



Cramlington Village Primary School
Science REAL projects template
Spring 2020

Project Name	Project summary What you're going to do and why	Essential question This should be inspiring, not able to be 'googled', requiring you to conduct in depth research and relate to a real world issue	Final project outcome Deadline date? How you will promote? Who will be invited?
<p>What makes a good Scientist?</p> <p>What makes a good horticulturist?</p> <p>What makes a good geologist?</p> <p>Are there any rock formations in the local area?</p> <p>What makes a good paleontologist?</p> <p>What makes a good petrologist?</p>	<p>Y3 Investigate the study and origin of rocks and how they have shaped the world we live in. Use this to research the best soil to grow plants</p> <p>What makes a good horticulturist?</p> <p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter</p> <p>Y4 - Investigate and study states of matter within sweet treats. Look at their molecular build up and how it changes through different processes such as melting, freezing and evaporation.</p> <p>What science is involved in involved in creating the perfect sweet treat?</p> <p>Can I create the perfect sweet treat?</p> <p>compare and group materials together, according to whether they are solids, liquids or gases observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Y3 Can we use science to find the best soil to grow plants in our greenhouse?</p> <p>Y4 What science is involved in involved in creating the perfect sweet treat?</p>	<p>Y3</p> <p>Oracy presentation</p> <p>Present findings of experiments into best soils</p> <p>Whole school geological timeline</p> <p>Legacy - vegetables to be sold in local shop</p>

Wow moment This needs to happen within the first week of term - preferably on the first day	Key staff	Key contact numbers/websites/resources	Classroom environment What will you be doing to your classroom? What resources do you need	Key text
<p>Reservoir visit?</p> <p>Centre for life - rocks and soils workshop?</p> <p>Great North Museum Rocks workshop</p> <p>Geologist or petrologist visit</p> <p>Visit to garden centre/</p>		<p>https://geologistsassociation.org.uk/school-rocks/</p> <p>Great North Museum</p>	<p>Y3 Key Terminology:</p> <p>Rock (types), smooth, shiny, rough, crumbly, grainy, crystals, hard, soft, fossil (types), sediment, layers, pressure, soil, organic matter, vegetation, compost, crystallisation,</p> <p>Science Model:</p> <p>Particles</p>	<p>Pebble In My Pocket</p> <p>The Rock Factory: A Story About Rocks and Stones</p> <p>A Rock Is Lively</p> <p>The Street Beneath My Feet</p> <p>100 Facts: Planet Earth</p> <p>Stone Girl Bone Girl</p> <p>Survivors</p> <p>This Little Pebble</p> <p>Charlie and the Chocolate Factory.</p> <p>Pseudonymous Bosch This Book is Not Good for You</p> <p>Usborne</p>

horticulturist (2nd half)					
Visit to the cheese factory - Blagdon					

Science planning					
Week 1 6.1.20	Week 2 13.1.20	Week 3 20.1.20	Week 4 27.1.20	Week 5 3.2.20	Week 6 10.2.20
<p>Explaining Science and classification</p> <p>use Science ideas/facts to describe and explain? Remember science words I've used before? Begin to use a science model to describe? Link relevant information? Annotate diagrams to help describe? Use spider diagrams? Create groups for sorting?</p> <p>Year 3: Week 1: What makes a great petrologist? Scientific skills covered: observation, classification, recording and labelling diagrams Monday introduce T4W - story of a pebble (explanation text) what do we know about rocks, use KWL grid to assess prior knowledge. PE dance - extreme earth Tuesday visit from geologist Wednesday what is a petrologist what do they study? Famous petrologist: Norman L Bowam, devise questions to ask a petrologist - display in class Thursday Forest school - dig deep, do we come to bedrock? are some places stonier than others? finding and classifying rocks, use magnifying lenses to examine closely and record findings in diagrams Friday take rubbings of rocks to look at differences, develop vocabulary for describing rocks and definitions</p> <p>Year 3: Week 2 How does a petrologist know what rocks are? Scientific skills covered: classification, modelling, describing, observing Monday can we see crystals in rocks, what are crystals? Sort and classify crystals. PE dance - extreme earth Tuesday How do crystals form? Set up salt or copper sulphate experiment to show crystallisation. Wednesday where do rocks come from? How are they formed? What is in a rock? Look at different formation including igneous, sedimentary and metamorphic Thursday experiment with making sedimentary layers using sand clay etc formation of fossils how do fossils get into rocks? Use clay to make impressions and fill with plaster Friday look at life and work of Mary Anning - one of first paleontologists</p> <p>Year 4: Week 1: What makes a great Chemist? What states of matter does a chemist need to know? Scientific skills covered: classification, modelling, describing - using who what why where when. Monday - Look at different states of matter: Solid, Liquid and