



SCIENCE

PORTFOLIO



SCIENCE AT HOVE JUNIOR SCHOOL

As a science team, we strongly believe that all children should be learning science through active investigations and enquiry based learning. They should be encouraged to discuss and debate the 'big ideas' of science and through this discussion ask questions about the world around them. Our curriculum overview ensures children are exposed to the facts and theories set out in The National Curriculum giving them a progression of knowledge that builds from year to year. However, it is the understanding and investigation of key ideas that allows children to further explore events and phenomena that influence their lives.

Our goal is that science units allow children to learn through enquiry. Starting with their initial questions, that will be based on their existing ideas and experience, we encourage children to make predictions, explore concepts through investigation, collect data and return to their original idea to reflect and pose further questions. This cycle develops over the key stage as children are taught a clear progression of skills to become scientific thinkers.

Our aim is that children will develop a life-long interest in science and their world.





At Hove Juniors we...

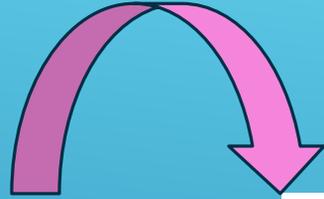
L Look after each other

E Everyone does their best

A Aim high

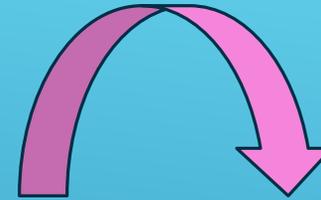
R Respect

N New day new challenge



	Question
	Collaborate
	Reflect
	Take Risks
	Independence
	Perseverance

Our LEARNING CHARACTERISTICS support and define how the children become successful learners.



CURRICULUM DRIVERS:



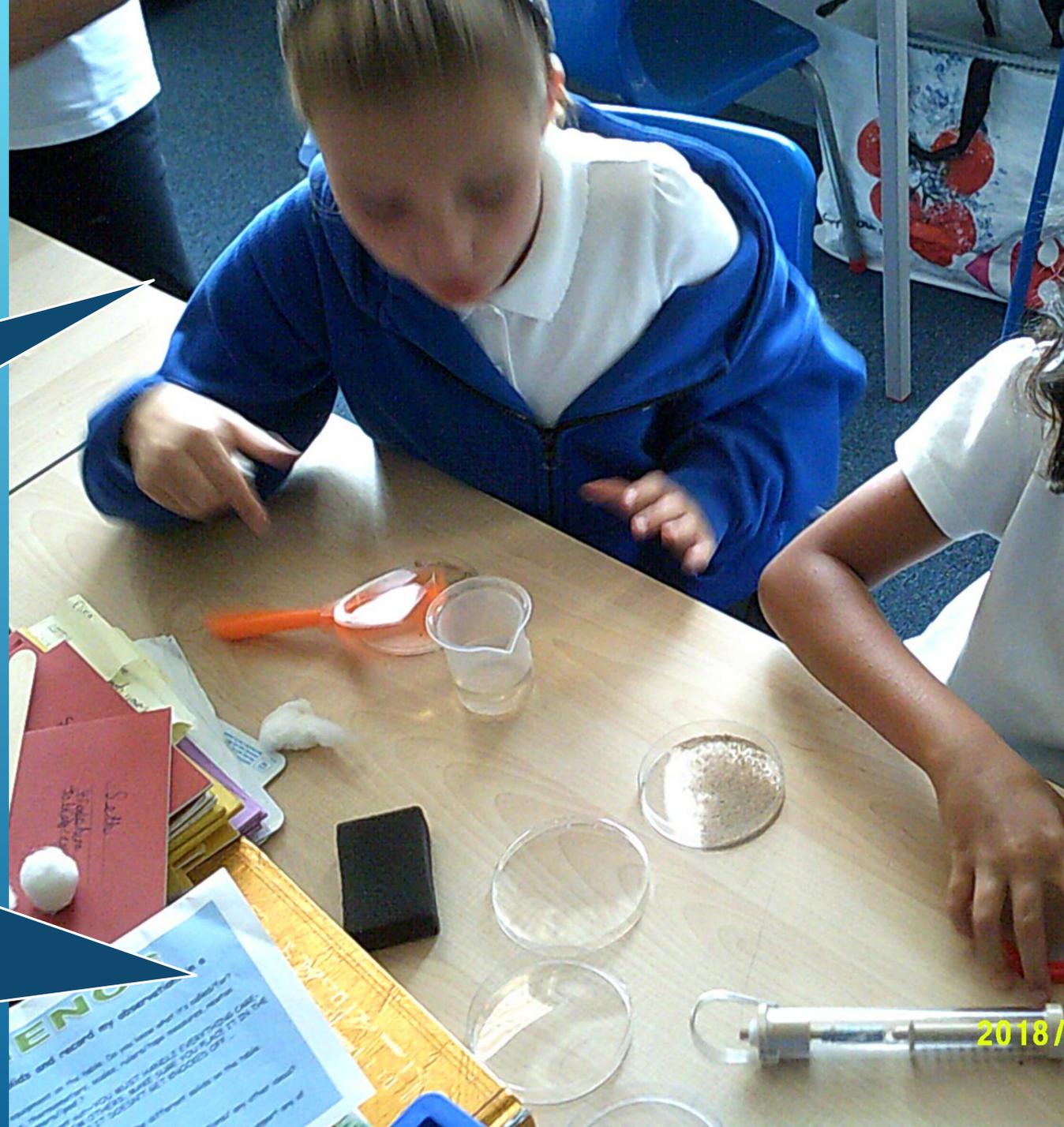
- The children at Hove Junior School are passionate about Science. Their curiosity and enthusiasm shines through during their lessons.

