Design and Technology
Progression Map

Intent	At Inglehurst Infant School we want our children to design and make products that solve real and relevant problems within a variety of contexts. From starting school, we plan for children to be inspired to explore and create and develop their own ideas using a range of materials. It is our aim, that through their design and technology lessons and STEM days, all of the children will acquire good subject knowledge and skills which they will develop and build on throughout their life. Throughout the units of work, the children will focus on developing the physical skills they require to enable them to handle tools safely and effectively. Through cross-curricular learning and a focus on real life issues children have the opportunity to draw on knowledge and skills from other subjects, such as maths, science, computing and art. We want our children to develop confidence in taking risks, becoming resourceful, creative and innovative individuals.
Implementation	Within a range of exciting topics, children study carefully planned units of work which ensure sequential progression of knowledge and skills that builds on previous learning and provides support and challenge for all learners. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual understanding needed for each strand. In the EYFS, the learning environment is planned to enable children to create and explore different materials independently to consolidate skills and develop their critical thinking to make links and develop their own ideas. Cooking and nutrition focuses on specific principles, skills and techniques in food, including where food comes from and healthy diet. We plan to extend this knowledge further by growing our own food to use in our cooking. Key areas are revisited, to ensure that pupils have the opportunity to build on and extend previous learning. Knowledge organisers are utilised for each unit to support pupils in building their factual knowledge through the recall of key facts and vocabulary.
Impact	Children will be able to combine their designing and making skills with knowledge and understanding, in order to design, make, analyse and evaluate products of high quality. Children will be able to use a range of tools safely and effectively to produce the desired outcome. Our children will be able to express their creativity through their designs and explain their ideas using key vocabulary. They will be able and confident to express their opinions and evaluate their product. Lessons focus on the process (rather than the outcome) encouraging children to improvise and adapt to overcome problems which enables children to feel supported and secure in making mistakes and not aiming for perfection.

Experience for all children
• Are given opportunities to explore a range of materials and develop their own ideas to make a product. • Are taught to build skills to become increasingly independent to use tools to achieve an end goal.

EYFS		
	Nursery	Reception

Personal, Social and Emotional Development		•Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.	•Show resilience and perseverance in the face of challenge.
Physical Development		•Use large-muscle movements to wave flags and streamers, paint and make marks. •Choose the right resources to carry out their own plan. •Use one-handed tools and equipment – scissors, tongs, one handed hole punch, glue stick, glue spreader, spade, cutters **Cutting skills** •Pulling and tearing paper •Make snips in paper, leaves •Begins to hold scissors correctly. •Cuts up and along in a linear fashion. •Begins to cut a range of materials. **Joining/Collage skills** •Using a glue stick •Begin to use a glue spreader and PVA glue with some guidance •Begin to use a glue spreader and PVA glue more independently • Fold card/paper to make products with some guidance •Use sticky tapes •Threading	•Progress towards a more fluent style of moving, with developing control and grace. •Develop their small motor skills so that they can use a range of tools competently, safely and confidently – scissors, tongs, one handed hole punch, large needle, spade, **Cutting skills** •Usually holds scissors correctly •Cuts up and along in a linear fashion •Cuts a range of materials •Cuts along patterns. •Cuts circular shapes or around a simple outline. **Joining/Collage skills** •Use PVA glue and glue spreaders independently •Fold card and paper to make products •Complex folding of card and paper e.g. concertina •Use dexterity to combine materials with elastic bands, paper clips, treasury tags, construction •Threading on to string and putting thread in and out of material/card •Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.
Understanding the World		•Explore how things work.	
Expressive Arts and Design		•Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. •Explore different materials freely, in order to develop their ideas about how to use them and what to make. •Develop their own ideas and then decide which materials to use to express them. •Create closed shapes with continuous lines, and begin to use these shapes to represent objects. **Joining/Collage** •Using a glue stick to stick materials on flat surface. • Using a glue stick to join 3d shapes together (junk modelling) with some guidance • Use a glue spreader and pva glue to stick materials on a flat surface •Use a glue spreader and pva glue to join 3d shapes together (junk modelling)	•Explore, use and refine a variety of artistic effects to express their ideas and feelings. •Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. •Understand various materials can be combined to create new effects. •Creates representations of events people and objects. **Joining/Collage** •Begin to use techniques to join cardboard with guidance (junk modelling) •Use split pins to join paper or cardboard.
ELG	PSED	Managing self Self regualtion	•Be confident to try new activities and show independence, resilience and perseverance in the face of challenge

			•Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions.
	Physical development	Fine Motor Skills	•Use a range of small tools, including scissors, paintbrushes and cutlery.
	Expressive Arts and Design	Creating with Materials	•Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. •Share their creations, explaining the process they have used.
Vocabulary Clean, germs, cook, bake, stir, mix, healthy, fruit, vegetable, cut, chop, slice Fabric, material, clothes, wool, fleece, thread, yarn, weave Move, up, down, sideways, turn, join, split pin Build, connect, join, tall, short, long, thin, wide, strong, joining materials- glue, tape, paper clip, elastic band, split pin, string			

