Design Technology Ingol CPS

High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Pupils at Ingol CPS will continue to develop the **'**characteristics of effective learning' (CoEL) throughout their primary school journey. The CoEL will provide a structure for **how** our pupils will learn. All staff will have regard for the CoEL when teaching design technology to ensure that our high-quality design technology curriculum engages, inspires, and challenges our pupils. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They will be able to think critically, and they will develop a more rigorous understanding of design technology.

Playing and Exploring

- **Finding out and exploring** – Our pupils will have numerous opportunities to find out about and explore existing products and designs. They will be taught to research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- **Playing with what they know** – pupils will become increasingly competent and confident in cooking, as cooking and nutrition is taught in all year groups, they will have repeated opportunities to use the skills and knowledge that they have already acquired. Our Key Stage 2 pupils will be given opportunities to use their existing knowledge to adapt recipes by adding or substituting one or more ingredient.
- **Being willing to 'have a go.'** – staff do not pass negative judgements on pupil's design ideas; pupils are encouraged to self-reflect throughout the design and making process. This helps our pupils to feel a sense of success and develop a positive view of themselves as learners. As a result, they are all keen to 'have a go'.

Active Learning

- **Keeping trying –** At Ingol CPS we set high expectations for our pupil's, as a result pupils are constantly developing their resilience as they bounce back from challenges and learn to persist when difficulties arise.
- **Being involved and concentrating** – We endeavour for our design technology lessons to link with the interests of our pupils, as we recognise that children show high levels of focus when they are fascinated by something.
- **Enjoying achieving what they set out to do –,** We recognise that learning is not linear, children learn at different rates and have their own unique strengths and weaknesses. Our pupils enjoy learning for its own sake and not for external praise, after each design technology lesson pupils are encouraged to reflect on their own learning and set themselves challenges for the next lesson, they enjoy achieving what they set out to do.

Creating and Thinking Critically

- **Having their own ideas** – Pupils are encouraged to be imaginative and creative through the design and making process, their unique ideas are valued and encourage by all staff.
- Making links – Our pupils will have opportunities to develop concepts and link them together, as they find meaning in sequence and in cause and effect.
- **Choosing ways to do things -** Our pupils will be encouraged to make their own choices and decisions about how to approach tasks, planning and monitoring what to do, they will be able to change and adapt their strategies and design ideas throughout the making process.

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Structures- Junk modelling houses			Textiles- bookmarks	Cooking- porridge	Structures- boats

Making verbal plans and material choices. Developing a junk model. Improving fine motor/scissor skills with a variety of materials. Joining materials in a variety of ways (temporary and permanent). Joining different materials together. Describing their junk model, and how they intend to put it together. Giving a verbal evaluation of their own and others' junk models with adult support. Checking to see if their model matches their plan. Considering what they would do differently if they were to do it again. Describing their favourite and least favourite part of their model.			Discussing what a good design needs. Designing a simple pattern with paper. Designing a bookmark. Choosing from available materials. Developing fine motor/cutting skills with scissors. Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. Using a prepared needle and wool to practise threading. Reflecting on a finished product and comparing to their design.	Designing a porridge recipe as a class. Designing porridge packaging. Chopping plasticine safely. Chopping fruit with support. Tasting the fruits and giving opinions. Describing some of the following when tasting food: look, feel, smell and taste. Choosing their favourite packaging design and explaining why.	Designing a junk model boat Using knowledge from exploration to inform design. Making a boat that floats and is waterproof, considering material choices. Making predictions about, and evaluating different materials to see if they are waterproof. Making predictions about, and evaluating existing boats to see which floats best. Testing their design and reflecting on what could have been done differently. Investigating the how the shapes and structure of a boat affect the way it moves.

Year 1 Autumn	Year 1 Spring	Year 1 Summer
Mechanisms - A moving Christmas Cards ▪ I understand that sliders are mechanisms. ▪ I know that sliders can make things move. ▪ I can create a moving picture that use sliders. ▪ I can use the words: up, down, left, right, vertical and horizontal to describe movement. ▪ I can design my Christmas card by: drawing background picture, drawing the moving parts. deciding whether I will use a side-to-side slider or an up-and-down slider, labelling the movement of each type of slider. ▪ I can make my moving card by: drawing my background, drawing and cutting my	**Bring on Breakfast Primary Food Project** ▪ name different food and drinks consumed at breakfast time. ▪ explain why it is important to have breakfast every day. ▪ sort a selection of food and drink items into their plant or animal origin. ▪ state what makes a healthy breakfast (i.e. food, drink and inclusion of a 5 A DAY item). ▪ explain that we all need to eat at least five portions of fruit and vegetables each day and give examples of what would count. ▪ express their opinion about ingredients they taste using sensory vocabulary.	**Mechanisms and moving structures - Windmills (KAPOW UNIT)** ▪ design purposeful, functional, appealing products for themselves and other users based on design criteria ▪ generate, develop, model and communicate their ides through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology ▪ select from and use a wider range of tools and equipment to perform practical tasks ▪ explore and evaluate a range of existing products ▪ evaluate their ideas and products against design criteria ▪ build structures, exploring how they can be made stronger, stiffer and more stable