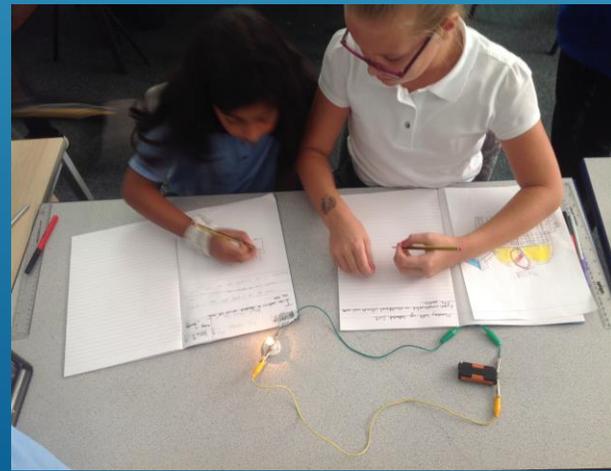
I wanted to do a victory dance when my circuit lit up!

It was so fun, seeing how the different things made the teeth rot - I know I need to avoid coke now!

It was so funny when we made a model of the digestive system - it even had fake poo - but some people said it was disgusting!

I loved drawing the fossils, using the magnifying glasses to see their details. I wonder how many more fossils are left undiscovered.





CURRICULUM

Our curriculum aims to inspire children's curiosity about the world and how it works.

It encourages collaborative learning, alongside independent thinking and investigation.

Lessons are designed to encourage the development of key scientific skills.



Our Science Curriculum Overview details all of the specific topic areas to be taught in each year group, highlighting opportunities for practical investigations and suggesting links with other curriculum areas, to ensure the children's learning is relevant and meaningful.

