**Slingsby School** **Design & Technology Curriculum**

At Slingsby CP our pupils have the opportunity to work with a wide range of materials on exciting projects each year. These include: textiles, structures, mechanisms, electrical systems and food.

**Intent:**

Slingsby School’s Design & Technology curriculum is progressively planned and sequenced towards cumulatively sufficient knowledge and skills for future learning and employment. It aims to inspire pupils to be innovative and creative thinkers who are ambitious when planning and creating products and have an appreciation for the product design cycle through ideation, creation, and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others. Through using the Kapow Design & Technology scheme of work and adapting units to meet the needs of all our pupils, we aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to future design advancements. Our progressive curriculum enables pupils to meet the end of key stage attainment targets in the National curriculum and the aims also align with those in the National curriculum. EYFS (Reception) units provide opportunities for pupils’ to work towards the Development matters statements and the Early Learning Goals. Staff make links in learning across the curriculum –ensuring breadth and balance – and encourage children to be creative in all they do.

Our Slingsby Values of **Respect, Resilience and Expectations** are particularly pertinent during the teaching and learning of Design & Technology.

**Implementation:**

* Our use of the Kapow scheme of work follows the Design and Technology National curriculum which outlines the three main stages of the design process: design, make and evaluate. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical, and technical understanding required for each strand. Cooking and nutrition\* has a separate section, with a focus on specific principles, skills and techniques in food, including where food comes from, diet and seasonality.
* The Design and technology attainment targets are organised under five strands: Design, Make, Evaluate, Technical knowledge, and Cooking and nutrition. Our use of the Kapow Primary’s Design and Technology scheme has a clear progression of skills and knowledge within these five strands across each year group. The National curriculum mapping shows which units cover each of the National curriculum attainment targets, as well as each of the five strands. The progression of skills shows the skills and knowledge that are taught within each year group and how these skills develop to ensure that attainment targets are securely met by the end of each key stage. Through our use and adaptation of the Kapow Design and Technology scheme, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their skills in six key areas: (© Kapow Primary™ 2021-23) Mechanisms, Structures, Textiles, Food, Electrical systems (KS2) and Digital world (KS2).
* Key areas revisited again and again with increasing complexity, allowing pupils to revisit and build on their previous learning.
* Lessons incorporate a range of teaching strategies from independent tasks, paired and group work including practical hands-on, computer-based and inventive tasks. This variety means that lessons are engaging and appeal to those with a variety of learning styles.
* Differentiated guidance is available for every lesson to ensure that lessons can be accessed by all pupils and opportunities to stretch pupils’ learning are available when required.
* Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.
* Strong subject knowledge is vital for staff to be able to deliver a highly effective and robust Design and Technology curriculum. Each unit of lessons includes multiple teacher videos to develop subject knowledge and support ongoing CPD. Slingsby CP School has chosen to utilise the Kapow Primary Design & Technology scheme with the understanding that some teachers may not feel confident delivering the full Design and technology curriculum and makes every effort to ensure that they feel supported to deliver lessons of a high standard that ensure pupil progression. This is further enhanced and supported by subject leader expertise which is readily available at all times to enable all staff to deliver Design & Technology lessons confidently and competently.
* Where appropriate, we adapt the Kapow scheme to reflect learning in other curriculum areas and make links to strengthen and embed knowledge and understanding through carefully planned cycles to promote creative teaching and link across the curriculum in learning.
* Design & technology lessons are used as a vehicle to apply numeracy measuring skills and resource management (preparing pupils for future life).
* Children are encouraged to work independently and solve their own problems in order to continue to build **resilience** (Slingsby Values).
* We teach skills but do not apply constraints of content: our teacher will model, but not restrict the content of a pupil’s own creation.
* The ethos of neat and orderly presentation for all work applies to Design & Technology and is encouraged throughout the school.