Gases. Provide range of materials demonstrating solid, liquid & gas. Use talking points, e.g. jelly, sand. Generate characteristics of each state through observation and comparison Group and sort different matters. Can you give examples of S, L and G? Maybe bring out a range of foods from Chef Lynn's kitchen? Tuesday - Look at the molecular build up of different matters. Reversible and irreversible change. Will these molecules change during different processes? Changing states, such as melting, freezing and evaporation? Afternoon session to review S/L/G using bodies in the hall or outside (weather permitting) Use concept cartoons for misconceptions/ understanding. Wednesday - Trip to the cheese factory hopefully. Thursday - Can we discuss what we found out on our trip? The different processes making cheese and the vocabulary used. (sequence the recipe cards from the T4Wr link below) Discussion and consolidation of vocabulary of through T4W.</p>	<p>Working Scientifically/designing experiments</p> <p>Predict cause and effect and trends in relationship? Select suitable equipment for a task? Notice obvious risks and describe safe use of equipment? Plan a fair test by selecting variables? Suggest a suitable data range and interval for a variable? Design and write a simple ordered method (from a demo?)</p> <p>Year 3, Week 3: How can a petrologist find out what properties rocks have? Scientific skills covered: predicting, using fair tests, observing measuring - mass, time, giving explanations Monday: are all rocks the same? Can we make predictions on properties from what we have observed so far? How could their properties be useful? Tuesday: are rocks like sponges? do rocks contain any air? How can we find out. Devise an experiment to compare the amount of air contained in rocks (include example of pumice) make predictions and explain how to keep the test fair Wednesday carry out test, take accurate measurements of mass using grammes and volume using ml Thursday ground survey - which areas are the wettest and driest in forest school? Why do you think this is? Dig to find out what is underneath the surface, where would we want well drained surfaces or non porous surfaces? Friday what else can we find out about rocks? How can we test how hard they are?</p> <p>Year 3: Week 4: Where would a petrologist advise us to build a reservoir or a garden? Scientific skills predicting measuring mass, volume, recording results, making fair tests using variables Monday: if we needed drainage in our garden what size of rocks would be best? Consider rate of drainage, too much and plants will become too dry, too much and plants will become water logged. Tuesday devise experiment to test rates of drainage using different sized particles eg sand grit, gravel pebbles, which variable will they keep the same, which will they change which will they measure? Wednesday carry out investigation making observations of amounts of water. Make accurate measurements of volumes of water and time. Thursday use different types of rocks to provide drainage in pots and investigate if their predictions correct Friday Summarise learning from the week, how could they present their findings from experiments? Lead into graphing.</p> <p>Year 4 week 3: How does a chemist explore the states of different material? What happens when substances change state? Scientific skills covered: predicting, using fair tests, observing measuring - mass, time, giving explanations GATHER DATA - Bar charts (Fav cheese), temperature (line graph) Monday - Tuesday - Carry out an investigation of melting and the changes in the states. Look at ice melting in different temperatures. Prediction, reasoning and explanation. Selecting appropriate equipment. Wednesday - Carry out an investigation of freezing. Design and write a method of step by step instructions. Putting different liquids in the freezer to test how long it takes them to freeze. Ice pop maker. Thursday - Cooking in forest school. Looking at the process of evaporation of gases</p>	<p>Data/tables/graphs and drawing conclusions</p> <p>Can I... Predict cause and effect and trends in relationship? Select suitable equipment for a task? Notice obvious risks and describe safe use of equipment? Plan a fair test by selecting variables? Suggest a suitable data range and interval for a variable? Design and write a simple ordered method (from a demo?)</p> <p>Year 3: Week 5: How would a petrologist present their findings? Scientific skills covered: graphing, making conclusions Monday take results from experiment in previous week, how could these be presented, which would be the best chart to use? Explore some different options and decide on best one Tuesday model how to write up whole experiment including apparatus method diagram prediction results and graph Wednesday what do graphs show us? Look at some different results and graphs, what can we deduce from them. Thursday investigate planting - which sites are better for different plants, which need more moisture? Start to set up compost bins. Friday how do we write explanations based on our results?