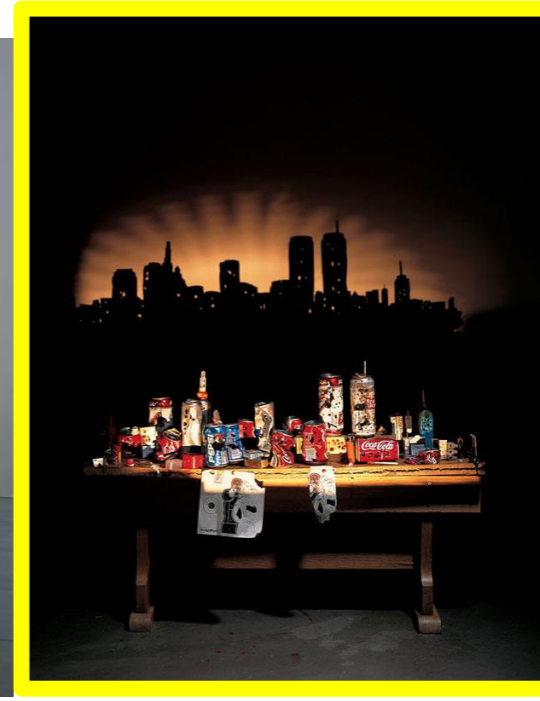


Science (Materials)		Science (Plants)				
Relevant Prior Learning (Y2)	Year 5 <u>Properties in Materials</u>	Relevant Prior Learning (Y2-Y4)		Year 5	Year 5	
<ul style="list-style-type: none"> - They can identify and compare a range of everyday materials and consider the suitability for particular jobs (wood, metal, plastic, glass, rock, <u>brick, paper and cardboard</u>) - They know that the shape of a solid object made from some materials can be changed by <u>squashing, bending, twisting, stretching</u> and these will differ according to the material 	<ul style="list-style-type: none"> -To know that materials have different properties (<u>hardness, solubility, transparency, conductivity</u> and response to magnets). -Know that changes can occur, some are <u>reversible</u> some are <u>irreversible</u> (<u>evaporating, filtering, sieving, melting and dissolving, burning, rusting</u>). -Some changes result in the making of new materials. - 	<ul style="list-style-type: none"> - They know plants need <u>water, light & a suitable temperature</u> to stay <u>healthy</u> - They know seeds and bulbs need water to grow - They know how seeds and bulbs grow to <u>maturity</u> and <u>reproduce</u> 	<ul style="list-style-type: none"> - They know the <u>functions</u> of different parts of flowering plants: roots, stems, trunk, leaves & flowers - They know how water is <u>transported</u> - They know the role of flowers in the flowering plant including <u>pollination, seed formation</u> and <u>seed dispersal</u> 	<ul style="list-style-type: none"> - They know that things can be grouped in different ways (flowering plants and non-flowering) and into different <u>categories</u> - They know that a <u>habitat</u> will change throughout the year, including the plants and animals within them <p>(N.B. Link to living things and their habitats)</p>	<ul style="list-style-type: none"> -They know the life process of reproduction in some plants including <u>sexual</u> and <u>asexual</u> reproduction - They know which parts of the plants could be used to try and re-grow new plants <p>(N.B. To link with reproduction of animals including living things)</p>	<ul style="list-style-type: none"> - To know the Sun, Earth and Moon as approximately <u>spherical bodies</u>. - To know how the <u>Earth</u> moves (& other planets) in relation to the sun and use this idea to explain day and night. -To know how the <u>moon</u> moves in relation to Earth and how this causes moon phases. <p>N.B. pupils should be warned is it not safe to look directly at the sun even with dark glasses.</p>
<ul style="list-style-type: none"> - Compare the uses of everyday materials in and around school with materials in other places (home/ visits etc) - Find similarities and differences in material properties - Raise and answer questions that consider which materials/ properties make an object suitable or unsuitable for purpose -Understand how to carry out a fair test - Carry out close observations with some accuracy - Evaluate the suitability of materials for different purposes - Record data and compare results to answer their questions 	<ul style="list-style-type: none"> - Compare, group and classify materials based on their properties. - Make decisions on how to set up appropriate, fair tests - Make well-reasoned predictions and begin to offer evidence to support their idea - Design independent experiments - Observe changes to material as they are exposed to change. - Observe and record evaporation over a period of time - Take accurate measurements using appropriately selected equipment -Gather, record and present data in a suitable way, creating accurate charts - Report findings and conclusions in different ways and communicate using scientific language - Suggest improvements to chosen scientific methods. -Offer reasons & explanations supported by evidence. 	