Year group & Link to Hamilton Trust Science planning	Topic	Coverage – taken from National Curriculum	Experiments/resources/ links	Separated?	Cross Curricular links taken from 'Creative Approach to Teaching Science. Big Idea Thinking! And Hamilton Trust						
Year 3 https://www.hamilton-trust.org.uk/science/year-3-science/	Light (Summer term in order to look at shadows outside, sun safety)	<ul style="list-style-type: none"> Recognise light is needed to see in the dark/darkness absence of light How light is reflected from different surfaces Dangers of the sun Shadows and how they change. 	https://www.hamilton-trust.org.uk/science/year-3-science/light-light-and-shadows/ It's really important that children experience complete darkness during this topic. School does have a dark tent. Recording shadows over time in the playground (with chalk) Making shadow puppets and mini theatres.	In year 6	Link with Ancient Greek story of Perseus who defeated Medusa's gorgons with the reflected light from his incredibly shiny shield. Children can choose the best material to make shields following an investigation.						
			on ing a lamp) ing circuits) s/insulators Exploring which components are required for a circuit Devising own experiment to test the effect of varying components	Year 6	Information texts: Create detailed safety posters to highlight the dangers of electricity Recount: Write a detailed recount, for Young Scientist of the Year competition, of your first-hand experience of testing a range of materials'.						
	Rocks	<ul style="list-style-type: none"> Compare/group rocks (appearance/properties) How fossils are formed Recognise that soils are made from rocks and organic matter. 	https://www.hamilton-trust.org.uk/science/year-3-science/rocks-rocks-and-fossils/ Make own fossils – imprints in clay. Close examination, using magnifying glasses – recording observations in a variety of ways	No.	Could be touched on again in year 5 with properties. Some observation of rocks as solids should be covered in Y4 and contrasted with other solids' properties						
			of digestive item – each tail kers, Digestion re-en- lights, plastic ba crackers, orange plate Use 'Virtual) Tei to see the diges Observe human shapes related t functions Identify teeth of animals, linked t https://www.hamilton-trust.org.uk/science/animals-humans-excite-these-your-teeth	Year 5 https://www.hamilton-trust.org.uk/science/year-5-science/	Animals including humans Properties and changes of materials Earth and Space	<ul style="list-style-type: none"> Changes as humans develop to old age (Puberty) Grouping materials by properties (hardness, solubility, transparency, conductivity, insulation, response to magnets) Dissolving materials in liquid to form a solution – recovering a substance from a solution Separating mixtures Give reasons (evidence from fair tests) for particular uses of everyday materials Reversible/irreversible changes Movement of the Earth/planets relative to the Sun in Solar System Movement of the Moon relative to Earth Sun, Earth, Moon – spherical bodies Day and night – why the sun seems to move across the sky. 	https://www.hamilton-trust.org.uk/science/year-5-science/animals-including-humans-life-explorers/ https://www.hamilton-trust.org.uk/science/year-5-science/properties-materials-music-festival-materials/ https://www.hamilton-trust.org.uk/science/year-5-science/changes-materials-changing-materials-education-pack/ Filtering water experiment. Growing salt crystals Optional cakes in cups! https://www.hamilton-trust.org.uk/science/year-5-science/earth-and-space-space-presenters/ Space Dome Phases of the moon model Optional – creating the solar system to scale in the playground/park	Building upon SRE in Y4 Can build upon learning in year 4 and the water cycle. Avoid Repeating Year 6 https://www.hamilton-trust.org.uk/science/year-6-science/	Chronological Report: Describe the changes that occur between baby and child Poetry – exploring physical changes in old age Recount: Write to stall Evolution and Inheritance. All living things and their habitats Electricity Light	Chronological Report: Describe the changes that occur between baby and child Poetry – exploring physical changes in old age Recount: Write to stall Evolution and Inheritance. <ul style="list-style-type: none"> Recognise change in living things over time and that fossils provide information about living things millions of years ago Living things produce offspring of same type but not identical to parents Adaption to environment and how this may lead to evolution Cross breeding dogs investigation/ Top Trump cards Classification of living things by common observable characteristics (plants/animals) Give reasons for classifying plants and animals based on characteristics. Brightness of light/loudness of buzzers and association with number/voltage of cells used in circuit Use recognised symbols when representing simple circuits in a diagram Recognise light seems to travel in straight lines How we see (objects reflect light into eyes etc.)	Argument and debate: Write up your new animal or plant explaining all adaptations to an Cross breeding dogs investigation/ Top Trump cards Fiction: Explain through story writing how certain features of animals have evolved Chronological report or persuasive writing: Write a chronological report about the life and work of Carl Linnaeus or a persuasive piece of writing arguing why he is one of the greatest scientists. Non-chronological report: Research some unusual living things and write up all findings in the form of a 'Fact file'. Year 4 – classifying, using branch diagrams Explanation: Carry out a series of enquiries that explore the effects of voltage on electrical circuit components and write up your findings, causal relationships and explanations in a written report. Persuasive writing: Write up the research and development of your festive lights decoration in order to persuade the Dragons that yours is the best. Year 4 Year 3

CURRICULUM OVERVIEW

STANDARDS

The standard of work produced in Science is very high at Hove Junior School. We encourage the children to see themselves as Scientists during these lessons: considering safety matters; selecting effective ways to record their observations; working in a team, where relevant, to achieve the best outcomes.



STANDARDS IN YEAR 3



Handwritten notes on a worksheet with a cloud graphic and a diagram of a container. The notes include:

Handwritten text in a cloud: "Handwritten notes in a cloud graphic." (Note: The text is mirrored and difficult to read.)

Diagram labels: "Small", "medium", "Big".

Other labels: "DARIO", "Nancy", "Darcy", "Arielle", "STAN".