moving parts., making sliders for my moving parts, putting all my parts together to create my moving card. ▪ I can review the success of my product by testing it. ▪ I can evaluate my product against the design criteria.	▪ carry out the getting ready to cook steps, with support. ▪ perform simple food preparation skills to make a fruit kebab safely and hygienically (e.g. fork secure, bridge hold, peel). ▪ evaluate the appearance and taste of their fruit kebab. ▪ explain where some breakfast foods originate. ▪ explain that dairy foods are made from milk which is usually from a dairy cow. ▪ recognise that dairy foods help keep bones and teeth healthy. ▪ evaluate a range of yogurts for their dish. ▪ plan a simple breakfast dish based on simple criteria. ▪ recall and carryout the getting ready to cook steps, with support. ▪ perform simple food preparation skills safely and hygienically (e.g. peel, mash, juice, cut, spoon, arrange). ▪ make a breakfast pot. ▪ evaluate their breakfast pot and suggest ways it could be modified or improved in the future.	
Year Two – Autumn	**Year Two - Spring**	**Year Two – Summer**
Structures – Chair for baby bear (KAPOW UNIT) ▪ I can identify natural and man-made structures. ▪ I can understand what is meant by stability and identify when a structure is more or less stable than another. ▪ I can explain that shapes and structures with wide, flat bases or legs are the most stable. ▪ I can understand the meaning of the words strength, stiffness and stability. ▪ I can understand there are different ways to fold paper to improve its strength and stiffness. ▪ I can build a strong and stiff structure by folding paper. ▪ I can test the strength of my structure.	**Primary Food Project- Party Time** • give examples of occasions when 'party food' would be eaten and name different types of party food. • describe the food skills used to make a dish (e.g. cutting out, mixing, snipping). • recall and explain the 'getting ready to cook' steps. • get ready to cook, with some support (e.g. tying of apron). • perform basic cooking skills as instructed (e.g. cutting out, snipping, mixing, spooning, spreading). • recall where the ingredients in a dish come from. • recognise the Eatwell Guide and explain that it shows us how to eat healthily.	**Textiles – Pouches (KAPOW UNIT)** ▪ I can thread a needle. I can sew a running stitch. ▪ I can use neat and evenly spaced stitches to join fabric. ▪ I can remember how to use a template. ▪ I can cut fabric neatly. ▪ I can pin fabric accurately. ▪ I can design a pouch. ▪ I can sew neat, even stitches. ▪ I tie a knot at either end of the thread. ▪ I can design decorations for my product. ▪ can join items using fabric glue or stitching. ▪ I can decorate fabric using different items. • I can evaluate my own designs.

▪ I can remember that chairs are structures that need to be strong, stiff and stable. ▪ I can create joints and structures from paper, card and tape. ▪ I can identify that the chair I design needs to be strong, stiff, stable and support Teddy. • I can create joints and structures. I can evaluate my structure according to the design criteria.	• sort a selection of foods into the Eatwell Guide food groups. • sort ingredients from a dish into the Eatwell Guide food groups and comment on how the dish contributes to healthy eating. • explain some of the reasons people may not consume certain foods or drinks. • taste ingredients and discuss their suitability for a dish, using sensory vocabulary. • suggest ways to adapt a dish to make it suitable for the needs of others (e.g. allergies, religion, culture, choice). • plan a dish with consideration for the needs of others (e.g. a vegetarian). • make suggestions for a checklist (design criteria) that their party dish should meet. • identify the plant or animal origin of all the ingredients used to make the final dish. • demonstrate the safe use of some basic cooking equipment (e.g. cutters, kitchen scissors). • make a simple dish, safely and hygienically. • eat sociably with others demonstrating good manners. • reflect on the success of their dish, how well it met the checklist (design criteria) and how it might be improved in the future.	
Year Three – Autumn Key Individual- Zaha Hadid (shell structures)	**Year Three- Spring** Key Individual-James Dyson	**Year Three – Summer** **Key Individual- Mary Berry**
Structures – Castles (KAPOW UNIT) ▪ I can identify different features of castles. ▪ I can design my own castle. ▪ I can label the features of my castle. ▪ I can explain why a castle needs to be strong and stable. ▪ I can recall the features of a castle. ▪ I can add two design points to the design specification to appeal to the person/purpose of my castle. I can draw the design of my castle using 2D shapes and labelling: the 3D	**Mechanical Systems – Pneumatic Toys (KAPOW UNIT)** ▪ I can recall that mechanisms are a system of parts that work together to create motion. ▪ I can recall that a pneumatic system can be used as part of a mechanism. I can recall that pneumatic systems are used in a range of everyday objects. I can recall that a pneumatic system can force air over a distance to create movement.	**Food – Primary Food Project- Get Baking** • name a selection of different types of bread and their countries of origin. • describe a selection of breads tasted using sensory vocabulary. • recall and apply the 'get ready to cook' steps. • make a bread roll by applying skills which have been demonstrated (e.g. knead, shape). • name other products that can be made from dough.