<ul style="list-style-type: none"> - Carry out close observation (with some) accuracy, including measurements as they grow - Understand how to set up a fair test to find out what plants need to grow, including asking an appropriate question - Record and compare results to answer their question 	<ul style="list-style-type: none"> - Closely observe the stages of a plants life cycle and describe it - Set up practical enquiries and fair tests - Make careful observations and use appropriate equipment to measure accurately - Record findings in different ways - Report findings different ways 	<ul style="list-style-type: none"> - Raise and answer questions - Carry out careful and accurate observations -Gather and record data - Group and classify data gathered - Use keys or simple guides to explore the local plants and animals 	<ul style="list-style-type: none"> -Pose pertinent questions that they can explore and answer how plants reproduce - Set up a practical enquiry using fair test including systematic observations and recording results - Make predictions and compare the outcomes to draw a conclusion - Use scientific knowledge and evidence to support their findings 	<ul style="list-style-type: none"> - Pose pertinent questions that they can explore and answer about the movement of Earth and the moon. -Investigate (through careful & accurate observations) how the sun appears to move across the sky but provide explanations & reasons for this. - To undertake independent research in order to explain day and night and the apparent movement of the sun -To demonstrate findings in different ways e.g. model, diagram. -Use scientific knowledge and evidence to support their findings
<ul style="list-style-type: none"> - Understand some materials are used for more than one thing e.g. metal can be used for coins, cans, cars - Different materials have different properties which determine their use 	<ul style="list-style-type: none"> - Materials can be changed using different processes some of which are reversible others are irreversible. -Sometimes new materials can be made because an existing material has been altered and this is not usually reversible 	<ul style="list-style-type: none"> - The life cycle of a plant and the changes over time - All living things need certain factors to survive 	<ul style="list-style-type: none"> - Different parts of the plant have different functions e.g. roots and stems provide nutrition and support, leaves for nutrition, flowers from reproduction 	<ul style="list-style-type: none"> - Recognise that living things live in certain habitats because they meet their needs - They change as the habitat changes throughout the year - Things can be grouped and this can presented as classifications keys 	<ul style="list-style-type: none"> - An understanding of reproduction within the life cycle -Every living thing has to have the means of reproducing itself in order to have a life cycle and to continue the species 	<ul style="list-style-type: none"> - The sun is a star at the centre of the solar system which has 8 planets. - The moon orbits the Earth and the Earth orbits the sun and the position of these are what causes day and night and the moon phases. - Recognise the Earth <u>rotates</u> on an <u>axis</u> which affects climate & creates biomes (links to geography)

