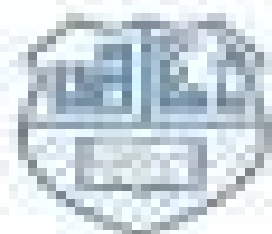


<https://www.youtube.com/watch?v=BGZaCsCfhFY>



focus aspiration
realisation partnership
consistency opportunity
Oxford learning **creativity**
quality **Primary** expectation
community respect challenge **School**
standards feedback inclusion
progress reflection
energy





Why is Science so important?



A high quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics.

- Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science.
- Pupils should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave and analyse causes.

Department for Education.



Aims



The National Curriculum for science aims to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Develop understanding of the natural processes and methods of science through different types of science enquiry that help them answer scientific questions about the world around them.
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Department for Education.



Scientific KNOWLEDGE AND CONCEPTUAL UNDERSTANDING



The programmes of study in the National Curriculum describe a sequence of knowledge and concepts to promote children's progress.

- Children should be able to describe processes and key characteristics in a common language. They should be familiar with and use, technical terminology accurately and precisely.
- They should build up an extended specialist vocabulary.



Working scientifically



This allows children to use a variety of approaches to answer relevant scientific questions.

- They include observing over time; pattern seeking; identifying, classifying and grouping; fair testing and researching using secondary sources.
- Working scientifically is not taught as a separate strand but through the topics that each year group teach.



How do we begin a new topic in science?



Establishing what the children already know about a topic:

- Concept cartoons.
- Mind mapping.
- Using a story, a real life context or an object to stimulate discussion-hook in! (Stunning start)
- Record ideas on a post it note.
- Questions children have – what do we want to find out?
- Setting up a practical activity that stimulates questions.

Concept Cartoons

A concept cartoon is a kind of visual argument. It shows an everyday situation in which characters are expressing different views about what is happening.

- They generate discussion about alternative possibilities and provide an ideal basis for some kind of scientific enquiry to find out more about a situation.



Don't put the coat on the snowman. It will melt him

It will keep him cold and stop him melting



I don't think the coat will make any difference

?

