and that is exactly what happened. The sugar cube was the worst at dissolving in 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.

THAT was identifiable

Question How can we keep water even for longer?

Answer: If we want to make a cup of water with different materials it would stay warmer for longer.

Method

We needed a cup to put around a beaker cup of water, we used polystyrene that we could break apart to see the water pour a longer period of time. We used 100ml of the water into the beaker and 100ml of water. We left it until the water was cooled to 10°C.

Materials

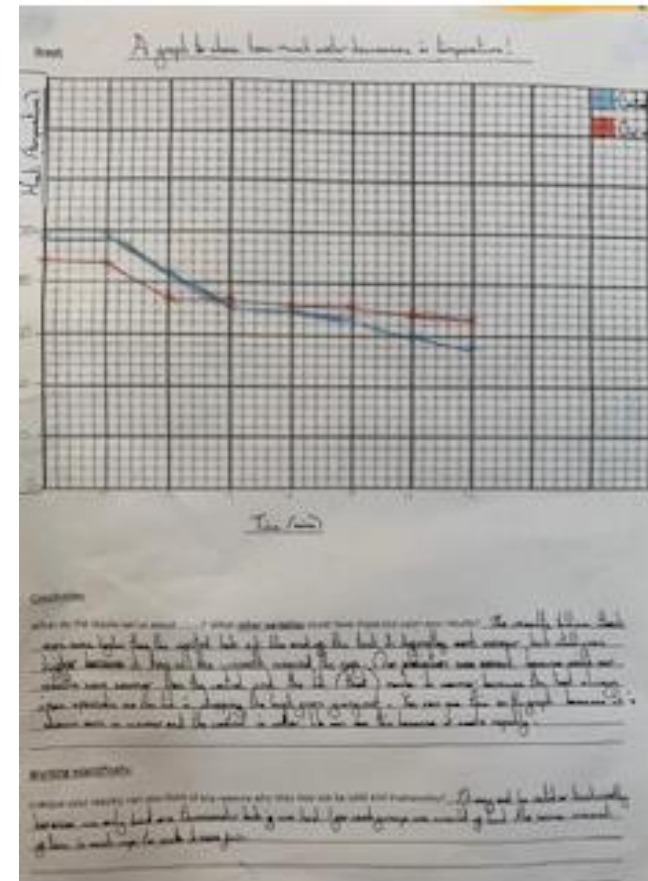
- Polystyrene
- Glass cup
- Water
- Thermometer
- Stopwatch
- 100ml beaker

Procedure

We poured the water into the beaker and waited until it was 10°C. We then poured the water into the glass cup and waited until it was 10°C. We then poured the water into the beaker and waited until it was 10°C.

Results and

Time	Temperature
0 min	82.5%
2 min	76.5%
4 min	75.5%
6 min	70.5%
8 min	69.2%
10 min	65.8%
12 min	63.5%



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

THAT WITH Slightly less
How does exercise affect heart rate?

Hypothesis
We believe that our heart rate will increase. We believe this because our teacher said that oxygen when we are running vigorously.

Method
Exercise for 30 seconds whilst wearing an electronic heart rate monitor. Did participant and gave an electronic heart rate monitor which told us the start time for 30 seconds, without stopping and at a constant rate.

Materials used
Electronic heart rate monitor/app - Stopwatch and participant.

Prediction
We predict that the heart rate will increase so long as the participant jumps at the same rate. We think this because our teacher said that oxygen when we exercise.

Independent variable: The amount of time we started for.

Dependent variable: Pulses/Heart rate.

Controlled variable: Person and the exercise completed.

Conclusion
In conclusion, from the graph we 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 us the heart rate was reaching its maximum. In our prediction we stated that the heart rate will increase so long as the participant 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. Complete repeat readings at complete different intervals. If we did any of these it would improve the validity of this experiment.