<u>Geography</u>	<u>Art</u>	<u>Design and Technology</u> <u>Cooking</u>
<p>-Locate North & South America (Modern country to be linked with the Mayans: Mexico, Belize, Guatemala) in relation to the equator & tropics (Links to Mayans/ chocolate).</p>	<p>Key stage 1 Pupils should be taught:</p> <ul style="list-style-type: none"> ♣ to use a range of materials creatively to design and make products ♣ to use drawing, painting and sculpture to develop and share their ideas, experiences and imagination ♣ to develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form and space ♣ about the work of a range of artists, craft makers and designers, describing the differences and similarities between different practices and disciplines, and making links to their own work. 	<p>Key stage 2</p> <ul style="list-style-type: none"> ♣ understand and apply the principles of a healthy and varied diet ♣ prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques ♣ understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
<p>-To know about climate zones, biomes, vegetation belts and how these are affected by location within North & South America. (Links to Mayans/ chocolate).</p> <p>-To know about the human (settlement, land use, economic activity) and physical geography (landscape) of that which best suits survival (Links to survival/ Ingleborough).</p>	<p>Key stage 2 Pupils should be taught to develop their techniques, including their control and their use of materials, with creativity, experimentation and an increasing awareness of different kinds of art, craft and design.</p> <p>Pupils should be taught:</p> <ul style="list-style-type: none"> ♣ to create sketch books to record their observations and use them to review and revisit ideas ♣ to improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay] ♣ about great artists, architects and designers in history. 	<p style="text-align: center;"><u>Design and Technology</u></p> <p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:</p> <p>Design</p> <ul style="list-style-type: none"> ♣ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups ♣ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <p>Make</p> <ul style="list-style-type: none"> ♣ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately ♣ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <p>Evaluate</p> <ul style="list-style-type: none"> ♣ investigate and analyse a range of existing products ♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work ♣ understand how key events and individuals in design and technology have helped shape the world <p>Technical knowledge</p> <ul style="list-style-type: none"> ♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures ♣ understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] ♣ understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] ♣ apply their understanding of computing to program, monitor and control their products.
<p>-Locate, using different maps, North and South America.</p> <p>-To make the connection that latitude affects climate and longitude affect time zones.</p> <p>-Research & present key physical & human features (in relation to Ingleborough draw upon navigational language i.e. to the North of... bordered by...) using a range of geographical resources such as own interpretations from maps, globes, digital mapping rather than textbooks.</p>		
<p>-Understand climate affects biomes, vegetation belts & that climate is dependent on latitude.</p>		

Shadow sculptures – link to recycling and science (shadow/light/properties of material relating to light)





Novels

Swimming against the storm - Jess Butterworth (Possible GD)

Exodus – Julie Bertagna (Possible GD)