**Impact:**

* The impact of our school’s use of the Kapow Design & Technology scheme is monitored through both formative and summative assessment opportunities. Each lesson includes guidance to support teachers in assessing pupils against the learning objectives. Furthermore, each unit has a unit quiz and knowledge catcher which can be used at the start and/ or end of the unit. After the implementation of our Slingsby Kapow Design & Technology, pupils should leave school equipped with a range of skills to enable them to succeed in their secondary education and be innovative and resourceful members of society.
* As children progress throughout the school, they increasingly draw on previous skills taught and begin to attempt more complex design decisions. They are more **resilient** and understand the importance of modelling to learn from their errors and make design improvements.
* Children have high **expectations** for their designs and products but understand that ongoing refinements are needed to further improve.
* The expected impact of following the Kapow Primary Design and technology scheme of work is that children will:
* Understand the functional and aesthetic properties of a range of materials and resources.
* Understand how to use and combine tools to carry out different processes for shaping, decorating, and manufacturing products.
* Build and apply a repertoire of skills, knowledge and understanding to produce high quality, innovative outcomes, including models, prototypes, CAD, and products to fulfil the needs of users, clients, and scenarios.
* Understand and apply the principles of healthy eating, diets, and recipes, including key processes, food groups and cooking equipment.
* Have an appreciation for key individuals, inventions, and events in history and of today that impact our world.
* Recognise where our decisions can impact the wider world in terms of community, social and environmental issues.
* Self-evaluate and reflect on learning at different stages and identify areas to improve.
* Meet the end of key stage expectations outlined in the National curriculum for Design and technology.
* Meet the end of key stage expectations outlined in the National curriculum for Computing.

**Slingsby School** **Design & Technology Curriculum**

How our Slingsby Kapow Primary Scheme for Design & Technology aids the SMSC development of our pupils and encourages development and understanding our Slingsby Values for Life: ‘*Respect, Honesty, Resilience, Expectations and Caring for Others.’*

**Spiritual development:**

● Offering opportunities to marvel at the human achievements which have led to many design and technology advancements.

● Encouraging pupils to develop a fascination with how things work.

● Inspiring pupils to be creative and imaginative in their design.

● Emphasising the importance of reflection during the evaluation process of the design cycle.

**Moral development:**

* Raising ethical issues related to design, such as sustainability of materials, the environmental impact of single-use or non-degradable materials and importing food.

**Social development:**

● Providing opportunities to collaborate with a group towards a shared outcome.

● Enabling our pupils to make decisions as a group, dealing with conflict when it arises and treating each other with respect.

● Supporting our pupils to give constructive feedback to their peers, considering the feelings of others when doing so

● Offering our pupils opportunities to ‘pitch’ their products to others.

● Encouraging pupils to consider the safety of themselves and others as they work.

**Personal Development:**

* Developing pupils’ confidence, resilience and knowledge so that they can keep themselves mentally healthy.
* Developing pupils’ character, defined as a set of positive personal traits, dispositions and virtues that informs their motivation and guides their conduct so that they reflect wisely, learn eagerly, behave with integrity and cooperate consistently well with others. This gives pupils the qualities they need to flourish in society.
* The Slingsby School Kapow progressive scheme for Design & Technology promotes equality of opportunity so that all pupils can thrive together, understanding that difference is a positive, not a negative, and that individual characteristics make people unique.

**Key Vocabulary by Year Group:** The children at Slingsby School will be expected to know and use the following vocabulary:

