

Knowledge Progression Sheet DT

Year 3	Year 4	Year 5	Year 6
Board Game Bonanza • Design criteria are the clear goals that a project must achieve in order to be successful. • Innovative, functional, appealing products are fit for purpose, aimed at particular individuals or groups. • Annotated sketches are drawings with labels. • A prototype is an early sample, model, or release of a product built to test a concept or process. Some prototypes are used to find defects or to test an idea. • A tool is anything that is used to make a change to something else or to help do a job. • Joining is the process of attaching two different items together.	What did the Romans do for us? • That the Romans settled in specific places so that they could access the areas natural resources such as water, metal and other natural materials of use to the empire. • That the romans have influenced technology today including: • Solar power to heat homes, water power to mill flour, and power saws to cut wood. • Aqueducts were used to move water, and dams to collect it. • The building of roads, and crafts such as stonemasons. • Early cranes for construction work. • Construction of bridges to cross water. • Carts to move freight had brakes, suspension, and bearings. • Mining of gold, and other metals using aqueducts and water mills to process the materials mined. • That they developed and used technology to build the roads to move soldiers and goods as efficiently as possible. • To build a road they first dug a trench and then they filled this	Reach for the Stars • The purpose of a Mars rover is to gather information about the surface of Mars and to find evidence whether life is, or has ever been, possible on Mars. Mars rovers act as robot geologists. • Mars rovers have a range of important features to ensure they are able to find information, complete experiments and function on Mars e.g., camera, solar panels, science lab, sensors, wheels, computer, robotic arms, antennas, tools. The data is sent back to Earth where it is then analysed further. • The design brief is to design and produce a prototype for a Mars rover which can be used in future expeditions. Research about the features and purpose of Mars rovers should be used when designing the Mars rovers (see above). The rover needs to be based around a solar-powered drive system and mounted	Wonders of Peru • Woven textiles were used to create practical items such as llicllas (women's carrying shawls), ponchos, chullos (knitted hat) and chuspas (traditional bag). They are traditional Peruvian dress. • Alpaca, llama and sheep wool is spun to create the yarn using a drop spindle. • Pigments from local plants, insects and minerals are used to dye the threads. • The designs contain patterns and symbols representing stories, animals, nature, people. The colours are also important: the most popular colours are red, blue, pink, burgundy, purple and brown.

• The flange method of joining is to flare out the edges of a tube. • The I-brace method is to make an I shape with two pieces of material and attached with tape. • The slot method is to make a small incision half-way up the midpoint of two pieces of material and to slide them together. • The tab method is to make small flaps which can alternate. • The fold method is to bend the material at the bottom so that it stands upright. • To analyse means to examine (something) in detail. • To evaluate means to identify the advantages and disadvantages of a product. • Board games have been around for thousands of years (e.g., the Egyptians played board games), but Elizabeth Magie was a key	- with a layer of big stones at the bottom. • Then broken stones, pebbles and sand were placed on top. • Next a layer of cement mixed with broken stones was put on top. • The top layer was then made of paving slabs that were cut to be tightly fitting. • Finally, kerb stones were put at the side to hold it all together and a channel was dug to allow water to run away. • To investigate and evaluate technology considering its suitability and effectiveness for the task. • To use annotated designs to build prototypes using clear labels and notes to support their design choices and needs. • To select tools appropriate to the task and purpose, including scissors and saws to cut materials and sticky and masking tape, glue guns and wallpaper paste or children's cement (flour, water and black paint) to join stones as a 'cement' to create a completed item. • To evaluate their own designs against a given criteria.	- onto a lightweight chassis (framework). • Gluing items together alone will not ensure that the prototype is secure. To strengthen, stiffen, and reinforce structures, cardboard triangles can be used. • How to use mechanical systems to allow their Mars rovers to move: • Glue a card triangle with a hole in for the wooden dowel to go through. • Loop an elastic band over the dowel at the back and through the dowel at the front. • Glue a wooden wheel to each end of the wooden dowel. • Turn the back wheels to wrap the elastic band around the dowel. • Let go of the wheels and the rover should move. • How to use DT tools and equipment effectively and safely (these will have close adult supervision at all times). • Saws: • Check that the area is clear and use a bench hook.	• Backstrap looms are portable so that they can be used wherever the weaver is. The four-post loom needs two weavers and is fixed to the ground. • A loom is the structure to give support and tension; the warp thread is strung vertically to give strength to the weave, the weft thread is woven under and over the warp threads to create the pattern. • A traditional embroidery sewing stitch is used to join two handwoven pieces together.