</p> <p>Year 3: Year week 6: How you present your findings? Scientific skills covered: graphing, making conclusions, writing explanations based on graphs Monday Ashleigh has two types of plants she wants to grow. One is spinach which likes wet ground and onions which like dry ground. What would a rock specialist recommend? Explore ideas and start to plan presentation. Tuesday start to write up recommendations including scientific data Wednesday what do graphs show us? Look at some different results and graphs, what can we deduce from them. Thursday investigate planting - which sites are better for different plants, which need more moisture? Start to set up compost bins. Friday how do we write explanations based on our results?</p> <p>Year 3: week 7 Scientific skills covered: graphing, making conclusions Monday take results from experiment in previous week, how could these be presented, which would be the best chart to use? Explore some different options and decide on best one Tuesday model how to write up the whole experiment including apparatus method diagram prediction results and graph Wednesday what do graphs show us? Look at some different results and graphs, what can we deduce from them. Thursday investigate planting - which sites are better for different plants, which need more moisture? Start to set up compost bins. Friday how do we write explanations based on our results?</p>			

<p>Forest school Cooking - Measuring temperature, changing of states. Cinder toffees. https://www.bbcgoodfood.com/recipes/2685640/honeycomb Change in states. Melting and cooling. Friday - Creating diagrams based on S, L and G and the key processes discussed. Create a working wall filled with our key vocabulary and processes.</p> <p>Possible T4Wr : http://www.nicurriculum.org.uk/STEMWorks/docs/futures/Say_Cheese.pdf</p> <p>Week 2: What are solids, liquids & gases made of? Monday - Use counters to draw annotated diagrams of each state. Tuesday - Demos: food colouring into hot/cold water (particle movement); water droplet (particle attraction); Discussion of movement of particles. Wednesday - Focus on gases and the process of evaporation and condensation. Discuss with actions the process of the water cycle Literacy: Key features of an instructional piece of writing. Comprehension. What stages are there in the cheese making process? Can we sequence them? Thursday - Cooking - Measuring temperature, changing of states. Cinder toffees. https://www.bbcgoodfood.com/recipes/2685640/honeycomb Change in states. Melting and cooling. Friday - After 2 weeks of forest school have a whole class discussion on the processes used in our cooking of sweets. Sequence stages and states.</p>	<p>from boiling pot. The change in states. Description and using oracy work outside the classroom Friday - Summarising learning from the week. How could we present our findings? Can you use your oracy skills to verbally explain the processes and the changes that have occurred?</p> <p>Year 4 Week 4 What makes a great food chemist? Can we identify the chemical processes to make our own cheese? Scientific skills covered: predicting, using fair tests, observing measuring - mass, time, giving explanations MODEL STRUCTURE OF INVESTIGATIONS Monday - What is food chemistry? History - Louis Pasteur and the process of pasteurization. Heating milk at a high temperature then cooling quickly to allow it to last longer. This is used to kill bacteria in milk before storing. Tuesday - Discuss method as a group. Select suitable equipment for a task. Notice obvious risks and describe the safe use of equipment. Wednesday - Use cheese making kit to create our cheese taking notice of the states of matter. Milk forming into cheese. Discuss how the milk has been sterilised (pasteurization). Thursday - Cooking - Measuring temperature, changing of states. Cinder toffees. https://www.bbcgoodfood.com/recipes/2685640/honeycomb Change in states. Melting and cooling.</p> <p>Friday - Discuss the processes we followed when making our cheese. Can you write the results of our process</p>	<p>Year 4 Week 5: What areas of science do Food Chemists look at? Can we identify the chemical processes to make our own chocolate? Scientific skills covered: statistics in Maths. Exploring charts and graphs and data analysis, line graphs, bar charts, interpreting data linked to Week3/4 investigations Monday - Looking at what temperature chocolate melts. How long it takes. M&Ms in children's hands, how long does it take to melt? Which do you think would melt fastest, white, dark or milk chocolate? Discuss, predict Tuesday - Cooling melted chocolate to show the change from liquid to solid. Discussion on the different shapes of we could make. observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Wednesday Visit chocolate factory. Thursday - Oracy discussions - What did we learn from our trip to the chocolate factory? What ingredients were involved? Word map to help us sequence the key steps and processes. Friday - Class instructional writing - Processes involved in making chocolate.</p> <p>Year 4 : Week 6: How does food chemistry focus on the health of humans? Scientific skills covered: statistics in Maths. Exploring charts and graphs and data analysis, line graphs, bar charts, interpreting data linked to Week3/4 investigations Monday- Literacy: focus on plan/writing instructional piece of writing for chocolate. Looking in detail at the sugar in a range of foods (chocolate, haribo, fizzy drinks etc...) Tuesday - Discussion about our teeth. Label different teeth and their purposes. Wednesday - Why is it important to brush our teeth?The effects of sugar on our teeth. Disclosing tablets. Thursday - Friday - Displaying and presenting our different results from the last 2 weeks explaining patterns.</p>