October 2019

3 Blue investigate mold fossils

Sedimentary sandwich Plasticine

Thursday 3rd October 2019

IAIT investigate and record my findings

Metamorphic

SLATE

- Slate is blue, purple and grey in colour.
- It is easy to cut into thin sheets due to its layers.
- Slate is used for roofs and foot paths.
- It is used for decorative garden paving stones.

Marble

metamorphic

It is made in British and make the surface smooth and shiny. It is easy to carve because it is soft and doesn't crumble when cut.

Sorting rocks into different categories

Sedimentary

Shale can be in colours like black and grey. We use shale for tiles, bricks and pottery. Did you know that shale can be split into sheets.

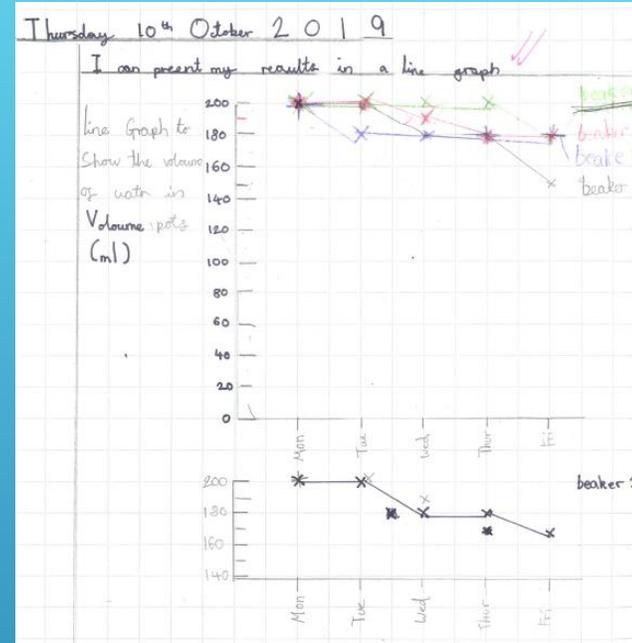
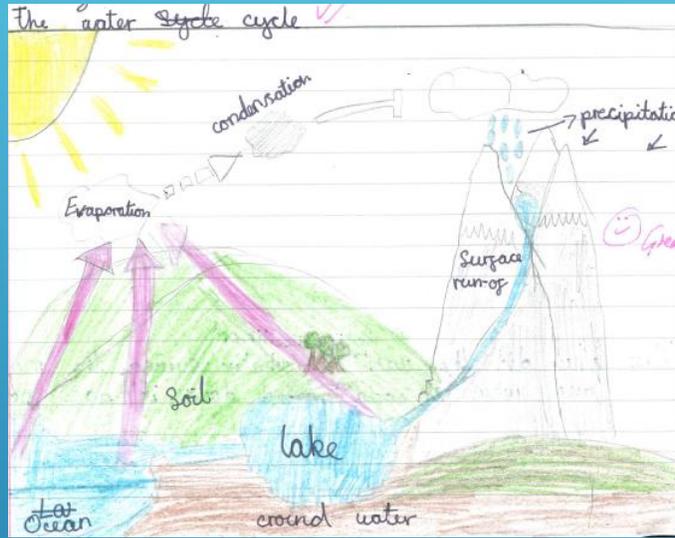
Did you know that chalk is made from shells of one type of sea creature? Chalk also is crumbly. Chalk comes in one colour which is white. You can see it get toothy.

Well done putting your research into your work. W

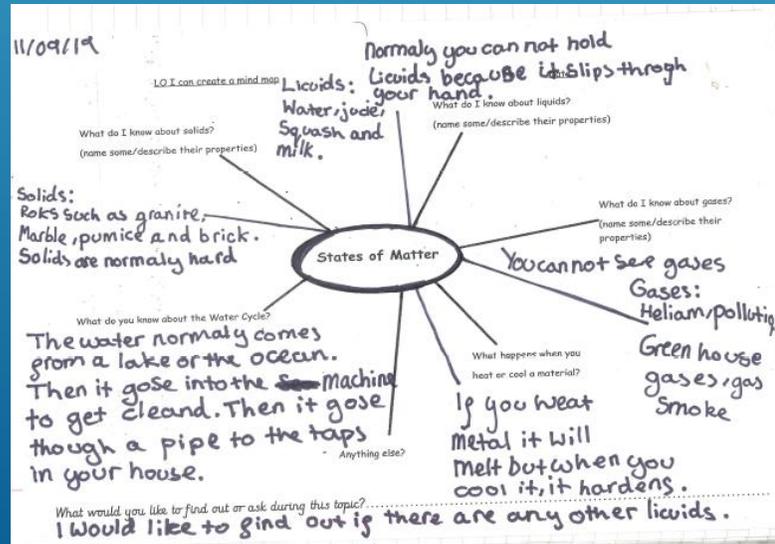
Did you know that lime stones are made by the shells and skeletons of sea animals so may have fossils.



