Broadmayne First School

D&T: Scheme of Work

Yr R	Structures	Mechanisms and mechanical systems	Cooking and Nutrition	Textile
Design	Draw a picture of something they would like to make.	Make something with lego to transfer to the big bricks outside.	Investigate raw materials e.g. spices, chocolate drops Then suggest ingredients to add to biscuits, fruit salad.	Feel different fabrics and describe them. Suggest ways in which they can be used (e.g. strong, stiff, floppy, shiny, warm, cool, wooly) - what could they be used for.
Make	Make stable structures using construction kits. Use scissors, hole punches, different types of glue and tape to create models from recycled materials, paper and card.	Use string in the woodland area to make simple pulleys (with string and baskets). Explore adding heavier and lighter objects. Use construction kits with wheels which resemble vehicles that they have seen. Invent new ones.	Make own hot chocolate in the woods, stirring until all the powder has dissolved. Toast marshmallows in the woods. (If risk assessments allow)	Make cloaks out of different materials for Super heroes topic. Make dens, gardens, small world landscapes out of different fabrics. Add other materials e.g. paper flowers, fish, cotton wool for snow.
Evaluate	Talk about how our construction kits and malleable modelling materials (playdough, plasticine, clay, salt dough) work. Decide which kits are the most appropriate for the design and say why.	Talk about how they made the baskets move	Talk about the difference between toasted and untoasted marshmallows/ cooked/ uncooked biscuits	Reflect on finished items. Comment on how the properties of the fabrics helped with our projects.
Technical knowledge	Talk about the shapes involved in the construction kits and relevant numbers (e.g. lego pieces have a number of bumps - often 4 and 8) Wooden building bricks give children the opportunity to understand the properties of 3D shapes, for example which shapes are best at the bottom and which are on the top.	Use the vocabulary: up, down and turn to describe movement.	Talk about flavours - sweet, spicy, sour. Textures: hard, soft, runny	Look closely at clothes and shoes and think about how the pieces stay together (e.g. during the Elves and Shoemaker topic)

Reception coverage

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Make stable structures using construction kits: lego, mobilo, loose parts, bricks - part of getting to know our classroom and apparatus.	Use scissors, hole punches, different types of glue and tape to create models from recycled materials, paper and card: Christmas crafts	Use scissors, hole punches, different types of glue and tape to create models from recycled materials, paper and card: Chinese New	Paper flowers Decorate polystyrene eggs Create world for dinosaurs	Make minibeasts - including butterflies that flap Make bug hotels	Use string in the woodland area to make simple pulleys (with string and baskets). Explore adding heavier and lighter objects.

	Feel different fabrics and describe them. Suggest ways in which they can be used (e.g. strong, stiff, floppy, shiny, warm, cool, wooly) - what could they be used for. - dancing with scarves, making small worlds - e.g. lakes, rivers etc.	Year - dragons, lanterns, Building with blocks supports our mathematics curriculum. Kite making (when it's windy)	Make dinosaurs and crocodiles (egg boxes etc)	Make patterns in the woods with sticks, cones etc Clay faces Mix clay/ chalk with water to make paint	Make cloaks out of different materials for Superheroes topic. Super smoothies for superheroes

Yr 1	Structures	Mechanisms and mechanical	Cooking and Nutrition	Textile

		systems		
Design	• Learn the importance of a clear design criteria • Include individual preferences and requirements in a design	• Explain how to adapt mechanisms, using bridges or guides to control the movement • Design a moving story book for a given audience • Design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Create clearly labelled drawings which illustrate movement	• Designing smoothie carton packaging by-hand or on ICT software	• Use a template to create a design for a puppet
Make	• Make stable structures from card, tape and glue • Follow instructions to cut and assemble the supporting structure of a windmill • Make functioning turbines and axles which are assembled into a main supporting structure	• Follow a design to create moving models that use levers and sliders • Adapt mechanisms	• Chop fruit and vegetables safely to make a smoothie • Identify if a food is a fruit or a vegetable • Learn where and how fruits and vegetables grow	• Cut fabric neatly with scissors • Use joining methods to decorate a puppet • Sequence steps for construction
Evaluate	• Evaluate the model according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements	• Test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed • Review the success of a product by testing it with its intended audience • Test mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move	• Taste and evaluate different food combinations • Describe appearance, smell and taste • Suggest information to be included on packaging	• Reflect on a finished product, explaining likes and dislikes
Technical knowledge	• Describe the purpose of structures. • Learn how to turn 2D nets into 3D structures • Learn that the shape of materials can be changed to improve the strength and stiffness of structures • Understand that cylinders are a strong type of structure that are often used for windmills and lighthouses • Understand that windmill turbines use wind to turn and make the machines inside work • Understand that axles are used in structures and mechanisms to make parts turn in a	• Learn that levers and sliders are mechanisms that can make things move • Identify whether a mechanism is a lever or slider and determine what movement the mechanism will make • Use the vocabulary: up, down, left, right, vertical and horizontal to describe movement • Identify what mechanism makes a toy or vehicle roll forwards • Learn that a wheel must be attached to an axle to move	• Understand the difference between fruits and vegetables • Describe and group fruits by texture and taste	• Learn different ways in which to join fabrics together: pinning, stapling, glueing.