The Lorax

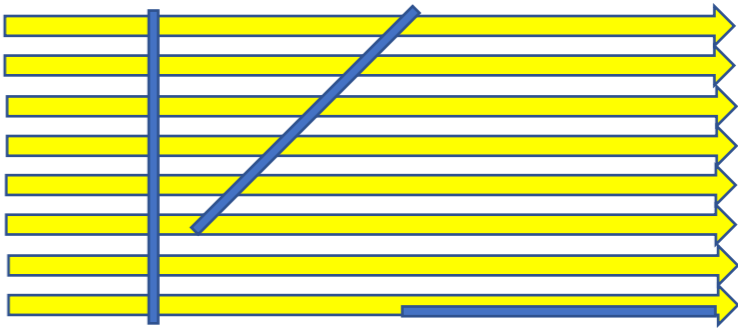
The Animals of Fathing Wood

This Morning I met a Whale – Michael Morpergo

The Midnight Fox – Betsy Byers

Mid Term Plan September to December

Sequencing (Not individual lessons)	Skills and Knowledge	Concept (What MUST the children understand by the end of the section)	Reading	Prior knowledge to be checked	Teaching
Ongoing:	<p>Create form through the use of shading.</p> <p>Observe how light falls across objects to create areas of shade, highlight and midtones.</p> <p>Use careful observation to ensure that what is drawn is what is seen.</p>	Shading can be used to create form without drawing lines.	N/A	How to hold a pencil correctly.	<p>Model how to draw simple 3d shapes.</p> <p>Model how to observe and recreate what they see by comparing the relative size of elements within the scene.</p> <p>Weekly drawing of a different environment in their sketch book. Feedback to be given so that each week the quality of drawing improves.</p> <p>Outcome: A sketchbook of environmental studies examining the impact of man upon nature.</p>
1	Retrieval skills based upon initial assessment of reading.	<p>Human activity has an impact on the environment.</p> <p>Our environment is suited to human life, but it doesn't have to stay that way.</p>	<p>Non-fiction texts about pollution/recycling/resource scarcity/carbon emissions and climate change.</p> <p>Start reading This Morning I met a Whale.</p>	<p>What is the environment?</p> <p>What is the climate? How is it different to weather?</p>	<p>What's the problem? Why do people say that we're heading for a climate catastrophe? What is climate change? Why is it a bad thing? What is plastic pollution? Why does it matter that plastic is entering the environment?</p> <p>Read articles and science reports upon all of the above and form an opinion about how humans are affecting the environment and Earth other species?</p> <p>Watch videos of the above.</p> <p>Walk around Manningham and survey the pollution.</p> <p>Outcome: Write an explanation of what climate change is/produce a diagram showing the carbon cycle and how carbon dioxide traps heat from the sun.</p> <p>Write an explanation of the impact upon animals of plastic in the environment – whales/ or other sea life full of plastic.</p>
2	<p>To know that materials have different properties (<u>hardness</u>, <u>solubility</u>, <u>transparency</u>, <u>conductivity</u> and response to magnets). -Know that changes can occur, some are <u>reversible</u> some are <u>irreversible</u> (<u>evaporating</u>, <u>filtering</u>, <u>sieving</u>, <u>melting and dissolving</u>, <u>burning</u>, <u>rusting</u>).</p> <p>-Some changes result in the making of new materials.</p>	<p>Plastics don't break down in the soil and will be around for a very long time.</p> <p>Materials can be changed using different processes some of which are reversible others are irreversible.</p> <p>-Sometimes new materials can be made because an existing material</p>	<p>Non-fiction texts on the properties of plastics.</p> <p>Non-fiction text on land fill.</p>	<p>- They can identify and compare a range of everyday materials and consider the suitability for particular jobs (wood, metal, plastic, glass, rock, <u>brick</u>, <u>paper and cardboard</u>)</p> <p>- They know that the shape of a solid object made from some materials can be changed by <u>squashing</u>, <u>bending</u>,</p>	<p>Identify the properties of the plastics used in school biro's and milk bottles. They're both plastic but do they have the same properties? Compare to glass bottles.</p> <p>How well do plastics degrade in soil/water/acid? Can heat be used to degrade plastic? Do all plastics melt? Can we separate micro-plastic from water or soil? Why can't we just sieve the sea? What about using evaporation?</p> <p>Design their own experiment relating to two of above. (Heating plastic to be demonstrated)</p>