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| **EYFS** | **YEAR 1** | **YEAR 2** | **YEAR 3** | **YEAR 4** | **YEAR 5** | **YEAR 6** |
| **Structures (EYFS) –** Junk Modelling (Buildings): Build, Cardboard, Cut, Combine, Design, Favourite part, Flexible, Glue, Join, Materials, Model, Rigid, Scissors, Stick, Strong, Tape, Weak. **Textiles (EYFS)** – Bookmarks: Close (together), Hessian, Needle, Over, Paper, Pattern, Pull (through), Push, Ribbon, Steady, Stitch, straight, String, Thread, Under, Weave. **Structures (EYFS)** – Boats: (As junk Modelling +) Anchor, Change, Crow’s Nest, Deck, Design, Float, Helm, Hull, Mast. Materials, Poop Deck, Predict, Rudder, Sail, Sink, Success. Test, Waterproof.**Cooking & Nutrition (EYFS)** - Soup: Add, Chop, Cut, Design, Draw, Fresh, Fruit, Ingredients, Juicy, Heat, Packaging, Pieces, Scoop, Slimy, Smell, Sweet, Taste, Vegetable, Wet.**Structures/textiles -** Puppets:Decorate, Design, Fabric, Glue, Model, Hand puppet, Safety pin, Stencil, Technique, Template.**Structures -** Constructing a Windmill:Axle, Client, Design, Design Criteria, Evaluation, Net, Stable, Strong, Structure, Test, Turbine, Weak, Windmill.**Food -** Fruit & Veg:Blender, Carton, Fruit, Healthy, Ingredients, Peel, Peeler, Recipe, Slice, Smoothie, Stencil, Template, Vegetable.**Mechanisms -** Wheels & Axles:Accurate, Axle, Axle Holder, Chassis, Design, Fix, Mechanism, Model, Test, Wheel.**Mechanisms -** Making a Moving Story Book:Assemble, Design, Design Criteria, Evaluation, Landscape, Mechanism, Model, Portrait, Sliders, Stencil, Target Audience, Template, Test,  | **Mechanisms -** Fairground Wheel:Axle, Decorate, Evaluation, Ferris Wheel, Ferris Wheel Pod, Mechanism, Stable, Strong, Test, Waterproof, Weak.**Food -** A Balanced Diet:Alternative, Diet, Balanced Diet, Evaluation, Expense/Expensive, Healthy, Ingredients, Nutrients, Packaging, Refrigerator (Fridge). Carbohydrates, Fruit & Vegetables, Protein, Dairy, Fats & Sugars (Science linked Vocabulary).**Mechanisms -** Making a Moving Monster:Design Criteria, Evaluation, Input, Linkage, Mechanical, Mechanism, Motion, Split-pin, Output, Pivot, Survey.**Mechanisms -** Baby Bear’s Chair:Function, Man-made, Mould, Natural, Stable, Stiff, Strong, Structure, Test, Weak.**Structures/Textiles -** Pouches:Accurate, Fabric, Knot, Needle, Pouch, Running-Stitch, Sew, Shape, Stencil, Template, Thread, Thimble.**Textiles** – Cushions:Accurate, Applique, Cross-stitch, Cushion, Decorate, Detail, Fabric, Needle, Patch, Running-stitch, Seam, Stencil, Stuffing, Target Audience, Thread.**Electrical Systems** – Electric Poster:Battery, Bulb, Circuit, Circuit Component, Information Design, Initial Ideas, Information, Public, Research, Wire.**Mechanical Systems** – Pneumatic Toys:Components, Exploding Diagram, Function, Input, Linkage, Motion, Net, Output, Pivot, Pneumatic System, Thumbnail Sketch.**Food** – Eating Seasonally: Climate, Dry, Exported, Imported, Mediterranean, Nationality, Nutrients, Polar, Recipe, Seasonal Food, Seasons, Temperate, Tropical (Geography linked Vocabulary).**Structures** – Constructing a Castle:Castle, Design Criteria, Evaluation, Façade, Feature, Flag, Net, Recyclable, Score/Scoring, Stable, Strong, Structure, Tab, Weak. Face, Edge, 2D/3D Shape, Measure. (Mathematics linked Vocabulary) | **Electric Systems** – Torches: Battery, Bulb, Buzzer, Cell, Conductor, Copper, Design Criteria, Electrical Item, Electricity, Insulator, Series Circuit, Switch, Test, Torch, Wire.**Mechanical Systems** – Making a Slingshot Car:Aesthetic, Aerodynamic, Air-resistance, Axle, Bird’s-eye view, Chassis, Design, Design Criteria, Dowel, Form, Front view, Function, Graphics, Kinetic Energy, Mechanism, Net, Side view, Structure, Force, Elastic, Elasticity, Pull, wheel.**Digital World** – Mindful Moments: Advantage, Design Process, Ergonomic, Form, Function, Product, Program, Programming Loop, Prototype, Timer, Variable. **Food** – Adapting a RecipeAdapt, Bitter, Budget, Equipment, Evaluation, Flavour, Ingredients, Measure, Method, Net, Packaging, Prototype, Quantity, Recipe, Salty, Sweet, Sour, Target Audience, Unit of Measurement.**Structures** – Pavilions: Aesthetic, Assemble, Cladding, Design Criteria, Evaluation, Frame, Structure, Form, Function, Inspiration, Material, Pavilion, Reinforce, Rigid, Strength/Strengthen, Target Audience/Customer, Texture, Theme. Cube, Triangular Prism, Cuboid, Square-based Pyramid.**Textiles** – Fastenings: Aesthetic, Assemble, Book Sleeve, Buckle, Button, Design Criteria, Evaluations, Fabric, Fastening, Press Stud, Product, Prototype, Needle, Net, Running Stitch, Stencil, Target Audience/Customer, Template, Thread, Toggle, Velcro, Zipper. | **Mechanical Systems** – Making a Pop-up Book:Aesthetic, CAD (Computer Aided Design), Caption, Design Brief, Design Criteria, Exploded-diagram, Function, Input, Linkage, Mechanism, Motion, Pop-up, Pivots, Prototype, Sliders, Structure, Template.**Digital World** – Monitoring Devices:Boolean, CAD (Computer Aided Design), Device, Durable, Manipulate, Monitoring Device, Sensor, Synthetic, Variable, Versatile, Water-resistant (Impermeable), Work plane (CAD).**Food** - What Could be Healthier?Cross-contamination, Consumer, Farming, Method, Nutrients, Nutrition, Packaging, Production, Progress, Research, Waste, Welfare. Carbohydrates, Fruit & Vegetables, Protein, Dairy, Fats & Sugars.**Structures** – Bridges:Accurate, Arch Bridge, Beam Bridge, Bench hook, Compression, Coping-saw, Compression, Hack saw, File, Mark out, Reinforce, Sandpaper, Set square, Shape, Structure, Suspension Bridge, Tension, Truss Bridge. **Textiles** – Stuffed Toys:Accurate, Annotate, Applique, Blanket-stitch, Cross-stitch, Design Criteria, Detail, Evaluation, Fabric, Form, Function, Needle, Running-stitch, Secure, Sew, Shape, Stuffing, Technique(s), Template, Thread, Pin.**Digital World** – Navigating the World:Biodegradable, Boolean, Environmentally Friendly, Finite, ‘If’ Statement, Mouldable, Multiple-functional, Product Lifecycle/Lifespan, Smart (device), sustainable.**Food** – Come Dine with Me:Accompaniment, Cross-contamination, Equipment, Farm (verb), Flavour, Ingredients, Method, Preparation, Processed, Reared, Recipe, Target Audience/Customer, unit of measurement. Carbohydrates, Fruit & Vegetables, Protein, Dairy, Fats & Sugars.**Structures** – Playgrounds:Apparatus, Bench hook, Coping-saw, Dowel, Handsaw, Jelutong, Mark out, Modify, Natural materials, Plan view, Prototype, Reinforce, Structure, User, Vice.**Textiles** – Waistcoats:Accurate, Adapt, Annotate, Detail, Fabric, Fastening, Knot, Plan, Properties, Running-stitch, Seam, Sew, Shape, Target Audience/Customer, Template, Unique, Waistcoat.**Electrical Systems** – Steady Hand Game:Backboard, Battery, Bulb, Buzzer, Circuit, Conductor, Continuous, Copper, Function, Insulator, LED (Light Emitting Diode), Magnetic Field, Net, Pliers, Prototype, Series Circuit, Side view, Switch, Test, Top view drawing. |