STANDARDS IN YEAR 4



Name of material	State of matter	Can you change its volume?	Can you change its shape?
unfix block	Solid	no	no
water	liquid	yes	yes
air	gas	yes	yes
Sand	Solid	no	yes
perfume	gas	yes	yes
honey	liquid	no	yes



What solids don't melt?
 Can solids freeze again after they have melted?
 Are most solids that have melted opaque, translucent or transparent?
 Do most liquids that have melted freeze?
 Can butter rise again after it has melted? *False question*

STANDARDS IN YEAR 5



How many types of forces are there?
 Why is there no gravity on the moon?
 Where does gravity come from?
 What would happen if we jumped in space? What would happen if we had gravity in space?

What will happen to the newtons when I place the force meter in the water?

Results

Object	Force meter reading in air (Reading 1)	Force meter reading in air (Reading 2)	Force meter reading in water (Reading 1)	Force meter reading in water (Reading 2)
Lego	6.8 N	5.2 N	0.0 N	0.0 N
mug	3.0 N	3.1 N	1.0 N	2.0 N
marble jar	10.0 N	10.0 N	1.4 N	1.4 N
paints	1.2 N	1.4 N	0.0 N	0.2 N
plants	3.4 N	3.4 N	0.0 N	0.0 N

Conclusion

I found out that no matter how heavy or how light the object was, it uplifted reduced the newtons when they were put in the water. (most of them were on 0.0N!) All of the objects except the mug were buoyant (because of its shape) were buoyant. The upthrust worked against the force gravity so make sure the objects floated. I was surprised because even some of the heavy objects (like the big marble jar) were buoyant and didn't sink. If I were to do this



What does axis and orbit mean?

Axis is this: 23.5 degrees

Orbit means going round. this is going round. this is in the middle staying still!

Thursday 20/10/2020

I can understand that air resistance slows moving objects.

Notes

Gravity pulls objects to the centre of the Earth. Even if, like a paperclip and a glue stick, they have a different mass, they will still fall at the same time. It's not how heavy it is, it's how strong the gravity's pull is. But, if you have air resistance, objects fall slower. But if you have streamlined objects, they'll go faster.

A famous scientist, called Galileo Galilei (1564-1642) led an experiment about gravity and climbed to the top of the leaning tower of Pisa with two balls and one was heavier than the other. He dropped them and they landed at the same time. Say you dropped a hammer and a feather. The hammer will drop quickly, more so than the feather because A) it's streamlined, and B) it's heavier. The feather would float down slower because A) it's lighter and B) it's got more air resistance.

Wow!

Results

Parachute	Observation
	Droplet land very well and floated over the bench.
	Landed OK but got stuck over as it landed on floor.
	Floated for a second and landed great. Didn't get over.

Evaluation

Two of the parachutes dropped and floated over onto the bench and floor, but the large parachute didn't get over or land badly. Overall, it was 2/3 that went wrong.

STANDARDS IN YEAR 6



Friday 18th October 2019. Friday 25th October 2019.

Living Things - Mould Experiment

QUESTION
What conditions makes mould grow faster?

PREDICTION
I predict that the wet piece will grow mould faster because of its moist surface the mould will find it easier to grow.

VARIABLES
What I will change
I will change the dampness of the bread.
What I will observe/measure
What I will keep the same
the type of bread, the place the bags and person putting the bread in the bag.

MATERIALS
2 slices of bread, 2 ziplock bags and water.

Results

		1 st observation	2 nd observation	3 rd observation
Bread Example 1	dry bread.	Slightly moldy (brown and green)	very moldy (green and brown) 5 large patches	not moldy.
Bread Example 2	wet bread.	not moldy.		