Structures			
	Year 1	Year 2	Year 3
Design	•Learning the importance of a clear design criteria •Including individual preferences and requirements in a design	• Generating and communicating ideas using sketching and modelling • Learning about different types of structures, found in the natural world and in everyday objects	• Designing a castle with key features to appeal to a specific person/purpose • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials need and colours • Designing and/or decorating a castle tower on CAD software
Make	• Making stable structures from card, tape and glue • Following instructions to cut and assemble the supporting a structure. • Making moving parts which are assembled into a main supporting structure	• Making a structure according to design criteria • Creating joints and structures from paper/card and tape	• Constructing a range of 3D geometric shapes using nets • Creating special features for individual designs • Making facades from a range of recycled materials
Evaluation	• Evaluating a structure according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements	• Exploring the features of structures • Comparing the stability of different shapes • Testing the strength of own structures • Identifying the weakest part of a structure • Evaluating the strength, stiffness and stability of own structure	• Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design • Suggesting points for modification of the individual designs
Technical Knowledge	• Describing the purpose of structures • Learning how to turn 2D nets into 3D structures	• Identifying natural and man-made structures • Identifying when a structure is more or less stable than another	• Identifying features of a castle • Identifying suitable materials to be selected and used for a castle, considering weight, compression, tension

	• Learning that the shape of materials can be changed to improve the strength and stiffness of structures • Understanding that some shapes are stronger and used for a purpose • Understanding that structures have a purpose • Developing awareness of different structures for different purposes	• Knowing that shapes and structures with wide, flat bases or legs are the most stable • Understanding that the shape of a structure affects its strength • Using the vocabulary: strength, stiffness and stability • Knowing that materials can be manipulated to improve strength and stiffness • Building a strong and stiff structure by folding paper	• Extending the knowledge of wide and flat based objects are more stable • Understanding the terminology of strut, tie, span, beam • Understanding the difference between frame and shell structure
Vocabulary	cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards		

Mechanisms			
	Year 1	Year 2	Year 3
Design	• Explaining how to adapt mechanisms, using levers or sliders to control the movement • Designing a moving picture for a given audience • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Creating clearly labelled drawings which illustrate movement	• Creating a class design criterion for a moving picture • Designing a moving picture for a specific audience in accordance with a design criterion • Selecting a suitable linkage system to produce the desired motions • Designing a wheel, selecting appropriate materials based on their properties	• Designing a toy which uses a pneumatic system • Developing design criteria from a design brief • Generating ideas using thumbnail sketches and exploded diagrams • Learning that different types of drawings are used in design to explain ideas clearly
Make	• Following a design to create moving models that use levers and sliders • Adapting mechanisms	• Making linkages using card for levers and split pins for pivots • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used • Cutting and assembling components neatly • Selecting materials according to their characteristics • Following a design brief	• Creating a pneumatic system to create a desired motion • Building secure housing for a pneumatic system • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy • Selecting materials due to their functional and aesthetic characteristics • Manipulating materials to create different effects by cutting, creasing, folding, weaving

Evaluation	• Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed • Reviewing the success of a product by testing it with its intended audience • Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move	• Evaluating own designs against design criteria • Using peer feedback to modify a final design • Evaluating different designs • Testing and adapting a design	• Using the views of others to improve designs • Testing and modifying the outcome, suggesting improvements • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client
Technical Knowledge	• Learning that levers and sliders are mechanisms and can make things move • Identifying whether a mechanism is a lever or slider and determining what movement the mechanism will make • Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement • Identifying what mechanism makes a toy or vehicle roll forwards • Learning that for a wheel to move it must be attached to an axle	• Learning that mechanisms are a collection of moving parts that work together in a machine • Learning that there is an input and output in a mechanism • Identifying mechanisms in everyday objects • Learning that a lever is something that turns on a pivot • Learning that a linkage is a system of levers that are connected by pivots • Exploring wheel mechanisms • Learning how axels help wheels to move a vehicle	• Understanding how pneumatic systems work • Learning that mechanisms are a system of parts that work together to create motion • Understanding that pneumatic systems can be used as part of a mechanism • Learning that pneumatic systems force air over a distance to create movement
Vocabulary	Vehicle axle, axle holder, wheel, circular, disc, movement, moving, non-moving, attach, fix, strength, appearance, chassis, structure, supporting, strong, stiff, stable, cylinder, card, tape, pipe cleaner, glue/stick, turn, move, up, down, left, right, vertical, horizontal, slider, lever, pivot, slot, bridge/guide, link, mechanism		

Cooking and nutrition			
	Year 1	Year 2	Year 3
Design	• Designing a healthy snack/sandwich/meal based on a food combination which work well together •Designing a visually appealing, treat/cookie/biscuit		• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish
Make	• Chopping ingredients safely • Identifying if a food is a fruit or a vegetable	• Slicing food safely using the bridge or claw grip	• Knowing how to prepare themselves and a work space to cook safely in, learning the