	<ul style="list-style-type: none"> - Compare, group and classify materials based on their properties. - Make decisions on how to set up appropriate, fair tests - Make well-reasoned predictions and begin to offer evidence to support their idea - Design independent experiments - Observe changes to material as they are exposed to change. - Observe and record evaporation over a period of time - Take accurate measurements using appropriately selected equipment - Gather, record and present data in a suitable way, creating accurate charts - Report findings and conclusions in different ways and communicate using scientific language - Suggest improvements to chosen scientific methods. - Offer reasons & explanations supported by evidence. 	has been altered and this is not usually reversible		twisting, stretching and these will differ according to the material	<p>Outcome: Children hypothesise (based upon prior reading), plan and execute and record experiments relating to the above.</p> <p>Fist experiment to be scaffolded for all and the scaffolding to be removed for the majority for the second.</p>
3	<p>To make the connection that latitude affects climate and longitude affect time zones. -Research & present key physical & human features (in relation to Ingleborough draw upon navigational language i.e. to the North of... bordered by...) using a range of geographical resources such as own interpretations from maps, globes, digital mapping rather than textbooks.</p> <p>To know about climate zones, biomes, vegetation belts and how these are affected by location within North & South America. (Links to Mayans/ chocolate).</p>	<p>Understand climate affects biomes, vegetation belts & that climate is dependent on latitude.</p> <p>Understand that geography affects climate.</p>	<p>Maps</p> <p>Non-fiction texts on geography and climate.</p>	<p>Water cycle.</p> <p>What was the industrial revolution?</p> <p>Why does carbon dioxide affect the climate?</p>	<p>Examine the current climate distribution of the earth and notice how climate is affected by latitude – amongst other things such as distance from the sea, mountain ranges, elevation or ocean currents.</p> <p>Examine maps that show how climate has change over time – the long term and since the industrial revolution.</p> <p>Investigate from maps and other resources to find which locations will be the most at risk from climate change – island nations and sea levels, Bangladesh and longer storms, etc.</p> <p>Predict how the local climate will be affected by increased in temperature – what happened to the Dales in the long hot summer of 2018? Look at the forest fires in California and Australia.</p> <p>What will happen to the climate of Africa – what will be the impact upon the people?</p> <p>Outcome: create their own climate map of the future with annotations highlighting the impacts of climate change relating to the most at risk locations.</p>
4	<p>Pose pertinent questions that they can explore and answer about the movement of Earth and the moon. -Investigate (through careful & accurate observations) how the sun appears to move across the sky but provide explanations & reasons for this. - To undertake independent research in order to explain day and night and the apparent movement of the sun -To demonstrate findings in different ways e.g. model, diagram. Use scientific knowledge and evidence to support their findings</p> <p>- The sun is a star at the centre of the solar system which has 8 planets.</p> <p>- The moon orbits the Earth and the Earth orbits the sun and the position of these are what causes</p>	- Recognise the Earth <u>rotates</u> on an <u>axis</u> which affects climate & creates biomes (links to geography)	Non-fiction texts on the climate.	<p>Then Earth orbits the sun.</p> <p>The Sun is in the centre of the solar system.</p> <p>Life on Earth mostly gets its energy from sunlight.</p> <p>Misconception to address – this distance from the sun does not affect the climate. The North Pole is not colder because it is further away than the equator.</p>	<p>Demonstrate how light falling across a globe does not fall evenly. Demonstrate and model how light falling at 90 degrees to a surface is more 'concentrated' than light that falls at another angle reaching a minimum where the light rays are parallel to the surface.</p>  <p>(All three sticks are the same length, but changing their angle reduces the amount of rays that hit them)</p> <p>Outcome: ?</p>

