

Topic: Structure: Construct windmills

National Curriculum Objectives which are covered in this unit:

Design

Pupils should be taught to:

- Design purposeful, functional, appealing products for themselves and other users based on design criteria.
- Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology.

Make

Pupils should be taught to:

- Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
- Select from and use a wide range of materials and components, including construction materials, according to their characteristics.

Evaluate

Pupils should be taught to:

- Explore and evaluate a range of existing products.
- Evaluate their ideas and products against design criteria.

Technical knowledge

Pupils should be taught to:

- Build structures, exploring how they can be made stronger, stiffer and more stable.
- Explore and use mechanisms in their products.

Lesson sequence - include the key concept, L.O. and brief description of lesson

WALT: create a stable structure.

Learning about windmills and making a stable structure.

Success criteria

- I can find the centre of an object.
- I can puncture a hole.
- I can add weight to a structure.

Assessing progress and understanding

Pupils with secure understanding indicated by: finding the centre of the base of a paper cup; following instructions to puncture a hole using a pencil; adding modelling dough to a paper cup to add weight.

Pupils working at greater depth indicated by: arranging modelling dough differently to improve the stability of the base.

WALT: use tools and equipment accurately to make part of a structure.

Cutting carefully to make the sails of the windmill and learning about how windmills are used.

Success criteria

- I can hold scissors correctly.
- I can begin to estimate equal distances.
- I can cut carefully.
- I can fold to make the shape of the structure.

Assessing progress and understanding

Pupils with secure understanding indicated by: holding scissors in one of two correct grips; finding the middle of the base of a cup and piercing a hole; making cuts with some even spacing and length; folding the flaps to create the shape of the windmill blades.

Pupils working at greater depth indicated by: choosing the scissor grip that makes cutting accurate and comfortable for

WALT: join parts of a structure.

Attaching the sails to the supporting structure.

Success criteria

- I can widen a hole.
- I can join parts together.
- I can attach a supporting structure.
- I can test a structure.

Assessing progress and understanding

Pupils with secure understanding indicated by: using a pencil to widen a hole where needed; attaching a cocktail stick to attach a supporting structure to the sails; testing their windmill with their finger and by blowing.

Pupils working at greater depth indicated by: selecting either a cocktail stick or a piece of dowel to attach their supporting structure.

WALT: evaluate a structure.

Testing, evaluating and making improvements to the windmills.

Success criteria

- I can test my windmill.
- I can make my design better.
- I can decorate my windmill for the user.

Assessing progress and understanding

Pupils with secure understanding indicated by: checking their windmill to see if it is stable and the blades move; improving the design by adding more weight or modifying the structure; discussing suitable colour choices.

Pupils working at greater depth indicated by: creating an alternate configuration for the sails; testing the two sets of sails to see which is more effective.

	them; marking out the cup to ensure even cuts; making evenly spaced cuts of an equal length with little help.		
Prior learning <i>List year groups and topics with connected learning</i>	Reception – Junk modelling		
Future learning <i>List year groups and topics with connected learning</i>	Year 2 Structure: Baby bear’s chair Year 3 Structure: Construct a Castle Year 4 Mechanical systems: making a slingshot Year 5 Structures: Bridges Year 6 Mechanical systems: Automata toys		
Key vocabulary to be explicitly taught	<ul style="list-style-type: none"> • base • rotate • rotor • rotor blade • sail • stable • structure • fold • attach • evaluate • improve • test 		
Cross-curricular links	<u>Mathematics</u> Geometry – properties of shapes Pupils should be taught to: <ul style="list-style-type: none"> • Recognise and name common 2-D and 3-D shapes. 		
Enrichment <i>Give visit/visitor/first hand experience and focus</i>			
Useful websites/resources	DT KS1 Lesson Plan Structures Windmills https://video.link/w/j2Qtb		