Year 2 Spring **Post a Pringle** **Design and Technology (Model-Making)**

As Designers we will explore the different shapes that can be used to create strong structures. We will look at the best methods to create strong structures using cardboard and wood, and we will test these by using the box to deliver a Pringle via the Royal Mail. We will lean how to use appropriate cutting and joining methods for the materials wood and cardboard, and we will also learn how to make these stronger and more secure.

NC Content

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Materials required for this unit:	**Tools and equipment required for this unit:**	**Vocabulary**
• Cardboard • Wooden bases • Wooden lengths • Wood glue • Joining triangles • Nails • Screws • Sellotape • Pringles	• Scissors • Rulers • Clamps • Junior hack saws • Nails • Screws • Junior hand drills	disassemble purpose refine evaluate measure strengthen join drill

Post a Pringle

Model-Making (with cardboard)

By the end of this learning sequence, children will know:

- The types of shapes that can make a strong structure.
- How to design using drawings and prototypes, labelling designs with measurements to the nearest cm.
- Practise using appropriate cutting and joining techniques. (using scissors with some accuracy, using glue, hinges and Sellotape to join)
- How to make a stable structure and evaluate this against the design criteria, suggesting ways to improve.

Research	Design	Make	Evaluate
Procedural skill: Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs. Explore how products have been created. NC links: Pupils should be taught to: Explore and evaluate a range of existing products. Be able to identify the purpose of a product. - Identify a wide range of real-world packaging (external structures) and explore the materials used to make them, how they have been made stronger and their purposes.	Procedural skill: Design products that have a clever purpose and an intended user. NC links: 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. <u>Design Criteria:</u> Hook: Delivery from Royal Mail – open the envelope with the children and look inside. The Pringle has broken into crumbs. How/why did this happen? How can we improve	Procedural skill: Cut materials safely using tools provided. Measure and mark out to the nearest centimetre. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. Make products, refining the design as work progresses NC links: Pupils should be taught to: Select from and use a range of tools and equipment to perform practical	Procedural skill: Suggest improvements to existing designs. NC links: Pupils should be taught to: Evaluate their ideas and products against design criteria. Post the packages via Royal Mail as a test of effectiveness for the package. When the product arrives, determine whether the structure was fit for purpose. Is the Pringle still in tact? Has the box been damaged? Use this evaluation to suggest improvements to the design.

- Explore e.g cereal boxes, shoe boxes, crisp packets, pringle tubes, jiffy bags How can we check that products are suitable for the user? - Study 3d shapes and how they are used in packaging (e.g. dimensions) - Cubes / cuboids / cylinders – recreate prototypes of some of these structures and explore rigidity/durability of each. How can it be strengthened/improved? - What are the advantages/disadvantages of using these shapes? Are any of these stronger than others? Why is this? - What can you fit inside? Why can't you fit different types of products inside? Explain why packaging is made from different materials and have different structures in order to suit the environment / product.	the design of this packaging? Create a structure that can more safely deliver the package. Children to use knowledge from their research on packaging to develop design ideas to create a suitable package for posting a pringle. Consider which shapes and structures are the strongest, and ways that we can strengthen the materials used. Create drawings of the design, labelling with vocabulary and measurements to the nearest centimetre. Create a prototype of the design using card and explore joining and folding techniques. Take pictures of these and use Seesaw to justify their design choice, explaining how the design will help to keep the Pringle safe. Experiment with a range of materials (newspaper, card, cardboard) to determine which are the most appropriate for creating the packaging. How can these materials be strengthened?	tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Build structures, exploring how they can be made stronger, stiffer and more stable. Use their designs to create the product. Follow procedures for safety when cutting and joining. Children to measure and mark out the required lengths to the nearest centimetre. Use appropriate tools (scissors) to cut the required shapes with some accuracy. Use appropriate joining methods to join the pieces together to create the structure.	

	Practise marking and cutting with appropriate tools. (Scissors) Practise folding and joining methods. (Hinges, glue, Sellotape).		

Stronger Structures Model-Making (with wood) By the end of this learning sequence, children will know: • The types of shapes that can make a strong structure and how these can be created using wood. • How to design using drawings and prototypes, labelling designs with measurements to the nearest cm. • Practise using appropriate cutting and joining techniques. (using junior hack saws and sandpaper to finish. Using wood glue, clamps, joining triangles, nails and screws where appropriate). • How to make a stable structure using wood and evaluate this against the design criteria, suggesting ways to improve.			
Research	Design	Make	Evaluate
Procedural skill: Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs. Explore how products have been created. NC links: Pupils should be taught to: Explore and evaluate a range of existing products.	Procedural skill: Design products that have a clever purpose and an intended user. NC links: 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-	Procedural skill: Cut materials safely using tools provided. Measure and mark out to the nearest centimetre. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). Use materials to practise drilling, screwing, gluing and nailing	Procedural skill: Suggest improvements to existing designs. NC links: Pupils should be taught to: Evaluate their ideas and products against design criteria. Post the packages via Royal Mail as a test of effectiveness for the package.

Be able to identify the purpose of a product. - Identify a wide range of real-world packaging specifically using wood. Identify how they have been assembled and been made stronger. - Consider the different shapes of packaging that is made using wood. Are some shapes better than others? - Explain when it would be more suitable to use wood over another material.	ups and, where appropriate, information and communication technology. <u>Design Criteria:</u> Create another packaging structure for posting a Pringle. This time the structure must be made from wood. Children to use knowledge from their research on packaging to develop design ideas to create a suitable package for posting a pringle. Consider which shapes and structures are the strongest, and ways that we can strengthen the materials used. Create drawings of the design, labelling with vocabulary and measurements to the nearest centimetre. Take pictures and use Seesaw to justify their design choice, explaining how the design will help to keep the Pringle safe. Practise using appropriate tools and cutting techniques to cut wood (junior hack saws, clamps). Practise sanding the wood.	materials to make and strengthen products. Make products, refining the design as work progresses NC links: 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, textiles and ingredients, according to their characteristics. Build structures, exploring how they can be made stronger, stiffer and more stable. Use their designs to create the product. Follow procedures for safety when cutting and joining. Children to measure and mark out the required lengths to the nearest centimetre. Use appropriate tools (hack saws) to cut the required shapes with some accuracy.	When the product arrives, determine whether the structure was fit for purpose. Is the Pringle still in tact? Has the box been damaged? Did this design work better than the cardboard? Use this evaluation to suggest improvements to the design.

	Practise a range of joining methods: gluing and clamping, nails, screwing and drilling. Consider the type of material that may be required to further protect the Pringle inside the box (e.g. polystyrene, fabric, inflated plastic etc)	Use sandpaper to finish the edges of the wooden cuts. Use appropriate joining methods (wood glue, clamps, nails, screws, drills – where appropriate) to join the pieces together to create the structure.	