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Half term

Week 7 2.3.20	Week 8 9.3.20	Week 9 16.3.20	Week 10 23.3.20	Week 11 30.3.20 Oracy open day this week
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<p>Year 3: week 7: How does a horticulturist identify soil? Scientific skills covered: questioning, planning, hypothesising, identifying variables, Monday recap on how we investigated properties of rocks, what could we find out about different soils? What skills could we use from the first half term to investigate soils? Tuesday: visit garden centre/ horticulturist Wednesday investigating the appearance of different soils using microscopes and hand lenses. Draw annotated diagrams Thursday investigate soils in the forest school, do they change as you dig deeper? Friday recap on concepts covered during week and start to link with knowledge and skills from rocks</p> <p>Year 3: week 8 How does a horticulturist test soils to find properties? Scientific skills covered:carrying out a fair test, identifying variables, making observations Monday Can we separate soils into what it is made from? make predictions. Mix with water and shake and leave to settle out, observe, draw and label. Tuesday: How can we test the soil? Can you plan an investigation based on our investigations on rocks? Investigate water retention/ drainage Wednesday carry out own investigations, use accurate measures, identify variables, record findings and use to draw graphs use to develop explanations Thursday set up beds in forest school for vegetables Friday how can we apply this knowledge to plants? Gather ideas on how to test</p>	<p>Year 3: week 9 How would a horticulturist test the best soil for each plant? Scientific skills covered:prediction, evaluation, measuring, graphing Monday plan investigation using quick growing seeds. How will we keep this investigation fair? What will we keep the same, change, measure? How will we make accurate measurements? Tuesday set up plant experiments and make predictions Wednesday which vegetables would be best to grow, which ones do people at most? Design survey to find out Thursday planting up vegetables Friday summarise findings from survey</p> <p>Year 3: week 10 How can we promote our fruit and vegetables and display them? Scientific skills covered: communication, persuasion (DT investigating, designing, making, evaluating) Monday look at ways of advertising vegetables in the press and on TV, social media etc, what are the common features? Tuesday how can we display our vegetables? Investigate packaging used in supermarkets etc. make design for their own product, investigate how to make boxes Wednesday make their own display box Thursday planting vegetables Friday evaluate and improve design</p> <p>Year 4: week 9 - Can we create find a healthy sweet chocolate treat for easter? Scientific skills covered:questioning, discussing, planning, Monday - Look at ways of creating a healthy sugar free/reduced chocolate treat as a substitute to sugar filled easter eggs. Literacy - Look at persuasive writing and advertisements. Tuesday - Chocolate taster - which is reduced in sugar? Sugar is in cocoa which makes it near impossible to create sugar free chocolate. Look at sugar alternatives and</p>	<p>Year 3: week 11 Scientific skills covered: presenting information Monday: prepare for presentation, collate information, allocate roles, practise presentation Tuesday prepare for presentation, collate information, allocate roles, practise presentation, build in feedback and improve Wednesday ORACY DAY Thursday Friday</p> <p>Year 4: Scientific skills covered: presenting information Monday: prepare for presentation, collate information, allocate roles, practise presentation Tuesday prepare for presentation, collate information, allocate roles, practise presentation, build in feedback and improve Wednesday ORACY DAY Thursday Friday</p>
