Question: How was the Burj Khalifa built?

National Curriculum Link

KS1 Science: Y2 Uses of Everyday Materials

KS1 Science Working Scientifically

International Baccalaureate Learner Profile Link

Inquirers – Nurture skills for research and curiosity

Knowledgeable – Develop conceptual understanding and engage with issues and ideas

Thinkers – Use critical and creative thinking skills

Reflective – Consider the wider world and our own ideas and experience

Critical Learning

- Identify and name a range of everyday materials (wood, plastic, metal, water, rock, brick, paper, glass)
- Describe the simple physical properties of a variety of everyday materials
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, rock, brick, paper and cardboard for particular uses

Key Vocabulary

Properties
Physical
Natural
Manmade
Solid
Heating
Cooling

Prior Skills

- Distinguish between an object and the materials from which it is made
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock
- Describe the simple physical properties of a variety of everyday materials
- Explain why a material might be useful for a specific job
- Compare and group together a variety of everyday materials on the basis of their simple physical properties
- Ask questions and decide how they might find answers to them
- Identify and classify things they observe, also classify following a given criteria
- Explore, using the senses (see, touch, smell, hear or taste)

New Skills

- Know the difference between an object and the material from which it is made
- Identify and name a range of everyday materials (wood, plastic, metal, water, rock, brick, paper, glass)
- Describe the simple physical properties of a variety of everyday materials
- Compare and classify a variety of materials based on their simple physical properties
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, rock, brick, paper and cardboard for particular uses
- Explore and know how the shapes of solid objects made from some materials can be changed (e.g. by squashing, bending, twisting and stretching.)
- Explore changes of solids when they are heated and

Future Skills

- compare and group materials together, according to their state of matter; whether they are solids, liquids or gases
- observe that some materials change state when they are heated or cooled and explain what happens
- Measure or research the temperature at which different materials change state in degrees Celsius (°C)
- Use measurements to explain changes to the state of water and link to the water cycle.
- Identify the part played by evaporation and condensation in the water cycle
- Investigate the rate of evaporation with temperature.
- Plan and set up a simple fair test to make comparisons
- Plan a fair test and isolate variables and explain

• Use first-hand experience to answer some scientific questions • Record observations and results to a test using drawings and in simple tables • Explain their findings through talk and show their work using pictures, labels and captions • Make simple predictions and make links to prior learning or something they have observed before • Explain what they have found out and use them to draw conclusions and answer questions	cooled and usefulness (e.g. bread) • Ask questions and decide how they might find answers to them. • Explore, using the senses and make and record observations and measurements. • Use first-hand experience and simple information sources to answer questions. • Communicate findings in a variety of ways including diagrams, pictures, charts, tables and ICT to record their observations • Use scientific words to describe what they have observed and measured • Make simple predictions and make links to prior learning or something they have observed before • Recognise when a test is unfair • Describe their observations and use them to draw conclusions and answer questions	why it was fair and explain which variables have been isolated • Suggest improvements and predictions linked to questions • Decide which information needs to be collected and decide which is the best way for collecting it • Use their findings to draw a simple conclusion • Take repeated measurements for accurate results

Knowledge, Skills and Understanding

- Know the difference between an object and the material from which it is made
- Identify and name a range of everyday materials (wood, plastic, metal, water, rock, brick, paper, glass)
- Describe the simple physical properties of a variety of everyday materials
- Compare and classify a variety of materials based on their simple physical properties
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, rock, brick, paper and cardboard for particular uses
- Explore and know how the shapes of solid objects made from some materials can be changed (e.g. by squashing, bending, twisting and stretching.)
- Explore changes of solids when they are heated and cooled and usefulness (e.g. bread)

Knowledge, Skills and Understanding for Working Scientifically

- Ask questions and decide how they might find answers to them.
- Explore, using the senses and make and record observations and measurements.
- Use first-hand experience and simple information sources to answer questions.
- Communicate findings in a variety of ways including diagrams, pictures, charts, tables and ICT to record their observations
- Use scientific words to describe what they have observed and measured
- Make simple predictions and make links to prior learning or something they have observed before
- Recognise when a test is unfair

Challenge for children working at great depth

- Can they describe the properties of different materials using words like, transparent or opaque, flexible, etc?

- Can they find out about people who developed useful new materials? (John Dunlop, Charles Macintosh, John McAdam)

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<tr>
<td>Resources

• A wide ranging collection of naturally occurring and man-made materials
• Materials such as plasticine, plastic, cotton/fabric/ fleece, glass (take care- adult supervision), rubber, foam sponges, soft rubber ball, paper, fabric, metal/wooden spoon, etc
• shapes/moulds for making ice shapes
• materials which harden on cooling e.g. butter, choco-late
• thermometers
• beakers, petri dishes, foil trays</td>
<td>Website/Apps
http://www.bbc.co.uk/schools/scienceclips/ages/6_7/grouping_materials.shtml
Materials and their uses good link – audio and visual
http://www.bbc.co.uk/scotland/education/wwww/tech/flash/flash_index.shtml
https://wordwall.net/en-gb/community/materials/sorting
Oak Academy
https://www.commonsensemedia.org/app-reviews/states-of-matter-by-tinybop

Suggested Quality Texts
Fiction: One Snowy night Nick Butterworth
Building our house by Jonathon Bean

Science Explorer – States of Matter and Explore Solids, Liquids and Gases on Get Epic!</td>
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<tr>
<td>Assessment ideas</td>
<td>Writing Opportunities
Blueprints / Design Plan for a new building with details of suitability of each material</td>
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<tr>
<td colspan="2">Cross Curricular Links
DT: Christmas decorations (which materials will you use). Also link to buildings - Children could plan, design and make their own model building of a famous building and use a selection of materials of their choice and justify why they picked the materials they did.

ICT: Children could research famous buildings and look at the shape, size and what materials they have been made from and understand materials choices.

ART: Cityscapes topic - Print pictures of famous building and children can create line drawing sketches of the buildings. They can use shading on greyscale to create real life look to the buildings.
Sculptures topic – which materials would you use for sculptures?

Music: Children will listen carefully and look for patterns in results from the sound made by musical instruments made from different materials.

Philosophy: Look at a selection of pictures of a wide range of materials and try to make a link with two pictures. Children must give a reason for the link they have made.</td>
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