shapes that will create the features; the materials I need; the colours ▪ I will use. I know that a net is what a 3D shape would look like if it were opened out flat. ▪ I can construct a range of 3D geometric shapes using a net by: Cutting along the bold lines. Folding along the dotted lines. Keeping the tabs the correct size. Making crisply folded edges. Constructing the net using glue to make a geometric shape ▪ I can construct my castle to meet the requirements of my brief by: Making neat 3D shapes using nets. Stacking shapes and recyclable materials to make the structures of my castle. Creating a castle base to secure my structures to. Adorning my castle with facades and other decorative features. I can evaluate my work and the work of others	▪ I can develop design criteria from a design brief. I can generate suitable ideas using thumbnail sketches and exploded diagrams. I can recall there are three different types of pneumatic systems that I can use to design my toy and use recycled household objects to make it. I can recall that different types of drawings are used in design to explain ideas clearly. ▪ I can create a pneumatic system to create a desired motion. I can build secure housing for a pneumatic system. I can recall that syringes and balloons can be used to create different types of pneumatic systems. I can recall how to use these components to make a functional and appealing pneumatic toy. I can remember that materials are selected due to their functional and aesthetic characteristics. I can recall how to manipulate materials to create different effects by cutting, creasing, folding, weaving, etc	• identify ingredients (including bread) in meals from around the world and sort those ingredients into the Eatwell Guide food groups. • research how bread is made and where bread ingredients come from. • recall and explain where ingredients or foods come from. • select and use basic equipment to prepare ingredients safely. • select and arrange ingredients to create an attractive pizza. • suggest ideas for basic design criteria for the bread. • plan and make bread, based on their research and experiences, which meets their design criteria. • follow their bread plan and apply the food preparation skills they have learned to make their bread. • evaluate their bread against the design criteria and suggest improvements.
Year 4- Autumn Key Individual- Ann Makosinski (young inventor of the hollow flashlight)	**Year Four – Spring** Key Individual- Hannah Rae- Textile artist	**Year Four – Summer** Key Individual- Jamie Oliver
Electrical systems – Torches (KAPOW UNIT) ▪ I can identify electrical products. ▪ I know what electrical conductors and insulators are. ▪ I know that a battery contains stored electricity and can be used to power products. ▪ I can identify the features of a lightbox. ▪ I understand how a lightbox works. ▪ I can say what is good and bad about different lightboxes. ▪ I understand what is important in lightbox design. ▪ I can factor in who my product is for in my design criteria. ▪ I can design a torch which satisfies both the design and success criteria. ▪ I can make a working circuit with a switch. I can use appropriate equipment to cut and attach materials.	Textiles - Book Sleeve – Fastenings (KAPOW UNIT) • I know what the main types of fastenings are. • I can say what the benefits of each fastening type are. • I can say what the disadvantages of each fastening type are. • I can design a product based on a design criteria. • I can write a design criteria. • My design includes a fastening • I can make a paper template. • I know how to test my paper template. • I can join fabric by sewing. • I can stick to my design criteria. My product is fit for purpose.	**Food- Primary Food Project- Lovely Lunch** • recall the main messages from each of the Eatwell Guide food groups. • identify and classify ingredients in composite dishes (e.g. sandwiches) according to the Eatwell Guide food groups. • explain that the size of the food groups shows us the proportions in which different types of foods are needed for a healthy diet (e.g. fruit and vegetables should make up around a third of what we eat). • name and explain some of the reasons that can affect food choice. • explain what a healthy lunch should include by referring to inclusion of foods from the four main (largest) food groups and a drink. • give examples of ways to make a sandwich healthier.

