St Mary's Catholic Primary School
Design & Technology Curriculum Coverage

EYFS

At St Mary's we understand that the EYFS framework is structured differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. We believe that the Early Years outcomes are prerequisite skills for all subjects within the national curriculum. Below are the most relevant Early Years outcomes from Nursery to the end of Reception Class, brought together from relevant areas of the Early Years Foundation Stage, to match the programme of study for **Design and Technology.**

The most relevant Early Years outcomes for **Design and Technology** are taken from the following areas of learning:
• *Physical Development*
• *Expressive Arts & Design*

By the end of Nursery, we expect children to be able to:

- weave materials into frames
- use a knife and fork
- attempt some very simple fastenings when helping an adult with dressing and undressing
- using pincer movements to pick up small items or nip malleable materials
- post and thread
- use a fork and spoon independently
- use mark making tools with control to add detail to shapes
- join materials for a purpose
- make marks with a wide range of tools and grips
- stack and align irregular and natural objects.
- stack, align and balance blocks of different shapes and sizes
- join the pieces of jigsaw puzzles with increasing competence
- cutting along lines

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By the end of Reception, we expect children to be able to:

- use hand moulding and building techniques with malleable materials.
- use fine pincer mark-making tools with precision.
- use a range of tools to dismantle mechanisms.
- safely use a wider range of food preparation tools including chopping boards and knives, graters, fruit squeezers.
- join with tape and glue.
- use fine mark-making tools to create texture and pattern in clay/play dough.
- control printing
- dismantle objects and mechanisms using a range of hand actions.
- join the pieces of jigsaw puzzles with increasing competence
- use woodwork tools to cut and join safely and under supervision.
- use an increasing range of tools to dismantle and reassemble items/ screwdrivers etc
- stack, aligning, balancing with magnetic joints Join and separate small construction kit components by clicking and twisting.
- use squashing techniques including rolling pins to achieve desired effects.
- cut and turn along outlines.
- stack, align and balance blocks of different shapes and sizes
- thread, peg, and sew on cards.
- shape and mould wet sand and clay with hand tools to create particular effects
- know how to join wood and reclaimed materials to make objects with a purpose.
- make considered choices to create relief design in clay.
- twist, wrap and weave with pressure and precision,
- stack, align and balance with bricks and blocks on a range of scales.

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	Autumn Term	Spring Term	Summer Term
Year 1	**Structures – Constructing a windmill** • Identify some features that would appeal to the client (a mouse) and create a suitable design. • Explain how their design appeals to the mouse. • Make stable structures, which will eventually support the turbine, out of card, tape and glue. • Make functioning turbines and axles that are assembled into the main supporting structure. • Say what is good about their windmill and what they could do better. Kapow Primary - Structures (Constructing a Windmill)	**Textiles – Puppets** • 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. Kapow Primary - Textiles (Puppets)	**Mechanisms / Mechanical Systems – Making a moving storybook** • 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. • Make a picture, which meets the design criteria, with parts that move purposefully as planned. • Evaluate the main strengths and weaknesses of their design and suggest alterations. Kapow Primary - Mechanisms (Making a moving storybook)
Year 2	**Mechanisms / Mechanical Systems – Making a moving monster** • 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. Kapow Primary - Mechanisms (Moving Monster)	**Structures – Hermelin's Chair** • 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 Hermelin the mouse. • Produce a model that supports a mouse, using the appropriate materials and construction techniques. • Explain how they made their model strong, stiff and stable. Kapow Primary - Structures (Hermelin's Chair)	**Textiles – Pouches** • 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. Kapow Primary - Textiles (Pouches)

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Year 3	**Mechanisms / Mechanical Systems - Pneumatic toys** • 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. Kapow Primary - Mechanical Systems (Pneumatic Toys)	**Structures – Constructing a castle** • 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. Kapow Primary - Structures (Constructing a castle)	**Textiles – Cushions or Egyptian collars** • 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/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/or functional properties of some of their material choices. Kapow Primary - Textiles (Cushion or Egyptian Collar)
Year 4	**Textiles – Fastenings** • 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. Kapow Primary - Textiles (Fastenings)	**Mechanisms / Mechanical Systems – Making a slingshot car** • 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. Kapow Primary - Mechanical Systems (Slingshot Car)	**Structures – Pavilions** • 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. Kapow Primary - Structures (Pavilions)

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Year 5	**Mechanisms / Mechanical Systems – Pop up book** • 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. Kapow Primary - Mechanical Systems (Pop up book)	**Structures – Bridges** • 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. Kapow Primary - Structures (Bridges)	**Textiles – Stuffed toys** • Design a stuffed toy, considering the main component shapes of their toy. • Create an appropriate template for their stuffed toy. • Join two pieces of fabric using a blanket stitch. • Neatly cut out their fabric. • Use appliqué or decorative stitching to decorate the front of their stuffed toy. • Use blanket stitch to assemble their stuffed toy, repairing when needed. • Identify what worked well and areas for improvement. Kapow Primary - Textiles (Stuffed Toys)
Year 6	**Structures – Playgrounds** • 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. Kapow Primary - Structures (Playgrounds)	**Textiles – Waistcoats** • 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. Kapow Primary - Textiles (Waistcoats)	**Mechanisms / Mechanical Systems – Automata toys** • Mark, saw and cut out the components and supports of their toy with a varying degree 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. Kapow Primary - Mechanical Systems (Automata Toys)