

# Year 4

Aspect of D&T: **Mechanicals**  
Focus: **Pneumatics**

Project title: **Design, make and evaluate a moving monster for myself for fun**

## Prior learning:

- Explored simple mechanisms, such as sliders and levers, and simple structures.
- Learnt how materials can be joined to allow movement.
- Joined and combined materials using simple tools and techniques.

## Key learning in Design and technology

### Designing

- Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user.
- Use annotated sketches and prototypes to develop, model and communicate ideas.

### Making

- Order the main stages of making.
- Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.
- Select from and use finishing techniques suitable for the product they are creating.

### Evaluating

- Investigate and analyse books, videos and products with pneumatic mechanisms.
- Evaluate their own products and ideas against criteria and user needs, as they design and make.

### Technical knowledge and understanding

- Understand and use pneumatic mechanisms. • Know and use technical vocabulary relevant to the project.



## Vocabulary

Pneumatic  
System  
Pressure  
Inflate  
Deflate  
Syringe  
input  
output

## Resources

- examples of products showing pneumatic systems
- washing-up liquid bottles, 5mm plastic tubing, sterile syringes, balloons
- food containers with lids

## Learning opportunities pedagogy

### 1. Investigative and evaluative activity

Children investigate, analyse and evaluate familiar objects that use air to make them work e.g. whistle, beach ball, recorder, bicycle pump, balloon, foot pump for inflating an air bed. What does the air do? How has it been used in the design of these products?

### 2. Investigative and evaluative activity

Demonstrate a range of pneumatic mechanisms using prepared teaching aids. Children to test each and draw the three systems they have been shown. Pupils to consider how the different systems work and which will be the most appropriate to use for their moving monster.

### 3. Focused practical tasks

Demonstrate how to assemble the systems using syringes, tubing, balloons and plastic bottles.

### 4. Design

Develop a design brief with the children. Ask the children to create annotated sketches to develop, model and communicate their ideas for the product.

### 5. Make

Children to identify the main stages of making and the appropriate tools, equipment and skills they have learnt through focused tasks.

### 6. Evaluate

Evaluate the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed

## Useful links

[Moving Monsters Y3DdB 2021 - YouTube](#)

[KS2 Pneumatics Explainer \(youtube.com\)](#)

[DIY Pneumatic toy \(youtube.com\)](#)