**Materials Medium Term Plan**

**Subject/ Topic:** Science – Everyday Materials, **Year Group:** 1/2 **Date**: Spring term (discrete lessons)

Key questions are differentiated - orange = basic, turquoise = advancing and Purple = deep (HOTS)

Objectives and success criteria are colour coded – black = all children, green = most children (AAPs and HAPs) and pink a few (HAPs)

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| **Learning Objective** | **Lesson/Activities/ Differentiated Questions/Key Vocabulary** | **Success Criteria** | **Resources** | **Cross Curricular**  **Links** |
| Compare and group together a variety of everyday materials on the basis of their simple physical properties. | **Introduction:** Recap the different materials we have looked at. Feeling the materials the children to think of different adjectives/ properties of the materials. Tell me a property of wood. What do we use glass for? Explain why we use glass for windows. Explain why we wouldn’t use wood for a window. Choose the best material for a car, justify why you have chosen this material. Argue why you would use wood for a cupboard.  **Pupil Activity:**  **Cool** – Children to sort images of everyday objects into a simple Venn diagram using the given headings of ‘soft’ and ‘rigid’.  **Mild** – Children to sort images of everyday objects into a simple Venn diagram using their own headings.  **Spicy –** To complete a Carroll diagram with pre-given labels opaque, transparent, rigid, soft.  **Hot** – To create a Carroll diagram where children have to complete their own labels.  **Extension:** Why are bricks used with to build and not sponges. Justify your answer.  **Plenary:**  **Key vocabulary – transparent, opaque, translucent, natural, made, rigid, soft, smooth, bumpy, rough, shiny, dull, flexible, delicate, bendy, malleable, waterproof,** | I can group everyday objects based on given properties.  I can group everyday objectives based on their properties.  I can group objects based on two of their properties. | Range of different materials.  Feely bag.  Worksheets |  |
| Describe the simple physical properties of a variety of everyday materials | **Introduction:** Recap the different materials we have looked at. Feeling the materials the children to think of different adjectives/ properties of the materials. Tell me a property of wood. What do we use glass for? Explain why we use glass for windows. Explain why we wouldn’t use glass for a pillow. Choose the best material for a car, justify why you have chosen this material. Argue why you would use wood for a cupboard.  <http://www.bbc.co.uk/schools/scienceclips/ages/6_7/grouping_materials_fs.shtml>  **Pupil Activity:**  **Cool** – Complete scaffold sheet where they select the correct material out of a choice of 2, circle the correct property from a choice of 2 and then finally circle the correct choice of man-made or natural materials.  **Mild** – Children draw the item, write the end of each prompt e.g. made out of\_\_\_\_\_\_, properties\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, then circle manmade/ natural  **Spicy and Hot**– To draw a self-chosen object from a collection, using sentence starter cards for support if needed write what it is made out of, whether it is man-made, give two properties of the materials.  **Extension:** Question cards for children to answer such as why can’t shoes be made from paper? Why can’t clothes be made from glass? Why is a cup plastic?  **Plenary:** <http://www.topmarks.co.uk/Flash.aspx?b=science/characteristic_material>  **Key vocabulary – transparent, opaque, translucent, natural, made, rigid, soft, smooth, bumpy, rough, shiny, dull, flexible, delicate, bendy, mallable, waterproof,** | I can think of a property to describe a given material.  I can give properties of materials and say whether they are made or natural.  I can think of properities of everyday materials, say whether it is made or natural, and why the material has been chosen for the given property. | Range of different materials.  Feely bag.  Worksheets |  |
| Working scientifically:  Ask simple questions.  Use their ideas to suggest answers to questions.  Gather and record data.  To conduct a fair test. | **Introduction:** Children to have received an urgent letter from Paddington Bear who says that during his latest adventure to the Amazon Rainforest a suspicious crocodile nibbled his wellington boots and put a hole in them! Now his feet get wet in rainy London. Can we help him make some new wellingtons that are waterproof? Tell your partner what waterproof means. Explain which materials you think will be waterproof, explain why. Devise a fair test to investigate which materials are waterproof. Justify why we need to conduct a fair test.  **Pupil activity:**  **Cool** – Adult to scribe child’s prediction on their sheet. Children to complete a simple tick box for their results and adult to scribe the child’s conclusion.  **Mild** – Children to complete a scaffold sheet where they have to write a prediction and then complete the results box where they have tested 3 given materials. They have then complete the conclusion by using the starter prompt “My prediction was right because…” An adult can scribe underneath if necessary.  **Spicy** – Children to write the question, prediction/ hypothesis, equipment, method, results, conclusion in their books. Children to link the conclusion back to their prediction.  **Hot** – Children to write the question, prediction/ hypothesis, equipment, fair test, method, results, conclusion in their books. Children to link the conclusion back to their prediction.  **Extension: Paddington needs a new, warm coat because he got marmalade on his. Choose a material and justify why this would be a good material for his coat. Devise a simple investigation to prove you’re right.**  **Plenary AFL:** Share results back and discuss why they made the predictions they made. As a class write a letter back to Paddington explaining their findings.  **Key vocabulary: question, prediction/ hypothesis, equipment, fair test, method, results, conclusion, waterproof, test, investigate, measure, liquid, porous,** | I can ask a simple scientific question and record results to answer the question.  I can predict what I think will happen in an investigation to answer a question.  I can think of how to keep an investigation a fair test and use results to say whether my prediction was correct or incorrect. | Letter from Paddington.  IWB science investigation.  Range of materials  Scaffold sheets.  Water |  |
