**Rockcliffe CE School – Whole School Design and Technology Overview**

Below is an overview of the design and technology learning focus for each term/half term in each class.

Class teachers may choose to adapt the schemes of work to suit their class but must ensure full coverage throughout the two-yearly cycle.

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| 2024-2025 | | | |
|  | Autumn | Spring | Summer |
| **EYFS** | **Hibernation boxes**  Pupils learn what it means for an animal to hibernate and discover what different species need. They then develop designs for a hedgehog hibernation box. | **Cooking and nutrition- soup**  In this unit, children explore the differences between fruits and vegetables using their senses (taste, texture, smell etc.). They listen to the story ‘The best pumpkin soup’ and discuss the key ingredients the characters used before developing a class-based vegetable soup recipe. | **Structures- boats**  In this unit, children explore what is meant by ‘waterproof’, ‘floating’ and ‘sinking’, then experiment and make predictions with various materials to carry out a series of tests. They learn about the different features of boats and ships before investigating their shape and structures to build their own. |
| **Year 1 / 2** | **Pouches-Textiles.**   * 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. | **Making a moving monster- Mechanisms**   * Identify the correct terms for levers, linkages and pivots. * Analyse popular toys with the correct terminology. * Create functional linkages that produce the desired input and output motions. * Design monsters suitable for children, which satisfy most of the design criteria. * Evaluate their two designs against the design criteria, using this information and the feedback of their peers to choose their best design. * Select and assemble materials to create their planned monster features. * Assemble the monster to their linkages without affecting their functionality. | **Baby bear’s chair- Structures**   * 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. |
| **Year 3/4** | **Adapting a recipe- Cooking and nutrition**   * Describe features of biscuits using taste, texture and appearance. * Follow a recipe with support. * Use a budget to plan a recipe. * Adapt a recipe using additional ingredients. | **Egyptian collars- Textiles**   * Demonstrate their ability to use cross-stitch as a decorative feature or to join two pieces of fabric together. * Develop appliqué designs based on design criteria. * Design, cut and shape their template for an usekh or wesekh collar with increasing accuracy. * Decorate their Egyptian collar using a variety of techniques, such as appliqué, cross-stitch, beads, buttons and pinking. * Measure and attach a ribbon with a running stitch. * Recognise different types and qualities of fabrics. * Explain the aesthetic and functional properties of some of their material choices. | **Making a slingshot car- Mechanical systems**   * 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. |
| **Year 4/5** | **Stuffed toys- Textiles**   * 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. | **Monitoring devices- digital world**   * Describe what is meant by monitoring devices and provide an example. * Explain briefly the development of thermometers from thermoscopes to digital thermometers. * Research a chosen animal’s key information to develop a list of design criteria for an animal monitoring device. * Write a program that monitors the ambient temperature and alerts someone when the temperature moves from a specified range. * Identify errors (bugs) in the code and ways to fix (debug) them. * State one or two facts about the history and development of plastic, including how it is now affecting planet Earth. * Build a variety of brick models to invent Micro:bit case, housing and stand ideas, evaluating the success of their favourite model. * Explain key pros and cons of virtual modelling vs physical modelling. * Recall and describe the name and use of key tools used in Tinkercad (CAD) software. | **Pavilions- structures**   * Produce a range of free-standing frame structures of different shapes and sizes. * Design a pavilion that is strong, stable and aesthetically pleasing. * Select appropriate materials and construction techniques to create a stable, free-standing frame structure. * Select appropriate materials and techniques to add cladding to their pavilion. |
| **Year 6** | **Automata toys- Mechanical systems**   * Mark, saw and cut out the components and supports of their toy with varying degrees of accuracy to the intended measurements. * Follow health and safety rules, taking care with the equipment. * Attempt a partial assembly of their toys using an exploded diagram following a teacher’s demonstration. * Develop a design idea with some descriptive notes. * Explore different cam profiles and choose three for their follower toppers with an explanation of their choices. * Create neat, decorated follower toppers with some accuracy. * Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata. * Decorate and finish the automata to meet the design criteria and brief. * Evaluate their finished product, making descriptive and reflective points on function and form. | **Come dine with me- cooking and nutrition**   * Find a suitable recipe for their course. * Record the relevant ingredients and equipment needed. * Follow a recipe, including using the correct quantities of each ingredient. * Write a recipe, explaining the process taken. * Explain where certain key foods come from before they appear on the supermarket shelf. | **Playgrounds- structures**   * Create five 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. |

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| 2025-2026 | | | |
|  | Autumn | Spring | Summer |
| **EYFS** | **Christmas- Sliding pictures**  Children explore a simple paper slider mechanism as part of a practical example and then apply it to create their own sliding Santa chimney picture. | **Structures-junk modelling**  In this unit, pupils explore and learn about various types of permanent and temporary join. They are encouraged to tinker using a combination of materials and joining techniques in the junk modelling area. | **Cooking and nutrition- making a rainbow salad.**  Pupils refresh their knowledge of fruits and vegetables and explore what it means to have a healthy balanced diet. They design and make their own rainbow salad combination. |
| **Year 1 / 2** | **Balanced diet- Cooking and nutrition**   * Name the main food groups and identify foods that belong to each group. * Describe the taste, feel and smell of a given food. * Think of three different wrap ideas, considering flavour combinations. * Construct a wrap that meets the design brief and their plan. | **Puppets- Textiles**   * Join fabrics together using pins, staples or glue. * Design a puppet and use a template. * Join their two puppets’ faces together as one. * Decorate a puppet to match their design. | **Fairground wheel- Mechanisms**   * Describe how axles help wheels move a vehicle and design and label a working fairground wheel. * Evaluate different designs. * Describe the properties of different materials and select appropriate materials for the wheel. * Build a stable structure, test elements of the design and adapt the design as necessary. * Make the wheel rotate, evaluate a wheel mechanism and adapt it as necessary. * Recall that a survey is used to find out what people like, tally results and use the results to inform the design. * Add pods for the correct number of people and ensure that the pods stay upright when rotating around a fixed point. * Explain the decisions for the pod design. |
| **Year 3/4** | **Eating seasonally- Cooking and nutrition**   * 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. | **Constructing a castle- Structures**   * Draw and label a simple 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. | **Pneumatic toys- Mechanical systems**   * 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 fulfills the design brief. |
| **Year 4/5** | **Making a pop-up book- Mechanical systems**   * 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. | **Developing a recipe- Cooking and nutrition**   * 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. | **Fastenings- Textiles**   * 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. |
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