	circle • Develop awareness of different structures for different purposes			

Year 1 coverage					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Levers and sliders moving models. Link to History toys topic.	Cooking and nutrition - smoothies or fruit kebabs. Link to Science topic on senses and Healthy Me week.	Design, label and make a space rocket from recycled materials. Design and make a moon buggy. Making and attaching axles and wheels. Link to History Space topic.		Structures Design, label and make windmills.Link to Geography topic on houses and buildings.	Textiles Puppets link to Geography topic Amazing Africa

Yr 2	Structures	Mechanisms and mechanical systems	Cooking and Nutrition	Textile

Design	• Generating and communicating ideas using sketching and modelling • Learning about different types of structures, found in the natural world and in everyday objects	• Creating a class design criteria for a moving model • Designing a moving model for a specific audience in accordance with a design criteria • Selecting a suitable linkage system to produce the desired motions • Designing a wheel - Selecting appropriate materials based on their properties	• Designing a healthy snack based on a food combination which work well together	• Design a pouch (for a specific purpose)
Make	• Make a structure according to design criteria • Creating joints and structures from paper/card and tape	• Make linkages using card for levers and split pins for pivots • Experiment with linkages adjusting the widths, lengths and thicknesses of card used • Cut and assemble components neatly • Select materials according to their characteristics • Follow a design brief	• Slice food safely (using the bridge or claw grip) • Construct a snack that meets a design brief	• Select and cut fabrics for sewing • Decorate a pouch using fabric glue or running stitch
Evaluate	• Explore the features of structures • Compare the stability of different shapes • Test the strength of own structures and Identify the weakest part of a structure • Evaluate the strength, stiffness and stability of own structure	• Evaluate own designs against design criteria • Use peer feedback to modify a final design • Evaluate different designs • Test and adapt a design	• Describe the taste, texture and smell of fruit and vegetables • Taste test food combinations and final products • Describe the information that should be included on a label • Evaluate which grip was most effective	• Troubleshoot scenarios posed by teacher • Evaluate the quality of the stitching on others' work • Discuss as a class, the success of their stitching against the success criteria • Identify aspects of their peers' work that they particularly like and why
Technical knowledge	• Identify natural and man-made structures • Identify when a structure is more or less stable than another • Know that shapes and structures with wide, flat bases or legs are the most stable • Understand that the shape of a structure affects its strength • Use the vocabulary: strength, stiffness and stability • Know that materials can be manipulated to improve strength and stiffness • Build a strong and stiff structure by folding paper.	• Learn that mechanisms are a collection of moving parts that work together in a machine • Learn that there is an input and output in a mechanism • Identify mechanisms in everyday objects • Learn that a lever is something that turns on a pivot • Learn that a linkage is a system of levers that are connected by pivots • Explore wheel mechanisms • Learn how axles help wheels to move a vehicle	• Understand what makes a balanced diet • Know where to find the nutritional information on packaging • Know the five food groups	• Join items using fabric glue or stitching identifying benefits of these techniques • Thread a needle • Sew running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pin and cut fabric using a template

Year 2 coverage					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Design and make a healthy snack given criteria.		Design and make a fire mark (linked to GFOL topic) Make bread rolls.	Design a pouch for an explorer (stitching) Design and make an exotic fruit salad (fruits grown in Nepal). Label fruit salad with correct ingredients.		Design and make a moving vehicle.

Yr 3	Structures	Mechanisms	Cooking and Nutrition	Textile	Electrical systems

Design	• Design a structure with key features to appeal to a specific person/purpose • Draw and label a structure design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours • Design and/or decorate a structure on CAD software	• Design a toy which uses a pneumatic system • Develop design criteria from a design brief • Generate ideas using thumbnail sketches and exploded diagrams • Learn that different types of drawings are used in design to explain ideas clearly	• Create a healthy and nutritious recipe for a savoury dish using seasonal ingredients, considering the taste, texture, smell and appearance of the dish	• Design and make a template from an existing product and apply individual design criteria	• Design a game that works using static electricity, including the instructions for playing the game • Identify a design criteria and a target audience
Make	• Construct a range of 3D geometric shapes using nets • Create special features for individual designs • Make facades from a range of recycled materials	• Create a pneumatic system to create a desired motion • Build a secure housing for a pneumatic system • Use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy • Select materials due to their functional and aesthetic characteristics • Manipulate materials to create different effects by cutting, creasing, folding, weaving	• Know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination • Follow the instructions within a recipe	• Follow design criteria to create a product • Select and cut fabrics with ease using fabric scissors • Sew cross stitch to join fabric • Decorate fabric using appliqué • Complete design ideas with stuffing and sewing the edges	• Make a game that works using static electricity • Use a wider range of materials and equipment safely • Use electrostatic energy to move objects in isolation as well as in part of a system
Evaluate	• Evaluate own work and the work of others based on the aesthetic of the finished product and in comparison to the original design • Suggest points for modification of the individual designs	• Use the views of others to improve designs • Test and modify the outcome, suggesting improvements • Understand the purpose of exploded-diagrams through the eyes of a designer (and client)	• Establish and use design criteria to help test and review dishes • Describe the benefits of seasonal fruits and vegetables and the impact on the environment • Suggest points for improvement when making a seasonal dish	• Evaluate an end product and think of other ways in which to create similar items	• Learn to give constructive criticism on own work and the work of others • Test the success of a product against the original design criteria and justifying opinions
Technical knowledge	• Identify features of a given structure/building • Identify suitable materials to be selected and used for a structure, considering weight, compression, tension • Extend the knowledge of wide and flat based objects being more stable	• Understand how pneumatic systems work • Learn that mechanisms are a system of parts that work together to create motion • Understand that pneumatic systems can be used as part of a mechanism • Learn that pneumatic	• Learn that climate affects food growth • Work with cooking equipment safely and hygienically • Learn that imported foods travel from far away and this can negatively impact the environment • Learn that vegetables and	• Thread needles with greater independence • Tie knots with greater independence • Sew cross stitch and appliqué • Understand the need to count the thread on a piece of evenweave fabric in each direction to create uniform	• Understand what static electricity is and how it moves objects through attraction or repulsion • Generate static electricity independently • Use static electricity to make objects move in a desired way