**Slingsby School** **Design & Technology Curriculum Overview**

**Cycle A: 2022-2023**

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|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Class 1****EYFS/ Year 1** | **Structures/Textiles: Puppets -** Explore different ways of joining fabrics before creating hand puppets based upon characters from a well-known fairy-tale. Develop technical skills of cutting, gluing, stapling and pinning. | **Structures: Buildings (EYFS)** - Explore junk modelling, tinkering with temporary and permanent joins, and a range of materials. Create basic models to test in different conditions.**Structures: Constructing a windmill -** Design, decorate and build a windmill for a mouse (client) to live in, develop an understanding of different types of windmill, how they work and their key features. Look at real existing examples and the functions that they carry out. | **Cooking & Nutrition (EYFS)** - Explore and become familiar with different fruits and vegetables, using their senses.**Food: Fruit and vegetables -** Handle and explore fruits and vegetables and learn how to identify which category they fall into, before undertaking taste testing to establish chosen ingredients for a smoothie they will make, with accompanying packaging. |
| **Class 2****Year 2 & 3**  | **Mechanisms:** Making a moving monster - After learning the terms: pivot, lever and linkage, pupils design a monster that will move using a linkage mechanism. Pupils practise making linkages and experiment with various materials to bring their monsters to life. | **Mechanisms:** Baby bear's chair - Using the tale of Goldilocks and the Three Bears as inspiration, pupils help Baby Bear by making him a brand-new chair, exploring different shapes and materials. When designing the chair, they consider his needs and what he likes. | **Structure:** Constructing a castle - Learning about the features of a castle, pupils design and make one of their own. They will also be using configurations of handmade nets and recycled materials to make towers and turrets before constructing a stable base. | **Food:** Eating seasonally -Pupils discover when and where fruits and vegetables are grown and learn about seasonality in the UK. They look at the relationship between the colour of fruits and vegetables and their health benefits by making three dishes. | **Digital World:** Electronic charm - Design, code, make and promote a Micro-bit electronic charm to use in low-light conditions, developing their understanding of programming to monitor and control products to solve a design scenario. | **Textiles:** Cushions- Introduce two new skills to add to the pupils’ repertoire: cross stitch and appliqué. Pupils apply their knowledge to the design, decoration and assembly of their own cushions. |
| **Class 3****Year 4** | **Structure:** Pavilions- Exploring pavilion structures, learning about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding. | **Food:** Adapting a recipe- Work in groups to adapt a simple biscuit recipe, to create the tastiest biscuit ensuring that their creation comes within the given budget of overheads and costs of ingredients | **Mechanical Systems:** Making a slingshot car- Transform lollipop sticks, wheels, dowel and straws into a moving car. Pupils use a glue gun to construct, make the launch mechanism, design and create the chassis of a vehicle using nets. | **Textiles:** Fastenings - Building upon their sewing skills from previous years, pupils design and create a book sleeve; exploring a variety of fastenings and selecting the most appropriate for their design based on strength and appropriate use. |
| **Class 4****Year 5 & 6** | **Textiles:** Stuffed Toys - Create a stuffed toy by applying skills learnt in previous units. Introduce blanket stitch. | **Structures:** Bridges - After learning about various types of bridges and exploring how the strength of structures can be affected by the shapes used, create their own bridge and test its durability - using woodworking tools and techniques. | **Mechanical Systems:** Automata toys - Use woodworking skills, pupils construct an automata; measuring and cutting their materials, assembling the frame, choosing cams and designing the characters that sit on the followers to form an interactive shop display. |

