



## Curriculum

### Year 4 Scheme of Work Design Technology

**Term: Autumn 1**

**Topic: Pneumatic toys**

#### Key Skills and Knowledge:

##### Key Skills

##### Developing, planning and communicating ideas

- Designing a toy which uses a pneumatic system.
- Developing design criteria from a design brief.
- Generating ideas using thumbnail sketches and exploded diagrams.

##### Working with tools, equipment, materials and components

- Creating a pneumatic system to create a desired motion. Selecting materials due to their functional and aesthetic characteristics.
- Manipulating materials to create different effects by cutting, creasing, folding and weaving.
- Building secure housing for a pneumatic system.
- Using syringes and balloons to create different types of pneumatic system.

##### Evaluating processes and products

- Using the views of others to improve designs.
- Testing and modifying the outcome, suggesting improvements.

##### Key Knowledge

- To know that different types of drawings are used in design to explain ideas clearly.

#### Reading and Writing Opportunities (Long and Short Activities)

##### Creative Ideas and Hooks

##### Hooks

- Experimenting creating a pneumatic system using syringes, balloon pumps and plastic tubing.
- Stomp rocket launch to demonstrate what happens to compressed air.

##### Writing/ Research Opportunities

- What is a pneumatic system?
- News report from the rocket launch

#### Links to PSHCE, Equality and British Values Work

##### British Values

##### Democracy

- The children must take the views and opinions into account but still have the right to make their own choices.

##### The Rule of Law

- To understand the importance of safety rules when using tools.

##### Individual Liberty

- To understand that they are able to listen to others but can use their own ideas and design choices.
- To understand that many great design ideas originate from other cultures.

##### Mutual Respect

- To listen to and consider the ideas and opinions of others even if they differ from your own.
- To offer supportive comments in evaluations that will improve learning outcomes in a way that is objective but sensitive to the listener.

#### Resources Available / Visits/Visitors

- Syringes
- Plastic tubing
- Balloons
- Boxes/ paper plates to make the body of the toy.
- Craft materials e.g. pipe cleaners, googly eyes, feathers, coloured paper etc.

#### Key Vocabulary:

Component, Pneumatic system, sketch, lever  
 Function, Output, Input, Adapt, Pivot, Reinforce,  
 Thumbnail, Mechanism, Linkage, Properties  
 Function, Output, System, Motion

#### Previous Knowledge:

Do I know that mechanisms are a collection of moving parts that work together to cause movement?

#### Useful Websites:

<https://www.kapowprimary.com/subjects/design-technology/lower-key-stage-2/year-3/mechanical-systems-pneumatic-toys/lesson-1-exploring-pneumatics/>