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**Heathcoat Primary School**

**D&T Curriculum – Progression of Key Skills and Knowledge**

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| Date | Review date | Subject leaders |
| 19.7.21 | July 2022 | Elise Holman & Dana Pickford |
| It is our intention that pupils will be taught a curriculum that:   * Develops the creative, technical and practical expertise needed to perform everyday tasks confidently. * Enables children to be able to participate successfully in an increasingly technological world. * Build and importantly apply knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users. * Evaluate and test their ideas, as well as others. * Understand and apply the principles of nutrition and learn how to cook. * Creates fun experiences that lead to life-long memories.   We have created our curriculum with the use of the teaching scheme ‘Kapow’. This ensures coverage of all aspects of the Design and Technology curriculum, whilst also raising expectations and achievements in the subject. | | |

**Curriculum Organisation**

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| **Year / Term** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **1** | **Making puppets** Children explore different ways of joining fabrics before creating their own hand puppets based upon characters from a well-known fairytale. Throughout they work to develop their technical skills of cutting, glueing, stapling and pinning |  | **Fruit salads** Children handle and explore fruits and learn how to identify which category they fall into, before undertaking taste testing to establish their chosen ingredients for the salad they will make and design packaging for.  (check kitchen is free if needed as Year 3’s slot) |  | **Moving story books** Children experiment with sliders before planning and making three pages of a moving story book, based on a familiar story. They will draw the page backgrounds, make the moving parts and assemble it |  |
| **2** |  | **A balanced diet** Through their exploration of what makes a balanced diet, children taste test food combinations of different food groups. They will also aim to make a wrap that includes a healthy mix of protein, vegetables and dairy, and learn about the term ‘hidden sugars’. |  | **Baby Bear’s chair**  Using the tale of Goldilocks and the Three Bears as inspiration, children help poor Baby Bear by making him a brand new chair. When designing the chair, they consider his needs and what he likes and explore ways of building it so that it is a strong and stable structure and doesn’t break again! |  | **Making a moving monster** After learning the terms; pivot, lever and linkage, children set to designing a monster that will move using a linkage mechanism. After practising making linkages of different types and varying the materials they use, children can also bring their monsters to life with the gift of movement. |
| **3** | **Electrical systems: Static Electricity.**  Children are introduced to static electricity and based on scientific understanding of positive and negative charges. They observe the effects of static electricity on objects such as plastic straws, tissue paper and glitter. They will then consider ways of using static electricity as part of a simple game that they will make. |  | **Food: Eating Seasonally** Children discover when and where fruits and vegetables are grown and also learn about seasonality in the UK. They will also learn about the relationship between the colour of fruits and vegetables and their health benefits by making three dishes using seasonal ingredients. |  | **Structures: Constructing a castle**:  Learning about the features of a castle, children design and make one of their own. They will also be using configurations of handmade nets and recycled materials to make towers and turrets and constructing a base to secure them |  |
| **4** |  | **Mechanical Systems: Making a slingshot car:**  Children transform lollipop sticks, wheels, dowels and straws into a moving car. They will be using a glue gun to construct the materials, making the launch mechanism, designing and also making the body of the vehicle using nets and assembling these to the chassis |  | **Food: adapting a recipe**  Children work in groups to adapt a simple biscuit recipe, to create the tastiest biscuit. While making they will also ensure that their creation comes within the given budget of overheads and costs of ingredients |  | **Electrical systems : Torches** In this topic, children apply their scientific understanding of electrical circuits to create a torch made from easily available materials and objects. They will also design and evaluate their product against set design criteria. |
