Helsby Hillside Primary School

Design and Technology Essential Learning

With kindness, respect and gratitude, together we aim high in all we do.

Year Group	Unit of Work	Design and Technology - Essential Learning
Early Years	Junk Modelling	In this unit, the children will: • Use a range of small tools, including scissors, paint brushes and cutlery. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Develop small motor skills so that they can use a range of tools competently, safely and confidently.
	Textiles: Bookmarks	In this unit, the children will: • develop threading and weaving skills. • practise and apply threading skills with specific materials e.g. hessian and wool. • use threading or sewing to design a product (bookmark). • reflect with children on how they have achieved their aims.
	Structures: Boats	In this unit, the children will • develop an awareness of what waterproof means and to test whether materials are waterproof. • Be able to offer explanations for why things might happen. • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Test and make predictions for which materials float or sink. • Investigate how the shape and structure of boats affects the way they move.
Year 1	Structures: Constructing a Windmill	In this unit, the children will: • Follow design criteria to meet the needs of a user. • Make a stable structure. • Make functioning sails/blades that attach to the supporting structure. • Understand how to make simple improvements to their final design.
	Mechanisms: Make a Moving Storybook	In this unit, the children will: • Identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make. • Clearly label drawings to show which parts of their design will move and in which direction. • Draw a picture that meets the design criteria, with parts that move purposefully as planned. • Evaluate the main strengths and weaknesses of their design and suggest alterations.
	Food: Smoothies	In this unit, the children will: • Describe fruits and vegetables and explain how to identify fruits.

		• Name a range of places that fruits and vegetables grow. • Describe basic characteristics of fruit and vegetables. • Understand the importance of using knives safely when cutting fruits and vegetables to make a smoothie.
Year 2	Structures: Baby Bear's Chair	In this unit, the children will: • Identify man-made and natural structures. • Identify stable and unstable structural shapes. • Contribute to discussions. • Identify features that make a chair stable. • Work independently to make a stable structure, following a demonstration. • Explain how their ideas would be suitable for Baby Bear. • Produce a model that supports a teddy, using the appropriate materials and construction techniques. • Explain how they made their model strong, stiff and stable.
	Textiles: Pouches	In this unit, the children will: • Sew a running stitch with regular-sized stitches and understand that both ends must be knotted. • Prepare and cut fabric to make a pouch from a template. • Use a running stitch to join the two pieces of fabric together. • Decorate their pouch using the materials provided.
	Mechanisms: Making a Moving Monster	In this unit, the children will: • Draw accurate diagrams with correct labels, arrows and explanations. • Correctly identify definitions for key terms. • Identify five appropriate design criteria. • Communicate two ideas using thumbnail sketches. • Communicate and develop one idea using an exploded diagram. • Select appropriate equipment and materials to build a working pneumatic system. • Assemble their pneumatic system within the housing to create the desired motion. • Create a finished pneumatic toy that fulfils the design brief.

Year 3	Structures: Constructing a Castle	In this unit, the children will: • Draw and label a castle that includes the most common features. • Recognise that a castle is made up of multiple 3D shapes. • Design a castle with key features which satisfy a given purpose. • Score or cut along lines on the net of a 2D shape. • Use glue to securely assemble geometric shapes. • Utilise skills to build a complex structure from simple geometric shapes. • Evaluate their work by answering simple questions.
	Food: Easting Seasonally	In this unit, the children will: • Explain that fruits and vegetables grow in different countries based on their climates. • Understand that seasonal fruits and vegetables grow in a given season. • Understand that eating seasonal fruit and vegetables positively affects the environment. • Design a tart recipe using seasonal ingredients.
Year 4	Textiles: Fastenings	In this unit, the children will: • Identify the features, benefits and disadvantages of a range of fastening types. • Write design criteria and design a sleeve that satisfies the criteria. • Make a template for their book sleeve. • Assemble their case using any stitch they are comfortable with. • Attach a fastening of their choice to their case. • Evaluate and suggest improvements to their case.
	Mechanisms: Making a Slingshot Car	In this unit, the children will: • Work independently to produce an accurate, functioning car chassis. • Design a shape that is suitable for the project. • Attempt to reduce air resistance through the design of the shape. • Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed. • Construct car bodies effectively. • Conduct a trial accurately and draw conclusions and improvements from the results.

	Electrical Systems: Torches	In this unit, the children will: • Identify electrical products and explain why they are useful. • Help to make a working switch. • Identify the features of a torch and how it works. • Describe what makes a torch successful. • Create suitable designs that fit the success criteria and their own design criteria. • Create a functioning torch with a switch according to their design criteria.
Year 5	Mechanisms: Pop Up Books	In this unit, the children will: • Produce a suitable plan for each page of their book. • Produce the structure of the book. • Assemble the components necessary for all their structures/mechanisms. • Hide the mechanical elements with more layers using spacers where needed. • Use a range of mechanisms and structures to illustrate their story and make it interactive for the users. • Use appropriate materials and captions to illustrate the story
	Structures: Bridges	In this unit, the children will: • Identify stronger and weaker shapes. • Recognise that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight. • Identify beam, arch and truss bridges and describe their differences. • Use triangles to create simple truss bridges that support a load (weight). • Cut beams to the correct size, using a cutting mat. • Smooth down any rough-cut edges with sandpaper. • Follow each stage of the truss bridge creation as instructed by their teacher. • Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher. • Identify some areas for improvement, reinforcing their bridges as necessary.

	Food: Developing a Recipe	In this unit, the children will: • Describe the process of beef production. • Research a traditional recipe and make changes to it. • Add nutritional value to a recipe by selecting ingredients. • Prepare and cook a version of Bolognese sauce.
Year 6	Textiles: Design a Waistcoat	In this unit, the children will: • Consider a range of factors in their design criteria and use this to create a waistcoat design. • Use a template to mark and cut out a design. • Use a running stitch to join fabric to make a functional waistcoat. • Attach a secure fastening, as well as decorative objects. • Evaluate their final product.
	Structures: Playground	In this unit, the children will: • Create apparatus designs, applying the design criteria to their work. • Make suitable changes to their work after peer evaluation. • Make roughly three different structures from their plans using the materials available. • Complete their structures, improving the quality of their rough versions and applying some cladding to a few areas. • Secure their apparatus to a base. • Make a range of landscape features using a variety of materials which will enhance their apparatus.
	Electrical Systems: Steady Hand Game	In this unit, the children will: • Explain simply what is meant by 'form' (the shape of a product) and 'function' (how a product works). • State what they like or dislike about an existing children's toy and why. • Learn about skills developed through play and apply this knowledge in a survey of one or more children's toys. • Identify the components of a steady hand game. • Design a steady hand game of their own according to their design criteria, using four different perspective drawings. • Create a secure base for their game, with neat edges, that relates to their design. • Make and test a functioning circuit and assemble it within a case.