

Brough Primary School – Curriculum Intention

Plan 2023 - 2024



| Subject: Design and Technology Year Group: Year 3/4 - Cycle B | | Area of learning: Mechanical Systems - Pneumatics Focus - using pneumatics within systems |
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| Links to previous work/Remember when | <ul style="list-style-type: none"> • The children in Year 3 completed a unit of work on mechanisms to create a moving vehicle using wheels and axles in the spring term of Year 1. • The children in Year 4 will have encountered mechanisms twice, creating a moving vehicle with wheels and axles in the spring term of Year 2 and using sliders and levers to create a moving book in the Autumn term of Year 1. • Neither group will have had experience of pneumatic systems in previous years. • Both Year 3 and Year 4 children will have had many experiences of the investigation, design, and make and evaluate process. | |
| Term | Year | Key Skills to be taught |
| Autumn 2023 What the children should know at the end of this series of lessons | Y1/2 | <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"> - evaluate their ideas and products against their own design criteria and consider the views of others to improve their work <p>Technical Knowledge</p> <ul style="list-style-type: none"> - understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] |

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Vocabulary

Pneumatics, syringe, input, output, pivot, compressed, lever, inflate, deflate, pump, plunger, air pressure, control, evaluate, design, design criteria.

| Sequence of learning | Objectives and suggested details provided by subject leader. |
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| 1 | <p><u>Investigate/Research Phase</u></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>Investigate existing moving machines. Find out and evaluate how things move without being touched.</p> |
| 2 | <p><u>Investigate/Research Phase</u></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>Experiment with pneumatics How can we make things move using only air? Which way is the most effective?</p> |
| 3 | <p><u>Design Phase</u></p> <p>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.</p> <ul style="list-style-type: none"> - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. <p>Design our own moving monster using ideas from our evaluations of existing products. What will move? What does it have to do? Who is it for?</p> |
| 4 | <p><u>Design Phase</u></p> <p>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.</p> |

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| | <p>- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>Plan the sequence of stages of our build. What will our Mayan monster look like? What parts will move? What steps will we take?</p> |
| 5 | <p><u>Make Phase</u></p> <p>- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.</p> <p>- 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> <p>Make our Moving Mayan Monster! Use a variety of equipment and resources to make a successful product.</p> |
| 6 | <p><u>Evaluate Phase</u></p> <p>- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p> <p>Evaluate our product and suggest improvements to our build. What are the strengths and weaknesses of our finished product?</p> |

| Learning Outcome/product |
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| Assessment records | List only those children who have not achieved the expected outcomes. |
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| End of unit assessment question |
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| How can air produce movement? How can this be used to move parts of a model? |