| **5** | **Food: Make a biscuit project with a Christmas theme.**  Focusing on tasting, designing, making and evaluating biscuits and their packaging to a specific audience e.g to be sold at the Christmas fair. |  | **Textiles: Stuffed toys:** Creating their own stuffed toy is a really fun project as children can bring their drawings to life and can make them as challenging or as simple as they choose. Not only does this topic give them the chance to apply skills they have learned in previous topics, it also introduces them to a new stitch – blanket stitch |  | **Mechanical systems: Making a pop-up book:**  After choosing a simple story or nursery rhyme, children create a four-page pop-up storybook design. They will also add accompanying captions, incorporating a range of mechanisms and decorative features, including: structures, levers, sliders, layers and spacers |  |
| **6** | **Structure : playgrounds**:  This topic draws upon pupils’ skills and knowledge of structures, challenging them to design and create a model of a new playground featuring five apparatus, made from three different structures. Creating a footprint as the base, pupils can practise visualising objects in plan view and also get creative with their use of natural features and cladding for their structures |  | **Electrical systems: steady hand game:** Using their understanding of electrical systems and design, pupils are challenged with designing and creating a steady hand game. Pupils will use nets to create their bases and their knowledge of electrical circuits to build a circuit with a buzzer which closes when the handle makes contact with the wire frame |  |  | **Food – Come Dine with Me.**  Working in groups, children research and prepare a three-course meal taught as a rotational activity over three lessons. They will taste-test and score their food and when they aren’t cooking, they will research the journey of their main ingredient from ‘farm to fork’ or write a favourite recipe to include in a class cookbook |

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| Progression Map | | | | | |
| **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Design | | | | | |
| Using a template to create a design for a puppet  Planning and sketching the mechanical elements in the moving story book.  Designing a fruit salad package, using traditional or digital (ICT) methods based on a chosen ingredient combination; selecting fruits for a salad recipe. | Planning for a set brief, following simple criteria, designing a healthy wrap.  Designing for others, using criteria and applying knowledge of structures through planning.  Devising and using design criteria, planning for the design and creation of a mechanical toy, drawing simple diagrams to express ideas. | Using research and design criteria to develop ideas, determining the target audience, utilising computer-aided-design (CAD) to draw a box panel for the game.  Generating and adapting a seasonal recipe idea based on research, designing to simple criteria.  Planning for manufacture, establishing and using a design criteria to help focus and evaluate their work, utilising research to inform idea generation. | Developing designs following a list of design criteria, modelling and testing the launch chassis.  Reviewing existing products to inform design ideas, working within a set design brief.  Designing for a chosen user-profile, identifying key properties (e.g. reflective, water, resistant) of a material and utilising this knowledge to inform design ideas. | Planning using storyboards and designs, communicating through annotated illustrations, identifying where and how the mechanisms will operate as part of the design.  Designing for a purpose, considering which techniques and materials to use, creating a paper pattern piece for the main body and individually for any additional components.  Adapting an existing recipe to fit for a specific purpose. | Researching and reading recipe books to inspire and develop innovative recipes as part of a three-course meal, planning the methods and determining equipment required.  Generating ideas through sketching and discussion, modelling ideas through prototypes, establishing a list of design criteria.  Establishing and using list of design criteria, drawing a floor-plan diagram to demonstrate what apparatus they plan to create and where it will be positioned. |
| Make | | | | | |