	• Learning where and how fruits and vegetables grow	• Constructing food that meets a design brief	basic rules to avoid food contamination • Following the instructions within a recipe
Evaluation	• Tasting and evaluating different food combinations • Describing appearance, smell and taste • Suggesting information to be included on packaging	• Describing the taste, texture and smell of fruit and vegetables • Taste testing food combinations and final products • Describing the information that should be included on a label • Evaluating which grip was most effective	• Establishing and using design criteria to help test and review dishes • Describing the benefits of seasonal fruits and vegetables and the impact on the environment • Suggesting points for improvement when making a seasonal tart
Technical Knowledge	• Understanding the difference between fruits and vegetables • Describing and grouping fruits by texture and taste	• Understanding what makes a balanced diet • Knowing where to find the nutritional information on packaging • Knowing the five food groups	• Learning that climate affects food growth • Working with cooking equipment safely and hygienically • Learning that imported foods travel from far away and this can negatively impact the environment • Learning that vegetables and fruit grow in certain seasons • Learning that each fruit and vegetable gives us nutritional benefits • Learning to use, store and clean a knife safely
Vocabulary	Healthy, varied/balanced diet, preparation, ingredients, bridge grip, claw grip, texture, taste, smell, fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, choosing, ingredients		

Textiles			
	Year 1	Year 2	Year 3
Design	• Using a template to create a design for a puppet	• Designing a puppet	• Designing and making a template from an existing cushion and applying individual design criteria
Make	• Cutting fabric neatly with scissors • Using joining methods to decorate a puppet • Sequencing steps for construction	• Selecting and cutting fabrics for sewing • Decorating a puppet using fabric glue or running stitch	• Following design criteria to create a cushion • Selecting and cutting fabrics with ease using fabric scissors • Sewing cross stitch to join fabric • Decorating fabric using appliqué • Completing design ideas with stuffing and sewing the edges

Evaluation	• Reflecting on a finished product, explaining likes and dislikes	• Troubleshooting scenarios posed by teacher • Evaluating the quality of the stitching on others' work • Discussing as a class, the success of their stitching against the success criteria • Identifying aspects of their peers' work that they particularly like and why	• Evaluating an end product and thinking of other ways in which to create similar items
Technical Knowledge	• Learning different ways in which to join fabrics together: pinning, stapling, gluing	• Joining items using fabric glue or stitching Identifying benefits of these techniques • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pinning and cutting fabric using a template	• Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch and appliqué • Understanding the need to count the thread on a piece of even weave fabric in each direction to create uniform size and appearance • Understanding that fabrics can be layered for affect
Vocabulary	Needle, stitch, running stitch, sew, pin, thread, knot, loop, fabric, material, puppet, pouch, template, secure, edge, embellishments, joining and finishing techniques, tools, components, pattern pieces, mark out, join, decorate, finish		

KS1		
Term	Cycle A	Cycle B
Autumn	Structures -playgrounds • explore existing structures • generate ideas & design own structure • select from & use a range of tools & equipment • build structures, exploring how they can be made stronger, stiffer & more stable • evaluate own product against design criteria Food - Christmas Cookies • Measure and weigh accurately using standard units and scales • How to use techniques such as stirring, rolling, cutting	Textiles - Puppets • Explore different types of puppets and how they are operated. • Design their own puppet linked to a traditional tale character. • Using a range of materials create their own puppet. • Select from & use tools & equipment safely • Evaluate own product against design criteria Food - Make a healthy sandwich • learn about food hygiene • generate ideas to design a healthy snack • select from ingredients • select from & use tools & equipment safely

		• evaluate own product against design criteria
Spring	Mechanisms – levers and sliders (moving picture) • explore & evaluate a range of existing products • make own lever & sliding mechanisms • generate ideas & design own moving picture • select from & use a range of tools & equipment	Mechanisms – levers and sliders (moving picture- Own invention to help somebody solve a problem) • explore & evaluate a range of existing products • make own lever & sliding mechanisms • generate ideas & design own moving picture • select from & use a range of tools & equipment • evaluate own product against design criteria
Summer	Mechanisms – jungle buggy • Look at existing vehicles • Design a functional and appealing jungle buggy using a wide range of materials. • Explore and use mechanisms such as wheels and axels. • Evaluate their own model and those of others. Around the world in one picnic • Sort and classify an increasing range of food according to specific food groups • How to name and sort foods into the five food groups in the 'Eatwell plate'	Mechanisms – superhero vehicle • Look at existing vehicles • Design a functional and appealing superhero vehicle using a wide range of materials. • Explore and use mechanisms such as wheels and axels. • Evaluate their own model and those of others. Traditional picnic • Sort and classify an increasing range of food according to specific food groups • How to name and sort foods into the five food groups in the 'Eatwell plate'