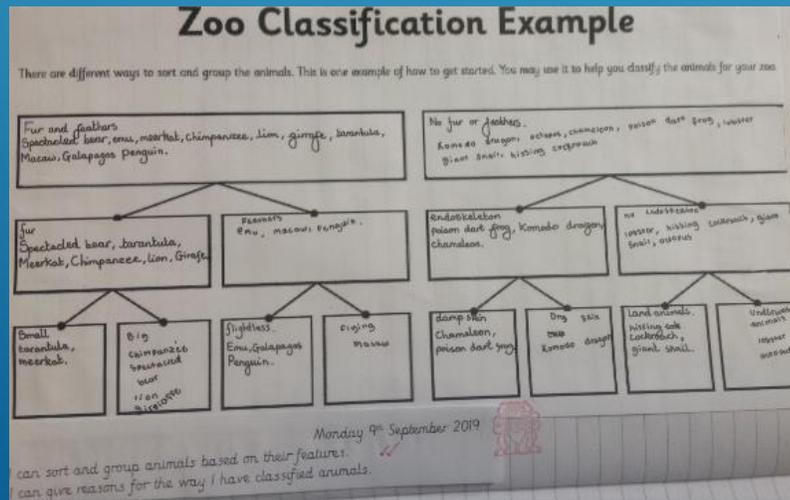
CONCLUSION
My prediction said the mould would grow faster on the wet bread. I was right. I can see from my observations that the moist surface of the wet bread had a big impact on the moulds growth. I found out that because the wet bread had more mould, the moistness of the bread helped the moulds growth. It is reasonable to conclude that it is easier for mould to grow on wet bread because there was alot more mould on the wet bread than the dry one.

Using the information from the experiment, draw a diagram showing mould growth on the bread.



Microorganisms

Having conducted our experiment on mould growth and bacteria, we used our Design and Technology skills to create our very own microorganisms. We researched what a microorganism is and found images for them, we then used clay to replicate what they look like.