▪ I can assemble a torch according to my design criteria. I can assemble a torch which satisfies the success criteria. I can test my torch to evaluate its success.		• prepare a topped savoury cracker safely and hygienically using spreading, slicing and arranging skills. • describe how their topped savoury cracker tastes using sensory vocabulary. • recall examples of foods available in different seasons and explain a benefit of choosing seasonal food. • carry out research about a selection of different sandwiches. • explain where a selection of ingredients come from and how they are processed. • develop their own design criteria with guidance. • design a sandwich based on their research and design criteria. • recall and carryout the getting ready to cook steps. • perform food preparation skills safely and hygienically to make their sandwich. • evaluate their sandwich and suggest ways it could be improved.
Year Five- Autumn Key Individual- Isambaard Kingdom Brunel	**Year Five – Spring** Key Individual- Michael Caines- chef	**Year Five – Summer** Key Individual- Stacey Zoern (inventor of the wheelchair)
Playgrounds (KAPOW unit) • I can create five apparatus designs, applying the design criteria to my work. • I can make suitable changes to my work after peer evaluation. • I can make roughly three different structures from my plans using the materials available. • I can complete structures, improving the quality of my rough versions and applying some cladding to a few areas. • I can secure the apparatus to a base. • I can make a range of landscape features using a variety of materials which will enhance my apparatus.	**Primary Food Project- Serve a Salad** • recall and discuss different types of salad. • identify salad ingredients and sort them into the correct Eatwell Guide food groups. • explain the key messages from each Eatwell Guide food group. • explain that a third of the food we eat should come from the Fruit and vegetable group and a third should come from the Potatoes, bread, rice, pasta and other starchy carbohydrates group and explain the key messages from these two food groups. • recall that foods in the two largest food groups provide fibre and explain the role of fibre in the diet. • use the internet to research a selection of different salads. • recall the get ready to cook steps, explain how they should be carried out and why they are necessary.	**Gears and Pulleys (KAPOW Unit)** • Give examples of machines that use gears and/or pulleys. • Describe how gears and pulleys work and their purpose. • Design and make a gear and pulley system. • Write a problem statement. • Write questions for market research, provide feedback and research market competitors. • Write and use a design brief to guide design. • Evaluate a product against a set of design criteria, provide useful feedback and incorporate changes. • Draw and annotate an eco-gadget bike design.

	• prepare ingredients for a salad bar by safely using the bridge hold, claw grip and grating techniques. • use a range of sensory vocabulary to describe a selection of foods. • recall foods associated with a selection of countries around the world. • create a questionnaire to research the requirements and preferences of their salad recipient. • identify design criteria for a salad based around the requirements of an individual and purpose. • apply their knowledge, experience and research findings to design a salad which meets their design criteria. • communicate their salad design through notes and sketches. • To be able to: • make the salad they have planned safely and hygienically. • select the correct equipment for different food preparation tasks. • evaluate their salad against the design criteria and feedback from others.	
Year Six – Autumn 1	**Year Six – Autumn 2** Key Individual- Nadiya Hussain (chef)	**Year Six – Summer** Key Individual- Althea McNish- textile designer
	Food – Primary Food Project- Grab and Go • give examples of on-the-go products and discuss their characteristics. • name a selection of nutrients, their functions in the body and foods that provide the nutrients. • recall that we can get the nutrients we need by having a healthy, varied diet, as shown by the Eatwell Guide. • read and interpret nutrition information labels. • use guidelines to identify foods that are high or low in fat, salt and sugars.	**Textiles – Stuffed Toys (KAPOW UNIT)** • Designing a stuffed toy considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components. • Creating a 3D stuffed toy from a 2D design. • Measuring, marking and cutting fabric accurately and independently. • Creating strong and secure blanket stitches when joining fabric. • Threading needles independently. Using appliqué to attach pieces of fabric decoration.

	• analyse a selection of products and express their opinions about ingredients using sensory vocabulary. • demonstrate that they know the getting ready to cook steps. • explain the role of the getting ready to cook steps in ensuring food is hygienically prepared and safe to eat. • perform food skills safely and as instructed to make a spring roll (e.g. peel, grate, cut using the bridge hold and fork secure/claw grip). • research an on-the-go product and how it is made. • discuss the purpose and features of advertisements. • write a list of design criteria for an on-the-go product. • design an on-the-go product based on the design criteria. • write a recipe to make an on-the-go product. • make their on-the-go product according to the plan. • perform food skills safely and as instructed (e.g. peel, grate, cut using the bridge hold and fork secure/claw grip). • evaluate their on-the-go product against the design criteria. • design a suitable package for their product which includes key information (e.g. ingredients, weight, cost).	• Sewing blanket stitch to join fabric. • Applying blanket stitch so the spaces between the stitches are even and regular. • Testing and evaluating an end product and giving points for further improvements.