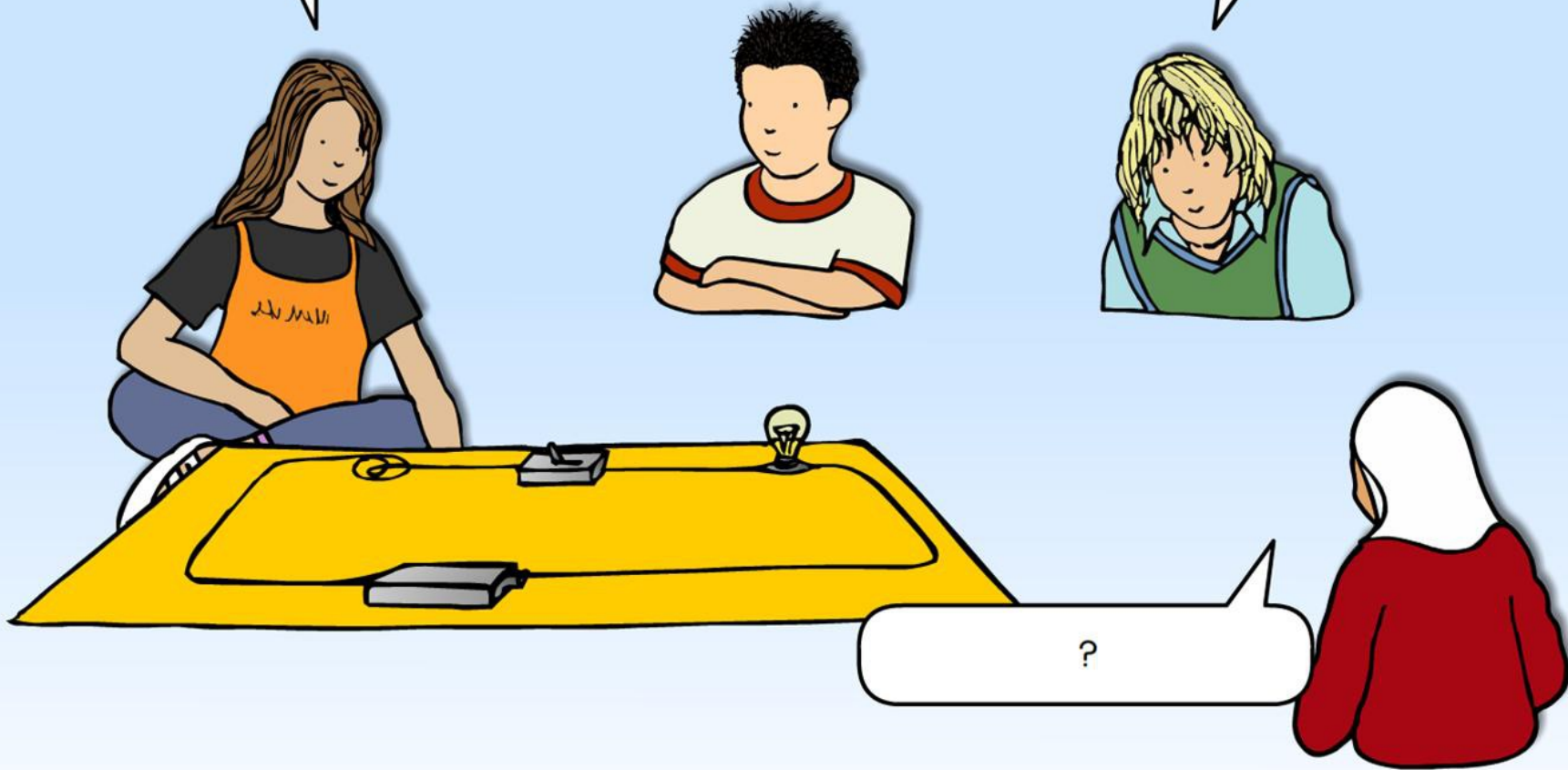




I can tie a knot in the wire tight enough to stop the electricity getting through

The knot slows down the electricity but doesn't stop it completely

I think that the knot doesn't make any difference





Asking Questions



We encourage children to ask questions:

Where do...? What is the difference between...?

How does? We wonder whether...?

How do we know that...? What would happen if...?

Can we find ways to...? What else can we try to...?

How can we make sure that...? Is there evidence to explain...?

Would it make any difference...? What would we need to do

to...? What is the best way to record?

Discovery Questions



I wonder if...
I wonder how...
I wonder why...
I wonder where...
I wonder what...

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Discovery Questions



I wonder if...
I wonder how...
I wonder why...
I wonder where...
I wonder what...



Scientific Enquiry.



Children love the practical aspects of Science and we work hard to ensure a balance of practical learning and acquisition of subject knowledge.

Practical Enquiry:

Change

Measure

Keep the same

Distance can travelled

Point where can was released

Height of ramp

Height of bounce

Size of can

Type of surface

Length of shadow

Height of drop

Investigation 1

These are the four investigations the children did.

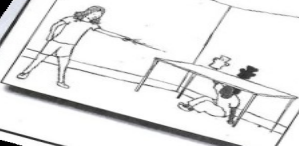
What affects the time sugar takes to dissolve in water?



What makes the distance a car has been rolled?



What affects the height of a shadow when a light shines on a puppet?



How can we make a ball bounce to different heights on its first bounce?



How does the temperature of the water affect the time it takes the sugar to dissolve?

How does the height of the ramp affect the distance the can travels?

How does the height of drop make a difference to how high the ball bounces?

Does the distance between the puppet and the light make a difference to the length of the shadow?

Practical Enquiry Skills:

Key Stage 1:

- Asking simple questions and recognising that these can be answered in different ways.
- Observing closely using simple equipment.
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions.

Practical enquiry skills

Lower Key Stage 2 (Years 3 and 4):

- Ask relevant questions and use different types of scientific enquiries to answer them.
- Setting up simple practical enquiries, comparative and fair tests.
- Making systematic and careful observations and, where appropriate, taking accurate measurements

Practical enquiry skills

Upper Key Stage Two (Years 5 and 6)

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Using test results to make predictions to set up further comparative and fair tests.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
- Identifying scientific evidence that has been used to support or refute ideas or

Key Stage One Topics:

Year 1:

- Plants
- Animals including Humans
- Everyday Materials
- Seasonal Changes.