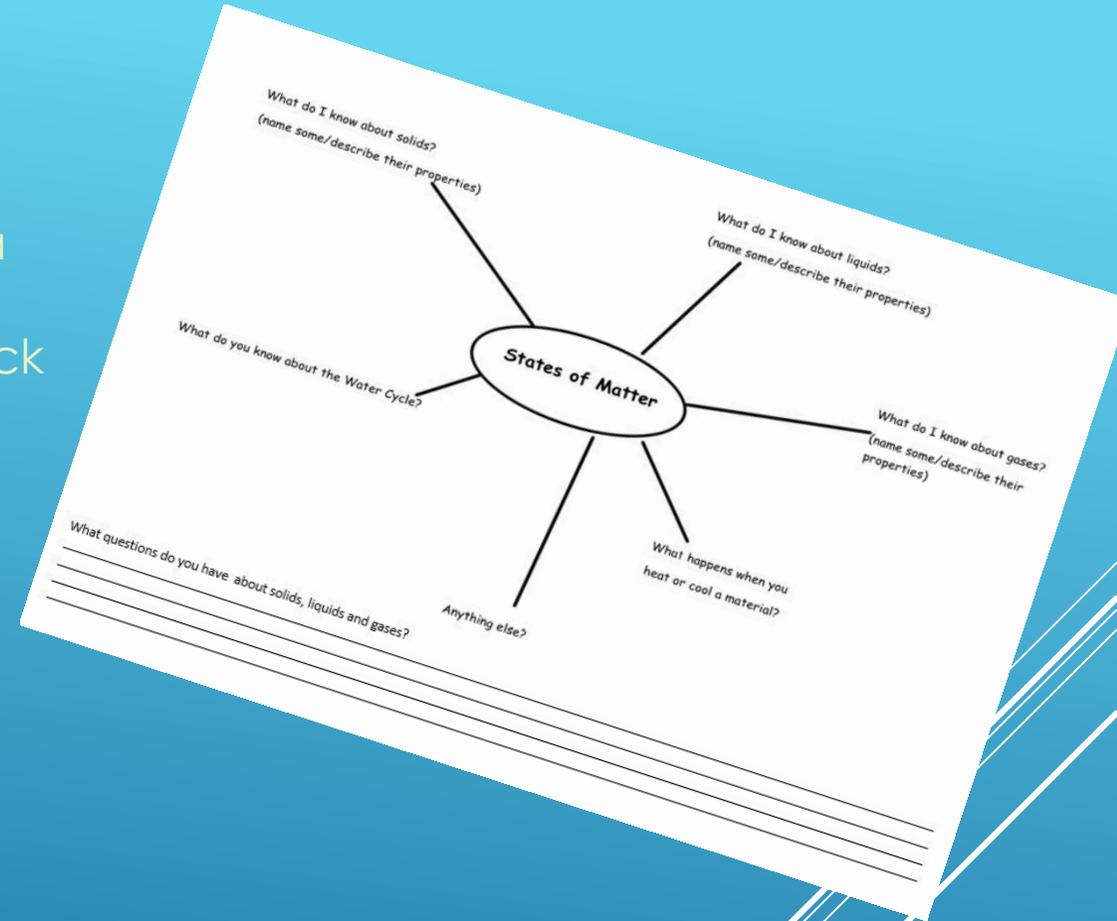
ASSESSMENT IN SCIENCE

Each year group has a skills-matched assessment sheet/check list to complete throughout the school year.

Year 3

I am a Scientist

Scientific Skill	Date of the lesson you learned or used this skill	Confidence with this skill (teacher ticks)
Asking Questions		
I can come up with my own ideas about what I want to investigate.		
I can ask questions using sentence stems.		
I can suggest how to find the answer to scientific questions.		
Planning and Setting up Different Types of Enquiries		
I can suggest how to find the answer to scientific questions.		
I can make a prediction, suggesting what might happen and why.		
I can suggest a range of ways to find things out from a scientific enquiry.		
I can select the best method of enquiry from those suggested by my teacher/peers.		
I can choose the correct equipment from that provided by my teacher to carry out a scientific enquiry.		
Performing Tests		
I can understand why a test needs to be fair and through discussion, say if a method is fair or not.		
I can, from the list provided by my teacher, select variables that should be kept the same for a fair test.		
I can set up simple practical enquiries, both comparative and fair tests, and consider the variables involved.		
I can explain how working with others may improve my results.		
Using Equipment		
I can select appropriate equipment and explain why I am using it and how it will be used.		
I can follow instructions on how to use equipment accurately and safely.		
I can suggest what the possible dangers of using equipment/materials are.		
Observing and Measuring		

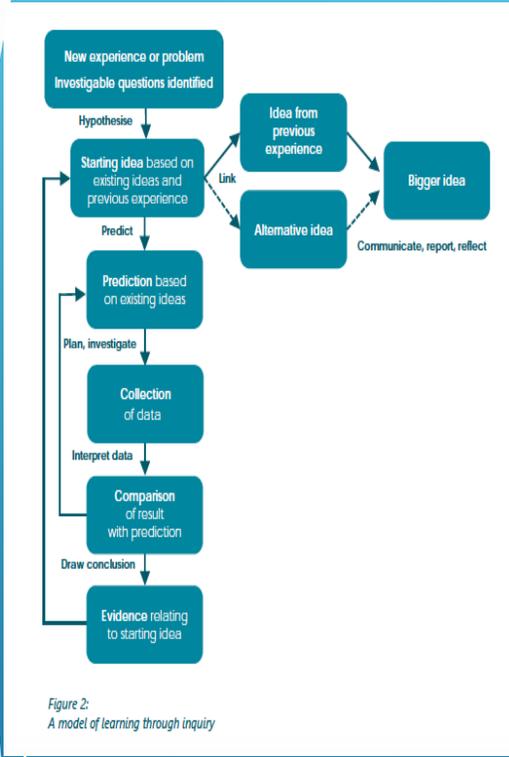
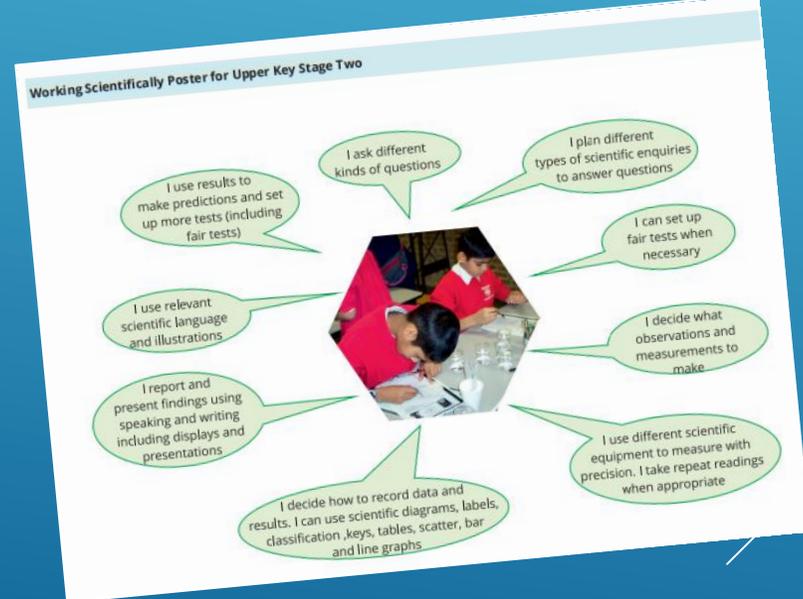
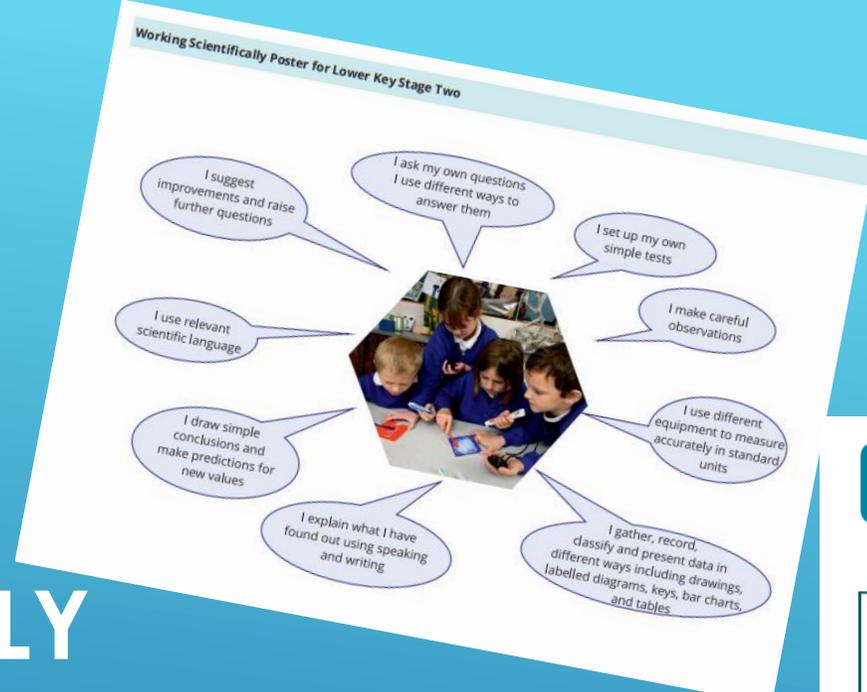