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name in the invention of modern board games. <u>Light and Sound</u> • Strengthening is to increase the capacity of an existing structure. • Design criteria are the clear goals that a project must achieve in order to be successful. • Innovative, functional, appealing products are fit for purpose, aimed at particular individuals or groups. • A cross-sectional diagram is like a picture of the shape we get when cutting straight through an object. For example, if you take a knife and cut through one side of a diagram to see the inside and outside in one picture. • A tool is anything that is used to make a change to something else or to help do a job.	<u>Bright Sparks</u> • Evaluate – investigate and analyse a range of existing products. • Design – know how to communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, pattern pieces. • Make – select from, and use, a wider range of tools and equipment to perform practical tasks. • Evaluate – their ideas and products against their own design criteria and consider the views of others to improve their work. • Technical knowledge – understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. <u>Mortimer Masterchefs</u> • Understand the principles of a healthy and varied diet. • Be able to apply the principle of a healthy and varied diet in selecting food to prepare and eat.	• Push the wood towards the lip of the bench hook and hold the wood firmly in place with one hand. • Use a bench hook to support the wood to be held firmly in place. • Place one foot in front of the other. • With the dominant hand, move the saw forwards and backwards in a steady motion until the wood is separated. • Do not touch the blades of the saw. • Glue gun: • Wait until the glue gun is heated. • Hold the materials being glued, making sure that fingers are not near the tip of the glue gun. • Gently squeeze the trigger of the glue gun until glue comes out. • Gently place the glue gun down on the heat protective mat. • Hold the materials together to allow the glue to set, making	
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• Joining is the process of attaching two different items together. • The I-brace method is to make an I shape with two pieces of material and attached with tape. • The tab method is to make small flaps which can alternate. • The fold method is to bend the material at the bottom so that it stands upright. • To analyse means to examine (something) in detail. • To evaluate means to identify the advantages and disadvantages of a product. • Key events and individuals in D&T have helped shape the world (history of puppetry e.g., Punch and Judy seaside shows).	• Know that certain foods are grown in this country and that some are grown abroad. • Know that some food travels great distances to reach us. • That some foods are now grown in the UK but were introduced as they are not native to this country, e.g., potatoes. • Know that most foods are grown in certain seasons. • Know what crops are grown in our local environment. • That the climate of a country influences the crops and foods produced there. • To know that not all foods are grown year-round and that we can break up what is produced into seasons. This is known as seasonality, and influences what foods are available when. • To research foods and develop a design for healthy meals aimed at people in our local area. • Understand that the menu ideas must appeal to people in the local area to encourage them to use them. • Create meal plans based on their understanding of the Eatwell plate.	sure that fingers are not touching the hot glue. • Do not touch the tip of the glue gun or the glue. <u>Magical Materials</u> • Reversible and irreversible changes can be found within cooking. • Dissolving, mixing, evaporating, melting, and freezing are examples of reversible changes. • Burning, heating, and mixing are examples of irreversible changes. • There are a range of cooking techniques and these produce changes (e.g., boiling, melting, mixing, whisking, heating, baking, freezing, cooling, dissolving). • How to use cooking equipment safely and effectively (toaster, oven, hob, freezer, whisk, mixer, sieve). • Certain ingredients impact the end product. Ingredients have an impact on the product's taste, texture and consistency. <u>Fantastic Fairgrounds</u> • In order to create a functional product that is fit for purpose, research and design adaptation is	
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<u>Splendid Shakespeare</u> • Design criteria are the clear goals that a project must achieve in order to be successful. • Innovative, functional, appealing products are fit for purpose, aimed at particular individuals or groups. • Annotated sketches are drawings with labels. • Cloth, textile or fabrics are similar names for manufactured material. They are often made by weaving or knitting fibres together. It is often used to make clothing or cover furniture. • Functional properties describe how materials behave during construction, how they affect the finished product in terms of how it looks, and feels. • Aesthetic qualities refer to qualities which determine the reactions of the senses; the eye (the colour and appearance) and the tactile	• Use detailed plans with annotations and sketches of their menu ideas. • How to select ingredients to combine to make