Year 2:

- Living things and their habitats
- Plants
- Animals including humans
- Uses of everyday materials

Year 3 and 4:

Year 3:

- Animals including Humans
- Rocks
- Light
- Forces and Magnets
- Plants

Year 4:

- Living things and their habitats
- Animals including humans
- States of Matter
- Sound
- Electricity

Years 5 and 6:

Year 5:

- Living things and their habitats
- Animals, including humans
- Properties and changes of materials
- Earth and Space
- Forces

Year 6:

- Living things and their habitats
- Animals including humans
- Evolution and Inheritance
- Light
- Electricity



Different ways of Recording



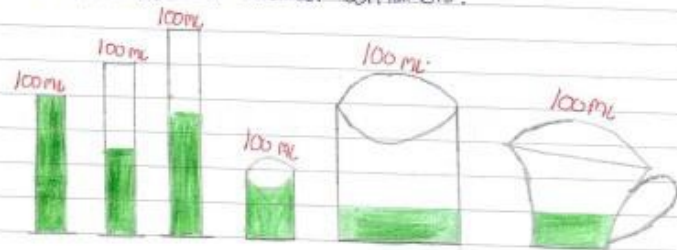
It will be no surprise to you that although children love the practical aspects of Science they are not so keen on recording their learning by writing in their books!

- As part of my role as Science Leader, I have worked hard to take on board the pupil's comments from Pupil Voice activities. We give them far more freedom to show their learning in many different creative forms e.g through drama, a song, a rap, a quiz and even teaching short lessons to the rest of the Class to name but a few. We also regularly take photographs of the children's learning as evidence.

Tuesday 8th January 2013

LO: Finding answers to questions

Question: Does the volume of liquid stay the same when poured in different shaped containers?



Well presented results add an amount to the jug and each container.

Write the answer to the question.

Yes. When we poured the water into each container it was the same amount.

Do all liquids freeze ?

Prediction: I predict they all freeze.

Liquids	Yes/No
Vinegar	Yes
Smoothie	Yes
Apple juice	Yes
Orange juice	Yes
Milk	Yes
Honey	No
Washing up liquid	Yes
Golden syrup	No
Sunflower oil	No
Olive oil	yes
Marmite	No
Treacle	No

Put in at 6:50pm. Took out at 6:50am

Conclusion: The viscous* ones did not freeze. Yes or No isn't always an answer. The olive oil changed colour. After leaving them out of the freezer they turned back to their original state.

* I found a word called viscous which describes thick liquids like marmite and treacle.

An interesting collection of data experiment at home.

Tuesday 8th January 2013

LO: finding answers to questions

Do all liquids freeze?

Water does freeze

Soy Sauce does not freeze

hard cream does freeze

olive oil does freeze

freeze

freeze

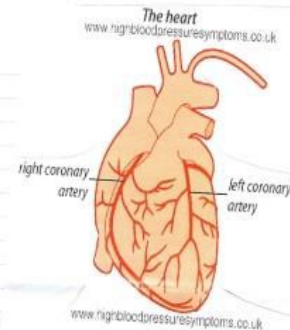


Tuesday 9th October 2012

LO: I am learning that the heart is a muscle that pumps blood around the body.

Song

Our heart, we need to pump blood round our body. X2
We need our heart, coz, otherwise we'll die.
Our heart, we need to pump blood round our body. X2
Our heart, is important to---- us, hey!
Our heart, we need to pump blood round our body. X2





Stunning starts, marvellous middles and fantastic finishes!



Here at Otford we believe in making the children's learning as fun and memorable as possible, with this in mind, all topics begin with a planned stunning starter, marvellous middle and fantastic finish. Here are some photos of these and afterwards please have a look at the display board to see more!



Using our School Site





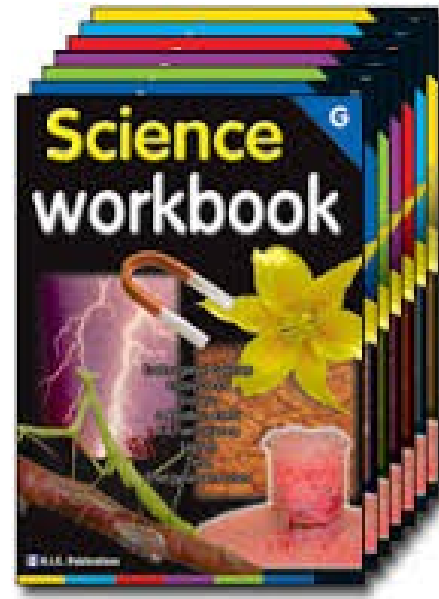
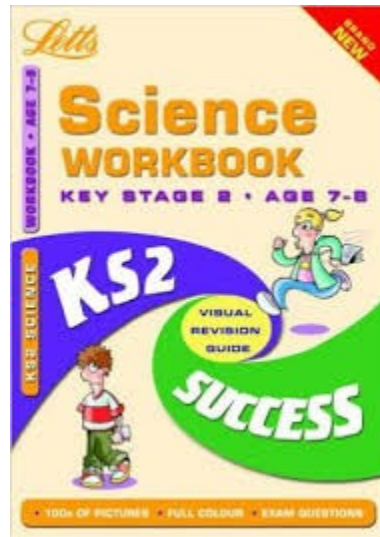
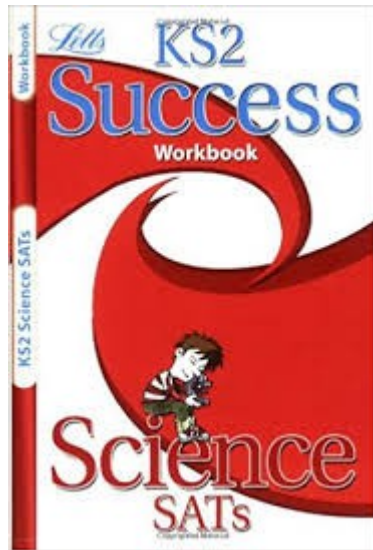
And the surrounding area!