**Slingsby School** **Design & Technology Curriculum Overview**

**Cycle B: 2023-2024**

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|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **EYFS/ Year 1** | **Structures: Boats (EYFS)** - Explore junk modelling, tinkering with temporary and permanent joins, and a range of materials. Create basic models to test in different conditions. | **Textiles: *Bookmarks* (EYFS)** - Explore and develop threading and weaving skills with different materials and objects. | **Mechanisms (EYFS**) - Explore a simple paper slider mechanism.**Mechanisms: Making a moving story book-** Experiment with sliders before planning and making three pages of a moving story book, based on a familiar story, drawing the page backgrounds, creating the moving parts and assembling it. | **Mechanisms: Wheels and axles -** Learn about the main components of a wheeled vehicle. Develop understanding of how wheels, axles and axle- holders work; problem-solve why wheels won't rotate; to design and build their own vehicle designs. | **Cooking & Nutrition (EYFS)** - Explore and become familiar with different fruits and vegetables, using their senses. Make soup. |
| **Class 2****Year 2 & 3** | **Mechanisms: Fairground wheel -** Design and create a functional Ferris wheels, consider how the different components fit together so that the wheels rotate and the structure stands freely. Select appropriate materials and develop their cutting and joining skills. | **Electrical Systems:****Electric poster** - An introduction to information design and electrical systems, pupils create an electric poster using a basic circuit to develop a museum display about The **GREAT FIRE OF LONDON** (NOTE: ADAPTED FROM KAPOW which specifies ROMANS museum display). | **Mechanical Systems:** **Pneumatic toys** - Design and create a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts. Pupil are introduced to thumbnail sketches and exploded diagrams. | **Food: A balanced diet-** Explore and learn what forms a balanced diet, pupils will taste test ingredient combinations from different food groups that will inform a wrap design of their choice which will include a healthy mix of protein, vegetables and dairy. |
| **Class 3****Year 4** | **Structure:** Pavilions -Exploring pavilion structures, learning about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding. | **Food:** Adapting a recipe -Work in groups to adapt a simple biscuit recipe, to create the tastiest biscuit ensuring that their creation comes within the given budget of overheads and costs of ingredients | **Mechanical Systems:** Making a slingshot car- Transform lollipop sticks, wheels, dowel and straws into a moving car. Pupils use a glue gun to construct, make the launch mechanism, design and create the chassis of a vehicle using nets. | **Textiles:** Fastenings - Building upon their sewing skills from previous years, pupils design and create a book sleeve; exploring a variety of fastenings and selecting the most appropriate for their design based on strength and appropriate use. |
| **Class 4****Year 5 & 6** | **Structures:** Playgrounds - Design and create a model for a new playground featuring five apparatus, made from three different structures. Using a footprint as the base, practise visualising objects in plan-view and get creative including natural features. | **Electrical Systems:** Electronic greetings cards - Explore how circuits can be adapted to suit different purposes, explore series circuits and recreate one using conductive adhesive copper tape. Apply this knowledge to design and create an electronic greeting card. | **Food:** What could be healthier? - Research and modify a traditional Bolognese sauce recipe to make it healthier. Cook improved versions, creating appropriate packaging and learn about where the ingredients the importance of animal welfare when farming cattle. |