| Cutting fabric neatly with scissors  Joining methods to decorate a puppet.  Assembling mechanisms to create various movements (up, down, along, around)  Preparing, chopping and blending fruit and juices. | Preparing food safely and hygienically, chopping and slicing safely using a bridge or claw grip.  Identifying flaws in a pre-modelled design and thinking about ways to fix or strengthen them, cutting and assembling accurately, selecting from materials based on their characteristics.  Cutting and assembling accurately, selecting appropriate crafting materials and tools such as card, paper, glue and paper fasteners. | Using electrostatic energy to move objects in isolation as well as part of a system, cutting, measuring and joining various crafting materials.  Safely preparing fruit and vegetables, following a recipe, adapting a recipe.  Using more demanding practical skills (paper engineering / paper folding techniques) including traditional and digital net creation using computer – aided – design (CAD) | Selecting the materials and tools to measure, mark, cut and assemble accurately, using nets and tabs to design and make the car chassis.  Following but adapting an existing recipe, preparing food hygienically, creaming and combining ingredients to form a basic dough.  Making a functional, operational electrical series-circuit and housing this appropriately, selecting materials based on their characteristics. | Making functional components, using layers and spacers to construct pages, cutting and assembling with accuracy.  Selecting and using appropriate stitch types to join and attach materials depending on their properties.  Cutting, weighing, preparing and cooking biscuit base and cook hygienically, using kitchen equipment such as cutters, hot pans and hobs in a safe manner, recognising when the ingredients are balanced and dough is the right consistency. | Working with food hygienically and safely, working to a time-scale, using a variety of cooking methods such as steaming, boiling and baking.  Selecting and using appropriate materials and equipment, to cut, measure and mark accurately including the use of set-squares and rulers.  Increasingly more demanding practical skills, selecting materials for their aesthetic and functional properties, make, strengthen an stiffen a range of structures. |
| Evaluation | | | | | |
| Reﬂecting on a ﬁnished product, explaining likes and dislike  Reflecting on the finished moving story book, by expressing likes, dislikes and improvements.  Trialling and exploring combinations of ingredients, specifying favourite combinations. | Conducting product research, trialling and feedback on foods taste, texture and aroma.  Exploring natural and man-made structures, testing and evaluating, analysing existing chairs including those by established designers.  Carrying out primary research, exploring and discussing existing objects which have linkages, levers and pivots. | Evaluating and adapting designs, experimenting with scientific theories to inform a design, listening and action on constructive feedback gathered from others.  Tasting and evaluation their dessert against criteria.  Reflecting on their project as it progresses, evaluating their own and other’s final product. | Testing products in time trials, comparing to other’s designs, discussing and recording ways to improve the speed of the car, reviewing and learning about aerodynamic shapes in cars.  Reflecting on and identifying flavours from a prototype, reviewing what aspects to change to improve the current recipe.  Reviewing and discussing existing torches, including use and the reasons behind the materials in their build. | Revisiting and reflecting on progress at numerous points through the project.  Comparing 3D object to 2D design, evaluating existing stuffed toys, identifying poor sewing technique and where possible rectifying it (e.g. to pull tighter, sew closer stitches).  Tasting and feeding back on existing pre-made biscuits, suggesting substitute ingredients.  Baked twice, try it, evaluate and then bake again based on evaluation. | Tasting, scoring and evaluating other’s three-course meals.  Adapting products to improve functionality, testing that the product is fit for purpose and operates as planned against the design criteria.  Evaluating and analysing existing and modelled playground structures, exploring different materials to achieve various textures, patterns and structures, reviewing other’s work. |
| Technical knowledge | | | | | |
| Learning different ways in which to join fabrics together: pinning, stapling, gluing.  Exploring how levers and sliders work in a paper-card format to create different movements.  Recognising the difference between fruit and vegetables, describing texture and taste, developing knowledge about where fruit and vegetables grow, identifying parts of a plant. | Identifying each of the food groups, understanding what makes a balanced diet, developing an awareness of hidden sugars in everyday foods.  Understanding strength, stability and stiffness, knowing that different shapes can strengthen or weaken structures, know materials can be manipulated to improve strength and stiffness.  Identifying inputs and outputs as part of a mechanism, developing an understanding of how linkages, levers and pivots operate together. | Understanding what static electricity is and how to generate it, knowing what a target audience is, constructing nets as part of a product to house a game.  