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<p>Year 4: Week 7: Can I act as a food scientist and take part in an investigation? Scientific skills covered: questioning, discussing, planning, hypothesising, identifying variables,.</p> <p>Monday - Children independent investigation - Children will be encouraged to find something out using the items provided - Eggs (teeth), coca cola, water, milk and vinegar. Children will work in small groups to discover through trial and error.</p> <p>Tuesday - Children will share their investigations and explain the different findings. Discussion and questioning will take place to allow the children to uncover what they have found out based on their results.</p> <p>Wednesday - A Key question will be shared with the children to support modelling of the investigation. As a class recap on how we will ensure that the test is fair? Why is a fair test important? What is the meaning of accurate and reliable results?</p> <p>Thursday Forest school</p> <p>Friday - T4W - Poetry. Sweet treats - link to easter.</p> <p>Year 4: Week 8: Can I act as a food scientist and take part in an investigation? Can I develop an overall judgment/findings based on my experiment?</p> <p>Monday - Children to repeat the investigation except with an overall question. This should allow children to follow a path to find the desired outcome independently. Can the children write up method?</p> <p>Tuesday - Children will record their results in a table then present them in a graph. Can the children write up their findings? Does their findings link to the overall question?</p> <p>Wednesday - As a class discuss whether or not we took part in a fair test? Accuracy and reliability of our results?</p> <p>Thursday - Forest school. Literacy - Poetry on sweet treats.</p> <p>Friday - Recap on our investigation. What was our findings? What was it in the cola that caused the egg to decap the most? Recap on the effect of sugars on our teeth and health. Maybe mention the intentions of the next week (creating own chocolate treat).</p>	<p>their effect on health and our teeth.</p> <p>Wednesday -</p> <p>Thursday - Forest school. Literacy - Writing a method for creating our sugar/sweetener replacement chocolate.</p> <p>Friday - Cook our chocolate sweet treats.</p> <p>Year 4: Week 10:Can we create find a healthy sweet chocolate treat for easter?</p> <p>Monday literacy - persuasive writing/oracy skills to sell our chocolates. PM - Test/Cook/package our chocolate sweet treats. Art focus- how will we package them?</p> <p>Tuesday - persuasive writing/oracy skills to sell our chocolates. PM - Test/Cook/package our chocolate sweet treats. Art focus- how will we package them?</p> <p>Wednesday Literacy - Writing up our method, science behind our creation and the reason for it.</p> <p>Thursday -Literacy -Writing up our method, science behind our creation and the reason for it.. Forest school.</p> <p>Friday -Literacy -. Writing up our method, science behind our creation and the reason for it.</p>	
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Lesson	Key milestones What are you going to do/ write/create/build?	Learning goals What key parts of the curriculum will this include? (long term plan holds all of the curriculum content) What skills will be practised?	
		<u>Year 3</u>	<u>Year 4</u>
Focus literacy		<p>What genres/features are you going to teach? What texts? What talk for writing? What purpose and audience will the children write for? What spelling, punctuation and grammar are you going to cover?</p> <p>Week 1-3 'pebble in my pocket' - explanation text how a specific pebble forms. Innovate to make own text about chosen type of rock or crystal</p> <p>Week 4 -6 recount innovate to biographical writing about Mary Anning</p> <p>Week 7 -8 persuasive writing innovated to ' buy our vegetables'</p> <p>Spring 1 - explanation how rocks are formed, non chronological report on types of rocks Procedural texts on experiments, biography of famous geologists and paleontologists</p> <p>Spring 2 -persuasive writing - this is the best soil, buy our products, press release selling our vegetables</p>	<p>What genres/features are you going to teach? What texts? What talk for writing? What purpose and audience will the children write for? What spelling, punctuation and grammar are you going to cover?</p> <p>Spring 1 - Explanation text?</p> <p>Spring 2 - Recount/Diary entry of Mount Vesuvius eruption. - Newspaper reports.</p>
Focus numeracy		<p>What White Rose/NCETM/National curriculum units are you going to cover?</p> <p>Y3 multiplication and division 2 (3 weeks), money (1 week), statistics (3 weeks), length and perimeter (3 weeks), fractions (2 weeks).</p>	<p>What White Rose/NCETM/National curriculum units are you going to cover?</p> <p>Y4 multiplication Focus on statistics week 5 and 6 (from summer term)</p>

Forest school		Finding and classifying rocks and soils Growing vegetables	Cooking - Measuring temperature, changing of states. Cinder toffees. https://www.bbcgoodfood.com/recipes/2685640/honeycomb Change in states. Melting and cooling.
Computing		Using basic spread sheets and graphing software	
PE		Dance - extreme earth Games - netball	
History		History of the earth formation Famous scientists	Famous scientists investigation - Louis Pasteur - introduce a timeline around the classroom to start to input different critical
PSHCE		My body	
Art/DT		sculpture	
RE			Possibly link story of Easter to sweet treats and the symbolism behind Easter Eggs.
French		All about me	