



DT knowledge and skills map

Master practical skills: this concept involves developing the skills needed to make high quality products.

Design, make, evaluate and improve: this concept involves developing the process of design thinking and seeing design as a process.

Take inspiration from design throughout history: this concept involves appreciating the design process that has influenced the products we use in everyday life.

Master practical skills

<p>Nursery</p>	<p>Continuous provision: experiment with using scissors, glue and hand-held tools to create a range of own products. Learn how to use scissors to make simple cuts and snips. Learn how to hold and use pencils. Learn how to hold and use a paintbrush and paint. Learn how to hold and use small tools for playdough. Learn how to use glue and glue spreaders. Mould clay to make a bowl shape for the diya lamp. Stick gems onto diya lamp. Paint diya lamps using fine brushes. Use scissors to make simple cuts and snips when making a self-portrait puppet. Use tape and glue to attach materials when making a self-portrait puppet. Use scissors to make simple cuts and snips when making a colour monster puppet. Use tape and glue to attach materials when making a colour monster puppet. Use a hand held drill to make holes though plastic for a watering can. Use posca pens to decorate watering can. Explore using safely use a hammer and nails in wood. Use a hammer and nails to join two pieces of material together to create a coat peg. Paint a wooden coat peg using a range of acrylic paints and brushes.</p>
<p>Reception</p>	<p>Continuous provision: explore, use and refine a variety of artistic effects to express their ideas and feelings. Continuous provision: create collaboratively sharing ideas, resources and skills.</p>

	<p>Continuous provision: Use split pins as a joining techniques to create a range of characters linked to topics.</p> <p>Use straws to create a secure structure for a kite.</p> <p>Use scissors to cut string, straws and collage pieces to create kite.</p> <p>Use running stitch attach buttons to autumn leaves.</p> <p>Learn how to use a split pin to make poppies.</p> <p>Colour and cut card to create poppies.</p> <p>Join and fix using hold punch and split pin.</p> <p>Use a range of media to create Christmas Tree decorations based upon a yearly theme.</p> <p>Use problem solving skills to create crown or a hat.</p> <p>Use non-standard measurements to measure circumference around head to make a crown.</p> <p>Select from a range of materials to decorate crown.</p> <p>Use scissors to cut paper in a range of ways, tape and decorative materials to make a crown.</p> <p>Use tape and glue as a joining material to create crown.</p> <p>Create 3D models of nocturnal animals using playdough and use a range of materials to add features onto their model.</p> <p>Make 3D models of emergency vehicles using junk material and add specific shapes to add features onto the model.</p> <p>Being to develop understanding of mechanisms in vehicles by selecting junk materials with suitable shapes.</p> <p>Create 3D fruits by moulding newspaper into fruit shapes and creating a solid structure using papier mache.</p> <p>Use appropriate coloured tissue paper to represent the colours of each 3D fruit.</p> <p>Use a range of junk modelling materials to create 3D safari materials.</p> <p>Join two pieces of material together using running stitch.</p> <p>Choose appropriate materials to create a handle for bag.</p> <p>Decorate bag with a minibeast design using glue to join and fix.</p> <p>Use story of Little Red Hen to make bread.</p> <p>Use non-standard measures to measure and weigh ingredients to make bread dough.</p> <p>With support, follow a recipe to make gingerbread men.</p> <p>Use non-standard measures to measure and weigh ingredients to make gingerbread men.</p>
Year 1	<p>Cut, peel and grate vegetables for harvest soup safely and hygienically.</p> <p>Measure and weigh vegetables for harvest soup.</p> <p>Cook harvest vegetable soup with support.</p> <p>Use a range of joining techniques to make a moving toy vehicle.</p> <p>Cut card safely to create a slider, lever and pivot in a moving picture.</p> <p>Use gluing to create a slider in a moving picture.</p> <p>Use gluing and split pins to join card to create a lever in a moving picture.</p> <p>Use gluing and split pins to create a pivot and wheel mechanism in a moving picture.</p> <p>Cut, peel and grate vegetables for a sandwich safely and hygienically.</p>