Knowing what foods are in season and when, understanding the benefits of various foods, knowing how climate affects which foods can grow naturally in different environments.  Applying prior understanding and increasing knowledge of paper or card nets and structures; consolidating methods and techniques to improve stability and strength. | Utilising car-part terminology (e.g. chassis) consolidating net and template creation recognising key mechanisms as part of a product’s key functionality.  Understanding the cost implications behind professional food preparation, altering a dough to be savoury or sweet, knowing to mix dry ingredients before combining with wet.  Identifying electrical components by name (e.g. bulb, cell) able to build a working electrical series-circuit and correct errors. | Consolidating knowledge on sliders, levers and linkages, identifying inputs and outputs, utilising methods of paper modelling and folding to improve resilience during use.  Identifying methods of joining fabric effectively, running stitch, cross stitch and blanket stitch, knowing how to create a hidden seam and seal stuffing.  Knowing what intolerant ingredients are and allergies. Understand issues around sugar content, identifying the nutritional values and contents on packaged food, making healthier ingredient swaps if possible. | Understanding the risks of meat and fish when not cooked or stored properly, understanding the safe storage of meat and fish, designing a balanced three-course meal.  Creating and using electric series-circuits effectively, knowing how to make electromagnetic motors, creating nets for 3D shapes to house the circuitry and act as a stable base.  Applying knowledge of construction techniques to realise design ideas, stabilising more complex structures using bracing, creating 3D shapes using custom nets. |
| Vocabulary | | | | | |
| List the vocab per topic | | | | | |
| **Making puppets:**  Decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template. | **A balanced diet:** Alternative, diet, balanced diet, evaluation, expensive, healthy, ingredients, nutrients, packaging, refrigerator, sugar | **Electrical systems – static electricity:** attract, component, constructive criticism, design criteria, electrostatic, evaluation, feedback, motion, repel, target audience, test | **Mechanical Systems – Slingshot Car:** Aesthetic, air resistance, chassis, design, design criteria, function, graphics, kinetic energy, mechanism, net, structure | **Mechanical systems – pop-up book:**  Aesthetic, CAD, caption, design, design brief, design criteria, exploded-diagram, function, input, linkage, mechanism, motion, output, pivots, prototype, sliders, structure, template. | **Food – come dine with me:** accompaniment, cookbook, cross-contamination, equipment, farm, flavour, imperative verb, ingredients, method, nationality, preparation, processed, reared, recipe, target audience, unit of measurement. |
| **Moving story books:** Assemble, design, design criteria, evaluation, mechanism, model, sliders, stencil, target audience, template, test | **Baby Bear’s chair**: function, man-made, mould, natural, stable, stiff, strong, structure, test, weak. | **Food – eating seasonally:** climate, dry climate, exported, imported, Mediterranean climate, nationality, nutrients, polar climate, recipe, seasonal food, seasons, temperature climate, tropical climate. | **Food – adapting a recipe**: adapt, budget, building hire, equipment, evaluation, flavour, ingredients, method, net, packaging, quantity, recipe, target audience, unit of measurement, utilities. | **Textiles – stuffed toys**  Accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template. | **Electrical systems – steady hand game:** blackboard, battery, bulb, buzzer, circuit, conductor, copper, function, insulator, LED, magnetic field, net, pliers, prototype, series circuit, side view drawing, switch, test, top view drawing. |
| **Fruit and vegetable smoothies:** package, carton, fruit, healthy, ingredients, peel, peeler, recipe, slice, salad, stencil, template, vegetable, juice. | **Making a moving monster**: design criteria, evaluation, input, linkage, mechanical, mechanism, output, pivot, survey | **Structures: Constructing a castle:** 2D shapes, 3D shapes, castle, design criteria, evaluation, façade, feature, flag, net, recyclable, scoring, stable, strong, structure, tab, weak. | **Electrical Systems – torches**: battery, bulb, buzzer, cell, conductor, copper, design criteria, electrical item, electricity, electronic item, insulator, series circuit, switch, test, torch, wire. | **Food – biscuit project.**  Hygiene, cross-contamination, method, packaging, temperature, target audience, flavour, texture, taste, aim, ingredients, measures, scaling, recipes, dough, cutter | **Structure: Playgrounds:** apparatus, bench hook, coping saw, dowel, jelutong, mark out, modify, natural materials, plan view, playground, prototype, reinforce, structure, tenon saw, user, vice. |