| **Lesson 4**  Ask simple questions.  Use their ideas to suggest answers to questions.  Gather and record data.  To understand that materials can be changed by heat and that these changes aren’t permanent. | **Introduction:** Read the chocolate poem by Michael Rosen. Whilst reading the poem children hold a chocolate button in their hand, with their fist closed tight. As the poem is read the chocolate will melt. After reading the poem ask…What has happened to the chocolate? Explain why this has happened. Justify what would happen to more chocolate if it was heated. Discuss why you think the chocolate melted. Compare chocolate to other materials… can we think of anything else that melts?  **Pupil activity:**  **Cool** – Children to draw the chocolate before it is heated, during heating and once it has been cooled. They then have to circle the property that describes the chocolate at each stage.  **Mild** – Children to draw and write a property prediction for each stage of the heating process. Once the investigation has been completed the children are to then draw what happened to the chocolate and write properties to describe it. Children as a challenge are to then write a sentence explaining (advancing) what happened at each stage using scientific vocabulary such as melting, cooling, and heated.  **Spicy and Hot –** Children to write the scientific query of “What happens when chocolate is heated?” Children then write a hypothesis of what they expect to happen, an equipment list, what they need to do and then finally complete a table saying before heating, during, once cooled where they write what has happened at each stage and then list properties to describe the chocolate.  **Extension:** Justify what would happen to an egg if it was heated. Once it has cooled will the egg return to its normal state or has it been changed? Explain your reasoning. (Advanced)  **Plenary AFL:** Use the melted chocolate to make rice crispy buns to share at snack time. <http://www.topmarks.co.uk/Flash.aspx?b=science/reversible_changes>  **Key vocabulary**: heating, cooling, changes, reversible changes, process, materials, irreversible, | I can record results from observations.  I can predict what I think will happen.  I can ask simple questions, record answers and write conclusions to an investigation. | chocolate buttons  chocolate poem  chocolate bar for melting  bowl  microwave  fridge |  |
| **Lesson 5**  Ask simple questions.  Use their ideas to suggest answers to questions.  Gather and record data.  To understand that materials can be changed by heat and that these changes aren’t permanent. | **Introduction:** Discuss how we can change water. What would happen if we cooled it? What would happen if we heated it? Explain to the children that today we are going to observe what happens as water cools and how long it takes for the water to become ice. What happens when water is cooled? Tell me some properties of frozen water. Explain if freezing water is a reversible change…Justify your answer with examples  **Pupil** **activity:**  As a whole class write a science investigation detailing the question “How long does it take water to freeze?” Children to make predictions and these are written together. As a class write a simple investigation where the ice is put into the freezer and it is check every half hour. After 30 minutes check the water. Ask a child to draw what they can see and as a class write properties to describe the water and a simple caption. Repeat until the water is completely frozen.  **Extension:** Can the water be changed back? How can we do this? Devise a way of changing the water back**.**  **Plenary AFL:** Share ways of changing the water back.  Key vocabulary: heating, cooling, changes, reversible changes, process, materials, freezing point, degrees, thermometer, Celsius, temperature, solid, liquid. | I can record results from observations.  I can predict what I think will happen.  I can ask simple questions, record answers and write conclusions to an investigation. | water  freezer  large paper for investigation. |  |
| **Lesson 6**  Ask simple questions.  Use their ideas to suggest answers to questions.  Gather and record data.  To understand that materials can be changed by heat and that these changes are permanent. | **Introduction: Recap the lessons on reversible changes. What would happen if we heated an egg? Could we change this back again? No. this is called an irreversible change. Can you explain any other irreversible changes linked to food? – bread, cake, chicken etc.**  Explain to the children that we are going to make bread and discuss whether the change is reversible or irreversible. As a class mix the dough and choose some children to knead the dough. As the dough is being kneaded discuss how the material can be changed by twisting, pulling, squashing etc (touching on y2 objective). Put the bread in the oven and predict what may happen.  **Pupil activity:**  **Cool** – Adult to scribe child’s prediction on their sheet, what will happen to the dough in the oven. Children to also predict whether they think the bread can be turned back to dough. Children draw what they think the bread will look like once it is cooked. As their conclusion they have to answer yes or no to the question. Is making bread a reversible change.  **Mild** – Children to complete a scaffold sheet where they have to write a prediction and then record what the bread looked like before and after heating. Children to write a final sentence of whether the dough is a reversible or irreversible change.  **Spicy** – Children to write the question, prediction/ hypothesis, equipment, method, results, conclusion in their books. Children to link the conclusion back to their prediction.  **Hot** – Children to write the question, prediction/ hypothesis, equipment, method, results, conclusion in their books. Children to link the conclusion back to their prediction.    **Extension –** Justify and debate whether the bread can be changed again. How? Is this a reversible or irreversible change?  **Plenary AFL:** Change the bread again, showing it can go through another irreversible change (make toast)  **Key vocabulary:** Key vocabulary: heating, cooling, changes, reversible/irreversible changes, process, materials, malleable, twisting, turning, squash, bend, pull, push, knead, heat | I can record results from observations.  I can predict what I think will happen.  I can ask simple questions, record answers and write conclusions to an investigation. | bread dough  cooker  scaffold sheets |  |