	Assemble ingredients to make a sandwich.
Year 2	<p>Measure and weigh ingredients for a chocolate cake using measuring cups and electronic scales.</p> <p>Assemble and cook ingredients hygienically.</p> <p>Know how to create a winding mechanism.</p> <p>Measure and mark materials to the nearest centimetre for a castle drawbridge.</p> <p>Cut materials safely using saws and scissors to make a castle drawbridge – <i>cardboard and dowels</i></p> <p>Demonstrate a range of joining techniques to strengthen materials and make a castle drawbridge.</p> <p>Colour textiles using dye to create England/Spain flag.</p> <p>Use running stitch to make England/Spain flag.</p> <p>Measure and mark materials to the nearest centimetre for a model bi-plane.</p> <p>Cut materials safely using scissors to make a model bi-plane – <i>cardboard and straws</i></p> <p>Glue materials to make and strengthen materials when making a bi-plane.</p> <p>Measure and weigh ingredients for Peter Rabbit's carrot cake using measuring cups and electronic scales.</p> <p>Assemble and cook ingredients hygienically.</p> <p>Measure and weigh ingredients for a pizza using measuring cups and electronic scales.</p> <p>Cut, grate and peel ingredients safely and hygienically for a pizza.</p>
Year 3	<p>Know how to prepare ingredients hygienically using appropriate utensils – <i>knife, peeler, skewer</i></p> <p>Assemble and cook Greek kebab ingredients using an oven.</p> <p>Select and use a wide range of tools and equipment to make a mini-greenhouse.</p> <p>Measure and mark out materials to the nearest 5mm when making a mini-greenhouse.</p> <p>Cut materials accurately and safely when making a mini-greenhouse – <i>saw, scissors</i></p> <p>Select appropriate joining techniques when making a mini-greenhouse.</p>
Year 4	<p>Follow a recipe accurately to make a Chinese stir fry.</p> <p>Prepare stir fry ingredients hygienically after selecting the appropriate utensils – <i>knife, chopping board, grater, peeler</i></p> <p>Know how to cook ingredients by controlling the temperature of the hob.</p> <p>Know which tools to select – <i>coping saw and bench hook</i> - and cut materials – <i>wood and cardboard</i> – safely and accurately when making a light up sign.</p> <p>Measure and mark out materials to the nearest 1mm when making a light up sign.</p> <p>Know a range of different joining techniques and select appropriate ones when making a light up sign.</p> <p>Measure and mark out materials to the nearest 1mm when making a catapult.</p> <p>Know which tools to select – <i>coping saw, drill and bench hook</i> - and cut materials – <i>wood and cardboard</i> – safely and accurately when making a catapult.</p> <p>Know a range of different joining techniques and select appropriate ones when making a catapult.</p> <p>Strengthen materials using suitable techniques when making a catapult.</p>
Year 5	Demonstrate a range of baking and cooking techniques – <i>grating, chopping, measuring, stirring, frying, baking</i>

	<p>Calculate ratios of ingredients to scale up from an Argentinian empanada recipe.</p> <p>Create a moving toy using a range of practical skills – <i>cutting with scissors, coping saw, drill, glue gun, bench hook, folding, construction of cam mechanism</i></p> <p>Cut wood with precision and refine the finish when making a moving toy.</p> <p>Use a more precise scissor cut after roughly cutting out a shape when making a moving toy.</p>
Year 6	<p>Cut card with precision when making an Anderson shelter.</p> <p>Calculate and measure the materials for an Anderson shelter using an accurate scale.</p> <p>Apply a range of practical skills to create an Anderson shelter - <i>cutting with scissors, coping saw, drill, glue gun, bench hook, hammer, nails</i></p> <p>Know about the importance of correct storage and handling of ingredients.</p> <p>Calculate ratios of ingredients to scale up or down ingredients for WWII bread and Lord Woolton pie.</p> <p>Demonstrate a range of baking and cooking techniques – <i>grating, chopping, measuring, stirring, baking</i></p> <p>Create fairground ride using a circuit using electronics which employ a number of components.</p>

Design, make, evaluate and improve

Nursery	<p>Continuous provision: develop their own ideas and then decide which materials to use to express them.</p> <p>Continuous provision: begin to develop collaborative work with peers, sharing ideas, resources and skills.</p> <p>Design a diya lamp using clay.</p> <p>Talk about the process of making the diya lamp.</p> <p>Make a self-portrait puppet using lollypop sticks and a range of materials.</p> <p>Talk about simple evaluation of their features – <i>position of features, colour and hair</i>.</p> <p>Make a colour monster puppet using lollypop sticks and a range of materials.</p> <p>Talk about simple evaluation of why they picked the colour monster.</p> <p>Design and make a watering can to use on their plants.</p> <p>Talk about the effectiveness of their watering can.</p> <p>Talk about how their watering can was the same as, similar to or different to a watering can bought from the shop.</p> <p>Make a wooden coat peg with strap.</p> <p>Talk about the strength of the coat peg to make a simple evaluation.</p>
Reception	<p>Continuous provision: return to and build on their previous learning, refining ideas and developing their ability to represent them.</p> <p>Plan, design and make kites.</p> <p>Test, evaluate and adapt kite designs.</p> <p>Plan, design and make split pin nocturnal animals.</p> <p>Plan, design and make a crown.</p> <p>Plan, design and make boats for the gingerbread man to cross the river using junk material.</p> <p>Test and make a simple evaluation of boat designs.</p>