	• Understand the terminology of strut, tie, span, beam • Understand the difference between frame and shell structure	systems force air over a distance to create movement	fruit grow in certain seasons • Learn that each fruit and vegetable gives us nutritional benefits • Learn to use, store and clean a knife safely	size and appearance • Understand that fabrics can be layered for affect	

Year 3 coverage					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Diwali Festival *food* - Link to Hinduism *Structures* - Light Theatres - link to Science		*Food* - Revolting Recipes - link to English. Textiles - felting and weaving - link to Iron Age	*Electricity - static electricity (to be taught in Science - forces)*	*Structures and mechanisms* - Bridges and pillars - link to Romans.

Yr 4	Structures	Mechanisms	Cooking and Nutrition	Textile	Electrical systems

Design	• Design a stable building structure that is aesthetically pleasing and select materials to create a desired effect • Build frame structures designed to support weight	• Design a shape that reduces air resistance • Draw a net to create a structure from • Choose shapes that increase or decrease speed as a result of air resistance • Personalise a design	• Design a dish (biscuit) within a given budget, drawing upon previous taste testing	• Write design criteria for a product, articulate decisions made • Design a personalised book sleeve	• Design a torch, giving consideration to the target audience and create both design and success criteria focusing on features of individual design ideas
Make	• Create a range of different shaped frame structures • Make a variety of free standing frame structures of different shapes and sizes • Select appropriate materials to build a strong structure (including the cladding) • Reinforce corners to strengthen a structure • Create a design in accordance with a plan • Learning to create different textural effects with materials	• Measure, mark, cut and assemble with increasing accuracy • Make a model based on a chosen design	• Follow a baking recipe • Cook safely, following basic hygiene rules • Adapt a recipe	• Make and test a paper template with accuracy and in keeping with the design criteria • Measure, mark and cut fabric using a paper template • Select a stitch style to join fabric, working neatly, sew small neat stitches • Incorporate a fastening to a design	• Make a torch with a working electrical circuit and switch • Use appropriate equipment to cut and attach materials • Assemble a torch according to the design and success criteria
Evaluate	• Evaluate structures made by the class • Describe what characteristics of a design and construction made it the most effective • Consider effective and ineffective designs	• Evaluate the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance	• Evaluate a recipe, considering: taste, smell, texture and appearance • Describe the impact of the budget on the selection of ingredients • Evaluate and compare a range of products • Suggest modifications	• Test and evaluate an end product against the original design criteria • Decide how many of the criteria should be met for the product to be considered successful • Suggest modifications for improvement	• Evaluate electrical products • Test and evaluate the success of a final product and take inspiration from the work of others/peers.
Technical knowledge	• Build on prior knowledge of net structures and broaden knowledge of frame structures • Learn that architects consider light, shadow and patterns when designing • Implement frame and shell structure knowledge • Consider effective and ineffective designs	• Learn that products change and evolve over time • Learn that all moving things have kinetic energy • Understand that kinetic energy is the energy that something (object/person) has by being in motion	• Understand the impact of the cost and importance of budgeting while planning ingredients for a recipe • Understand the environmental impact on future product and cost of production	• Understand that there are different types of fastenings and what they are • Articulate the benefits and disadvantages of different fastening types.	• Learn how electrical items work • Identify electrical products • Learn what electrical conductors and insulators are • Understand that a battery contains stored electricity and can be used to power products • Identify the features of a torch • Understand how a torch works • Articulate the positives and

					negatives about different torches

Year 4 coverage					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Rivers (geography) - structures - bridges Science link - electricity - make a torch	Design and make an Anglo Saxon round house (structures) link to History Cooking & nutrition Textiles *(woods/textiles/cooking rotation)*	North America (geography) - popcorn (cooking and nutrition - design flavours)	South America (geography) - design and make a mask for Rio Carnival - textiles	WW2 - make do and mend (textiles), war time cooking/rations	Mechanisms - air resistance design