Mind maps are used to show children's knowledge, understanding and misconceptions at the start of a unit of learning. Children are also asked to consider any questions that they would like to be answered. At the end of the unit, children return to the mind map and update it with their new knowledge, thus evidencing their Learning.

The Progression of skills for working scientifically, from Lower KS2 to Upper KS2, is clearly identified and opportunities for developing these are specifically planned for.

WORKING SCIENTIFICALLY

Children engage in personal reflection about how their own skills are developing.



Learning through enquiry

GREATER DEPTH OPPORTUNITIES

To secure a greater depth of understanding children need to:

- Show understanding of a concept by using scientific vocabulary correctly
- Apply knowledge in familiar related contexts, including a range of enquiries
- Work scientifically to explore the concept with a greater degree of independence

Sprinkle some rice on the drum.
Tap the drum gently with the drum stick.

What happens to the rice?

Can you change how high the rice jumps? How?

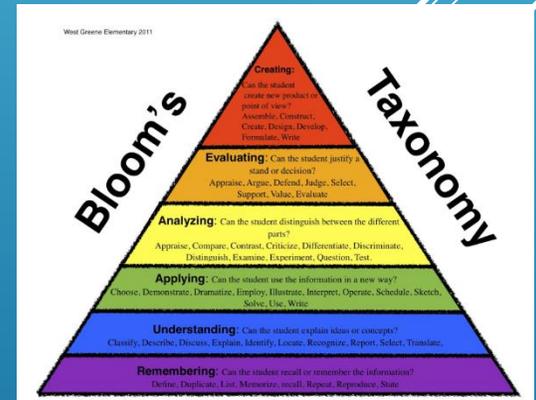
What does this tell you about how sounds are created?

Over time a seedling grows into a large tree - where did the mass of the large tree come from? Big Question

PMI

Scenario: People have their own plant-like green skin, so they can create their own food in sunlight

P: the positives
M: the minuses
I: the interesting associated ideas



Having considered the problem or context, they should be encouraged to raise their own questions, *select and plan* the most appropriate type of enquiry.