



Enquiry Question

What is the most effective way to create a self-standing structure?

Focus:

Shell Structures

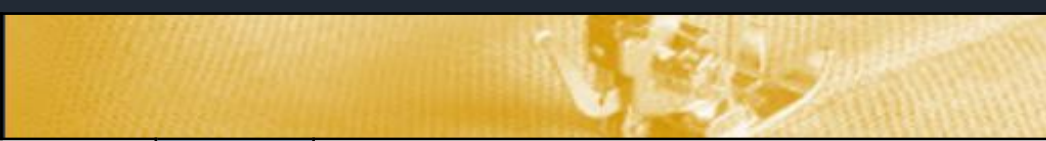
Be Brilliant
CULTURAL DIVERSITY
Enables our children to develop a growth mindset, by exposure to challenging experiences that allow our children to question and explore opportunities that will enable them to become confident and resilient in all areas of their lives.

Believe
POSSIBILITIES
Allows our children to explore the world around them, knowing that the experiences they gain will enhance their lives and open doors to new adventures.

Be brave
ADVENTURE
Exposes our children to a rich and diverse world that is full of colour, music, creativity and celebration. Providing our children with the opportunity to see a world beyond their own, that will inspire and influence their future choices.

Sequence of lessons		Outcome - from overview	Skills used (NC)
1	<p><u><i>As designers, we are learning what a shell structure is and its purpose.</i></u></p> <p>Use questions to develop children's understanding e.g. What is the purpose of the shell structure – protecting, containing, presenting? What material is it made from? How has it been constructed? Are the materials recyclable or reusable? How has it been stiffened i.e. folded, corrugated, ribbed, laminated? What size/shape/colour is it? What information does it show and why? How attractive is the design?</p>	Investigate different types of shell structures and the many different purposes including to protect, contain and /or present something / different scale.	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
2	<p><u><i>As designers, we are learning to investigate and evaluate different shell structures.</i></u></p> <p>Ask question such as: How are different faces of the package arranged? How are the tabs used to join the 'free' edges of the net? Evaluate existing products to determine which designs children think are the most effective. Provide opportunities for the children to judge the suitability of the shell structures for their intended users and purposes. Discuss graphics including colours/impact of style/logo/size of font. What style of graphics and lettering might we want to include in our product</p>	Take a small package apart identifying and discussing parts of a net. Evaluate existing products to determine which designs are the most effective.	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
3	<p><u><i>As designers, we are learning how to make shell structures.</i></u></p>	Use kit parts with flat faces to construct nets. Practise making nets out of card, joining flat faces with masking tape to create 3-D shapes. Experiment with assembling in nets in numerous ways.	select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
4	<p>Demonstrate skills and techniques of scoring, cutting out and assembling using pre-drawn nets. Then allow children to practise by constructing a simple box. Show how a window could be cut out and acetate sheet added. Demonstrate how to use different ways of stiffening and strengthening their shell structures e.g. folding and shaping, corrugating, ribbing, laminating. Provide opportunities for the children to practise these and to carry out tests to find out where their structures might need to be strengthened or stiffened. Children discuss and explore the graphics techniques and media that could be used to achieve the desired appearance of their products. Practise using computer-aided design (CAD) software to design the net, text and graphics for their products according to purposes.</p>		
5	<p><u><i>As designers, we are learning to design and make a Christmas gift box made from a shell structure.</i></u></p>	Use annotated sketches, CAD and prototypes to design and make a Christmas gift box. Evaluate throughout and the final products against the intended purpose .	select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately evaluate their ideas and products against their own design criteria
6	<p>Discuss with the children the uses and purposes of their shell structures e.g. What does the product need to do? Who is it aimed at? How will the purpose and user affect your design decisions? Agree on design criteria that can be used to guide the development and evaluation of children's products e.g. How will we know that we have designed and made successful products? Ask the children to use annotated sketches and prototypes to develop, model and communicate their ideas for the product.</p>		

Composite
The children debate and explain what is the most effective way to create a self-standing structure.



Enquiry Question

What makes the most nutritional healthy wrap?

Focus:

Nutrition - Healthy Eating

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Sequence of lessons		Outcome - from overview	Skills used (NC)
1	<i>As designers, we are learning about the importance of a balanced diet.</i>	Knowledge harvest: What do we know about a balanced diet? Investigate what makes a balanced diet.	understand and apply the principles of a healthy and varied diet
2	<i>As designers, we are learning to evaluate different shop bought wraps.</i>	Investigate and compare different shop bought wraps – white / wholemeal / 50/50 and different ingredients. Look at the traffic light labelling to help assess how healthy the different ingredient combinations are.	understand and apply the principles of a healthy and varied diet
3	<i>As designers, we are learning to prepare and evaluate different combinations of ingredients.</i>	Learn a range of cutting and grating techniques. Prepare a variety of different ingredients from a range of food groups and evaluate different combinations. Record results with annotations about health and taste.	prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
4	<i>As designers, we are learning to design a healthy wrap,</i>	Use results from ingredient investigation to design a healthy wrap. Label the different food groups and refer to the Eatwell Guide to assess whether the wrap meets the criteria of being healthy.	understand and apply the principles of a healthy and varied diet
5	<i>As designers, we are learning to construct and a healthy wrap.</i>	Revise cutting and grating techniques and construct wrap from the design.	prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
6	<i>As designers, we are learning to evaluate our wraps.</i>	Evaluate the wrap against the Eatwell Guide criteria. Create a traffic light label for the wrap. Present the design to the class explaining why the wrap is healthy, what went well and what improvements could be made.	understand and apply the principles of a healthy and varied diet

Composite: Make wraps to share on World Book Day to share in a picnic.

Enquiry Question

Can you use air to make a creature that moves?

Focus:

Mechanics - pneumatics

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Sequence of lessons

Outcome - from overview

Skills used (NC)

1 *As designers, we are learning to investigate what a pneumatic system is.*

Knowledge Harvest: What do you already know about systems that use air to make something move? Investigate using a bicycle pump to inflate a balloon. Draw and label a diagram to show hoe the pump works.

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

2 *As designers, we are learning to evaluate different products that incorporate a pneumatic system.*

Investigate, analyse and evaluate products and machines that incorporate pneumatic and/or hydraulic systems, and that are used to lift and move loads.

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

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3 *As designers, we are learning to create a simple pneumatic system.*

Create and analyse a pneumatic system using two syringes and tubing. Include a balloon in the system and investigate what ca be lifted by the balloon.

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 Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately

4 *As designers, we are learning to design a creature that uses a pneumatic system to move.*

Create a design of a creature with a moving part controlled by a pneumatic system including a balloon. Select the materials needed to construct the creature.

Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

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5 *As designers, we are learning to make a creature that uses a pneumatic system to move.*

Following the design, select materials to create a creature that moves using a pneumatic system.

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

6 *As designers, we are learning to evaluate our pneumatic system*

Present creature to the class. Evaluate effectiveness of pneumatic system and design of a creature that moves.

Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Composite: Display our mechanics and show to the other class.