	<p>Explore a range of different boat pictures and make observations based on what they can see. Plan, design and make a secure bridge structure for the Three Billy Goats to cross the river. Test and evaluate bridge designs using three different sized small world goats. Explore a range of different bridge pictures and make observations based on what they can see. Plan, design and make bug hotels using natural materials collect from the outdoor environment. Explore a range of different bug hotels pictures and make observations based on what they can see. Using knowledge of materials that are strong enough to hold fruit, they plan, design and make their own bags. Test and evaluate bag design by holding pieces of fruit.</p>
Year 1	<p>Know how to cook a healthy harvest soup. Identify where harvest soup vegetables – <i>carrots, onion, potatoes, parsnip</i> - come from. Design a toy vehicle with wheels and axels that has a clear purpose. Evaluate own moving toy vehicle against a design criteria. Make a moving picture with a slider. Make a moving picture with a lever. Make a moving picture with a pivot and wheel mechanism. Design a moving picture which has a clear purpose. Make a moving picture with a mechanism. Evaluate own moving picture against a design criteria. Know where the food in a sandwich comes from – <i>tomatoes, lettuce, cucumber, butter, cheese, ham</i> Plan and design a healthy balanced packed lunch for the Lighthouse Keeper’s Lunch. Evaluate packed lunch against a design criteria.</p>
Year 2	<p>Know where the ingredients in chocolate cake come from – <i>coco powder, butter, eggs, flour, sugar</i> Design a castle drawbridge that has a clear purpose and an intended user. Evaluate castle drawbridge with a winding mechanism against a design criteria. Design a flag for either England or Spain that has a clear purpose and intended user. Evaluate England/Spain flag against a design criteria. Design a model bi-plane that has a clear purpose and an intended user. Evaluate own bi-plane against a design criteria. Know where pizza ingredients – <i>cheese, tomatoes, onion, peppers, pepperoni, ham, pineapple</i> – come from. Create a healthy varied pizza.</p>
Year 3	<p>Know how food used in Greek kebabs is caught reared and grown. Know about the seasonality of different ingredients used in Greek kebabs. Choose ingredients to create a healthy and varied dish of Greek kebabs and dips. Design a greenhouse with a purpose. Explore a range of 3D shapes to design a stable greenhouse with a purpose.</p>

	Evaluate mini-greenhouse using a shared design criteria.
Year 4	<p>Know how to create a seasonality table to show the seasonality of fruit, meat, fish and vegetables in the United Kingdom.</p> <p>Compare the seasonality of produce in the United Kingdom to the seasonality of produce in China.</p> <p>Identify the differences between traditional Chinese and British cuisine.</p> <p>Use knowledge of ingredients to create a healthy and varied Chinese stir fry.</p> <p>Identify different opportunities for light up signs and design own light up sign with a purpose.</p> <p>Know how to create a series circuit which will be used in a light up sign.</p> <p>Improve and develop light up sign design, giving reasons for their choices.</p> <p>Evaluate light up sign against their own criteria.</p> <p>Design a catapult with a purpose by identifying opportunities to design.</p> <p>Test and evaluate catapult with own design criteria.</p>
Year 5	<p>Know where food is caught, reared and grown.</p> <p>Adapt recipes to create a healthy and varied Argentinian empanada.</p> <p>Know how to design with the user in mind when creating a moving toy.</p> <p>Make a moving toy through different stages of prototypes.</p> <p>Ensure that moving toy has a high-quality finish.</p> <p>Evaluate moving toy idea and product against own design criteria.</p>
Year 6	<p>Design an Anderson shelter using suitable shades of paint and appropriate materials.</p> <p>Ensure that an Anderson shelter has a high-quality finish.</p> <p>Evaluate peer's Anderson shelter against their own design criteria.</p> <p>Respond to peer evaluation of Anderson shelter by giving reasons for their choices.</p> <p>Design a fairground ride with the user in mind and the service that the product will offer.</p> <p>Refine fairground ride through stages of prototypes.</p> <p>Evaluate fairground ride against own design criteria.</p>

Take inspiration from design throughout history

Nursery	Continuous provision: develop an awareness of design and designers through photographs, video clips, artefacts and discussion.
Reception	Continuous provision: continue to develop an awareness of design and designers through photographs, video clips, artefacts and discussion and begin to talk about their preferred product.
Year 1	Explore different toy vehicles and identify likes and dislikes.
Year 2	<p>Explore England and Spain flags and identify likes and dislikes of the designs.</p> <p>Use observations to identify how Amy Johnson's bi-plane was created.</p>
Year 3	<p>Know about William Wilkinson and his invention of reinforced concrete.</p> <p>Use William Wilkinson's invention of reinforced concrete to generate own ideas about which bridge will bear the most weight before breaking.</p>

Year 4	Know about Tim Berners-Lee and his invention of the World Wide Web. Identify how the World Wide Web has helped to shape the world.
Year 5	Know about Charles Macintosh and his invention of waterproofing. Select a material to create a waterproof paper boat, test and evaluate.
Year 6	Know about Graham Alexander Bell and his invention of the telephone. Evaluate the effectiveness of a range of different string telephones. Identify how phones have changed over time.