a savoury dish using flavours that will complement each other. • To use a range of cooking techniques including chopping, boiling, sautéing, frying, or baking in an oven to produce dishes. • Understand that a lot of cooking techniques originate in France and so have French names. • Techniques including: Sauté, quenelle, flambé, julienne, batonnet, brunoise. • Know that they have drawn on influences from other countries to build on their own. • To use different tools and equipment to perform practical tasks. Including: ▪ A variety of knives to chop, dice and cut food safely. ▪ Vegetable peelers to remove skin from vegetables. ▪ Use spoons to make a quenelle. • Investigate a range of healthy dishes produced by high street	key. The functional product will be a carousel or ferris wheel, and will use a motor and pulley system to spin around. A carousel uses a horizontal rotation whereas a ferris wheel uses a vertical rotation. • The design brief is to design and produce a prototype of a fairground ride (either a carousel or a ferris wheel). • Annotated designs help to develop and communicate ideas clearly. • The purpose of a pulley is to lift heavy objects and it will also slow down the speed of the motor so that the ride does not move too quickly. • Electrical circuits need to be complete in order to work with all components attached. All circuits require: wires to carry the current through the circuit, a power source (battery) and a device to do some work e.g., light or motor. The purpose of a motor is to convert electrical energy to mechanical energy to allow a structure to move. • A switch can be used to turn the current in a circuit on or off. When	
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sense (how something feels). • Joining is the process of attaching two different items together. • The flange method of joining is to flare out the edges of a tube. • The I-brace method is to make an I shape with two pieces of material and attached with tape. • The slot method is to make a small incision half-way up the midpoint of two pieces of material and to slide them together. • The tab method is to make small flaps which can alternate. • The fold method is to bend the material at the bottom so that it stands upright. • A running stitch is created by simply running the needle and thread through the layers of fabric without backstitching. You are sewing a straight line of	supermarkets, e.g., smoothies, healthy ready meals and salads. • Evaluate the supermarket products against their own design criteria. • Evaluate and compare their products with supermarket brand products against their design criteria. • Carry out 'market research' within school to seek feedback for their healthy foods. • To evaluate their products against the design criteria and make changes based on market research to improve the final product.	the switch is open the circuit is broken so the current cannot travel. • How to make a carousel: ▪ Knock a piece of dowel into a wheel which will be the main axle. ▪ Glue the axle to the centre of a piece of card. ▪ Glue the roof onto the top of a jumbo straw using a small wheel. ▪ Fit a wooden pulley onto the straw. ▪ Place the jumbo straw over the dowel. ▪ Make sure that the motor is secure and glued down to the base (you could glue it to a cotton reel or small piece of wood). ▪ Fit a rubber band over the large wooden pulley and stretch it on to the small pulley attached to the motor. ▪ Adjust the large pulley so it is directly in line with the small pulley on the motor and then glue it to the straw so it stays in place.	
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stitches. These may be close together or farther apart.		▪ Attach one end of the battery to the motor and then include a switch. ▪ Add in own decoration. ▪ https://www.youtube.com/watch?v=QfEQOvEJ2uM • How to make a ferris wheel: ▪ Create a firm structure for the main tower: one piece of thick card 17cm long and another piece same width but 6cm long. ▪ Glue the pieces together and glue them to the edge of the base near the centre. ▪ Use two triangles either side to support the structure. ▪ Use a jumbo straw which is slightly longer than the width of the structure and sellotape or glue it to the top of the smaller card. ▪ Place a small pulley and large pulley on one end of dowel. ▪ Slide the dowel through the straw and place a small wheel on the other end to stop it falling out. Pulleys on the edge of the base.	
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		▪ Put a small pulley on top of the electric motor and glue it to the base making sure the pulleys line up with each other. ▪ Attach an elastic band joining the pulleys. ▪ Create a second pulley to sit on top of the main tower using a longer piece of jumbo straw (see previous instructions). ▪ Attach an elastic band to the top pulley and small pulley. ▪ Complete the circuit (see previous instructions). ▪ Use wood/lollypop sticks and foam to decorate the ferris wheel. ▪ https://www.youtube.com/watch?v=27iE2KnFXKk&t=37s • Gluing items together alone will not ensure the prototype is secure. To strengthen, stiffen and reinforce more complex structures, cardboard triangles can be used. • How to use DT tools and equipment effectively and safely (these will have close adult supervision at all times).	
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