	day and night and the moon phases				
5a	See literacy planning.	Carbon can be removed from the atmosphere in a variety of different ways. We can reduce the amount of carbon that is put into the atmosphere by making choices about how we choose to use transport and by considering carefully the products we choose to buy.	Websites offering carbon offsetting. Articles on other schools that have considered their environmental impact.	The impact of carbon dioxide on the climate of the planet.	What can we do? (Carbon Offsetting) Research different ways to remove carbon dioxide from the atmosphere. Find an initiative that the school would be able to become involved in – planting trees or raise money to pay to a carbon off-setting company. (Persuasion to have been covered in literacy) Outcomes: persuasive letters to JT/KH asking them to allow us to apply to have trees planted around the edge of the field/ or to start paying for some carbon offsetting/walking bus. Outcomes: prepare persuasive posters to convince the parents to walk children to school instead of driving them.
5b	See literacy planning.	Lots of materials can be recycled, but reuse is better as it doesn't have a carbon footprint.	Articles and reports on recycling. Current data on the UK's recycling. Non-fiction texts on countries that are now importing rubbish for recycling because they have become so effective.	That plastics don't degrade quickly like some other materials.	What can we do? (Recycling) Crayola's recycling program. Terracycle bin installation for the children to dispose of wrapper in. Make use of the school's milk bottles. What kind of materials can be recycled. Outcome: Write persuasive letters to JT/KH about applying for a Terracycle bin. Write a letter to go home to parents asking them to send used felt tips and crisp packets to school.
5c	See literacy planning. understand and apply the principles of a healthy and varied diet ♣ understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.				What can we do? (Grow our own food – avoids packaging and having to transport the food) What are the impacts of farming on the environment? How much non-recyclable waste is produced by the food industry? What is the carbon footprint of different types of food? Healthy eating?
6	- They know plants need <u>water</u> , <u>light</u> & a suitable <u>temperature</u> to stay <u>healthy</u> - They know seeds and bulbs need water to grow - They know how seeds and bulbs grow to <u>maturity</u> and <u>reproduce</u> - They know the <u>functions</u> of different parts of flowering plants: roots, stems, trunk, leaves & flowers - They know how water is <u>transported</u>	Different parts of the plant have different functions e.g. roots and stems provide nutrition and support, leaves for nutrition, flowers from reproduction The life cycle of a plant and the changes over time - All living things need certain factors to survive	Advertising from different brands of fertiliser. Articles on alternative fertiliser sources. Texts on different species of plants with different life cycles.	The requirements of plants for growth.	How do plants grow? Research fertilisers. Design and carry out tests to identify the most effective fertiliser. Outcome: A report detailing how the experiment's hypothesis, methodology, results and conclusions. Outcome: Choose the best fertiliser and apply it to the garden.
7		- Recognise the Earth <u>rotates</u> on an <u>axis</u> which affects climate & creates biomes (links to geography)	Articles on the best time to plant different seeds.		Why do plants have to be planted at a certain time of year? What causes the seasons? (Why do we plant at some times of the year and not others?) Demonstrate how the Earth rotates on its axis and examine how light from a torch falls across its surface.
8	-They know the life process of reproduction in some plants including <u>sexual</u> and <u>asexual</u> reproduction - They know which parts of the plants could be used to try and re-grow new plants	- An understanding of reproduction within the life cycle Every living thing has to have the means of reproducing itself in order to have a life cycle and to continue the species	Non-fiction texts on the reproduction of plants. Non-fiction texts on how farmers make use of cuttings and grafting.	Some plants produce seeds, some plants also clone themselves (see spider plants).	How do plants reproduce? (Why can't we just plant any part of the plant?) Dissect plants and identify the reproductive organs. Draw detailed, labelled diagrams of the dissected plants. Compare the reproductive methods of different plants and explain their differences.

	<p>Pose pertinent questions that they can explore and answer how plants reproduce</p> <ul style="list-style-type: none"> - Set up a practical enquiry using fair test including systematic observations and recording results - Make predictions and compare the outcomes to draw a conclusion <p>Use scientific knowledge and evidence to support their findings</p>				Outcome: ?
9	<ul style="list-style-type: none"> ♣ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups ♣ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make ♣ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately ♣ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate ♣ investigate and analyse a range of existing products ♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work <p>apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p>	<p>Product design is a process through which all new products go through.</p> <p>A product needs to fit certain criteria based upon its intended usage and its target audience.</p>	Reviews of existing products.		<p>How can we use the plastic waste (namely from milk bottles) to help our garden?</p> <p>Look at existing gardening products. Is there anything that plastic bottles could be used to produce?</p> <p>Evaluate existing products.</p> <p>Devise design criteria.</p> <p>Sketch design ideas and annotate them.</p> <p>Evaluate each other's designs.</p> <p>Examine processes used for cutting and joining.</p> <p>Evaluate processes for their efficacy and safety.</p> <p>Make the product.</p> <p>Test the product.</p> <p>Report on the final product.</p> <p>Outcome: A well recorded research, design and evaluation process with a final product.</p>
10	<p>understand and apply the principles of a healthy and varied diet</p> <ul style="list-style-type: none"> ♣ prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques ♣ understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. 				<p>Plan the garden. Work out expected yields. Work out which foods will give the best profit margins.</p> <p>What vegetables should we plant in the garden to be ready to harvest for Café Priestley?</p> <p>Outcome: Planted Garden</p>
11	<p>Key stage 2 Pupils should be taught to develop their techniques, including their control and their use of materials, with creativity, experimentation and an increasing awareness of different kinds of art, craft and design.</p>	<p>Art can be used to convey an idea or concept.</p> <p>The media used to produce the art helps to convey the message.</p>	Explanations of the art by the artist.		<p>Class project for the end of term:</p> <p>Produce shadow art using school waste in the style of the photos above?</p>