How can I help my child?

- Support their developing scientific vocabulary and help them to use topic specific vocabulary at home ‘Why is condensation forming on the car windows?’
- Encourage your children to ask questions about the natural world and then explore reasonable ways they could find out answers.
- Encourage them to improve their developing research skills using both the internet and books.
- Come into school and share your own scientific skills – could you do a presentation or run a work shop for a class or year group or even the whole school?

Read about science!



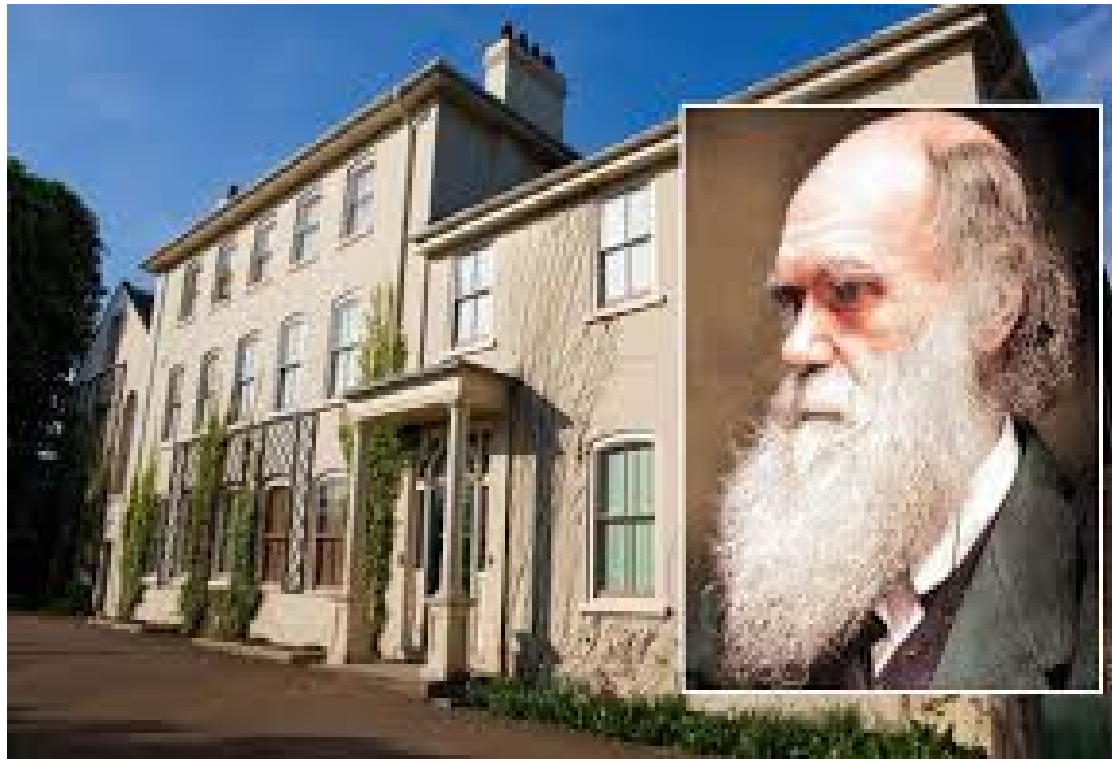
Go Places! SCIENCE IS ALL AROUND US!

SCIENCE
MUSEUM



So much is on our doorstep!





Lots to Explore-Science is everywhere!

