Chaddlewood Primary School's DT Progression Grid

Skills and Knowledge	Year 3	Year 4	Year 5	Year 6
Substantive themes	• Create a design criteria. • Design a product and label ideas and materials. • Explore moving mechanisms in a wide range of cards and books • Use a range of tools to join, finish and cut paper and card. • Evaluate after investigating, which joining material is best. • Select appropriate materials to join card and paper securely. • Evaluate finished design. • Explore hot and cold pre bought fish dishes. • Evaluate and use evaluation to determine your own fish dish. • Refer to Eatwell plate and ensure that the dish which is created follows Eatwell guidelines. • Learn and use skills	• Create a design criteria. • Design a product and label ideas and materials. • Use a range of tools to join, finish and cut materials to create a textile purse and cam toy. • Use running stitch and blanket stitch to join materials together to create a textile purse. • Explore what components of a toy would be beneficial for a moving cam toy.. • Select appropriate tools to join securely. • Prepare rainforest cookies and understand the sections of an eatwell guide.	• Create a design criteria for the shadufs/boat for Panama Canal/Apple pies and seasonal salad. • Design a product and label ideas and materials. • Use a range of tools to join, finish and cut materials to create a boat and shaduf • Explore boats that have already been made • Explore pies and seasonal ingredients that are already available on the market • Explain the key ideas behind 'eating well and seasonality' • Select appropriate tools and materials to join securely. • Test both the shaduf and boat • Taste test both the apple pie and seasonal salad. • Evaluate to think	• Design a quiz board on healthy lifestyles for a specific target audience (KS1 children). • Make and evaluate a quiz board. • Use appropriate equipment and utensils to measure out, chop, combine and prepare ingredients • Follow a range of recipes and to think carefully about the presentation of their meal • Produce a product that has been carefully considered, taking in audience preferences • Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • Apply their understanding of computing to program, monitor and control their products. • Design, write and debug programs that accomplish specific goals, including

	specific to making fish cakes. • Evaluate final product-does it meet criteria? • Design a product and label ideas and materials. • Explore shell structures and recreate prototypes • Use a range of tools to join, finish and cut paper and card. • Design using CAD • Evaluate finished design.		about how all the designs and products could be improved.	controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Sequence, selection, and repetition in programs; work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
Cross curricular connections	Moving cards- Christmas Fish cakes-Geography Coastal topic wellbeing week. 3d boxes-Roman treasure boxes Smoothies-Humans and other animals- food groups, healthy eating balanced diet.	Textile purse linked to History - Vikings Cam toys linked to Geography - Antarctica Rainforest cookies linked to Geography - Rainforests	Panama boat linked to Geography of Modern Egypt. Shaduf linked to the History of Ancient Egypt. Shaduf linked science to work on forces. Apple pies link to History of the Americas and Harvest. Where 'grown' ingredients' come from (recap y1) Seasonal salad: link to wellbeing week and healthy eating. Where 'grown' ingredients' come from (recap y1)	Pasties and Calzones - link with geography/history topics in which the children study Campania (home of the calzone) and Plymouth Electronic quiz boards - link with science units on electrical circuits and science/PSHE units on healthy lifestyles Control systems - link with computing unit (Scratch) on creating and debugging algorithms; link with geography/history unit on Plymouth (children will be programming a lighthouse); link with Science unit on circuits.
Overlap of learning: which other areas in other year groups or topics does this relate to?	Reinforce cutting and joining. Reinforce Eatwell Plate. Reinforce design criteria. Reinforce cutting, grating	Reinforcing running stitch. Reinforcing eatwell guide. Reinforcing design criteria. Reinforcing use of tools. Recap the 6 steps to food	Reinforce cooking skills. Recap the 6 steps to food preparation. Reinforce design and evaluation process	Reinforce cooking skills. Recap the 6 steps to food preparation. Reinforce design and evaluation process

	etc skills Recap the 6 steps to food preparation. • **eatwell guide all year groups** • **Seasonality and 'caught' ingredients**	preparation. • **eatwell guide all year groups** • **Seasonality and 'processed' ingredients**	Reinforcing joining of word using cardboard triangles Reinforcing of use of saw and workbench Reinforcing the whole process from design criteria/sketching/ exploded diagrams/ test and evaluation. Building on from Year 3 CAD designs • **eatwell guide all year groups** • **Seasonality and 'grown' ingredients'(recap y1)**	Reinforce Y4/Y6 units on electrical circuits. Reinforce Y3/Y6 science units on light. Reinforce computing units on programming (Scratch) • **eatwell guide all year groups** • **Seasonality and 'reared' ingredients.**
Design innovative, functional, appealing products				
Design: By using research to create a design criteria aimed at particular individuals or groups	Christmas Cards for family-research different types of moving parts in cards and books. Fish cakes-A healthy class snack/ meal. Try different bought fish dishes. Look at different types of fish which people eat. Roman Treasure box-a suitable box to put a" Celtic cauldron" made by the children in, so it need to meets specific size criteria Smoothies-a balanced diet, nutritional benefits of the food groups, where the food originates from.	Children will research Viking purses. Children will research how cam mechanisms work Rainforest cookies - children will research Fair trade and sustainable products	Panama boats- Chn carry out research on boats that they bring in/pictures of boats and research boats on Chromebooks. Shaduf-Research how Ancient Egyptians got water from the Nile. Look at pictures of shadufs, then design their own for Farmer Nile so he can water his crops. Apple pies and Seasonal salad: after chn have sampled the various pies and seasonal ingredients they can create a design criteria based on this and peer feedback.	Calzones and pasties - choose ingredients based on researching peer preferences. Quiz board- designed for a Key Stage 1 child based on CAFQES (Customer, Aesthetics, Function, Ergonomics, Quality, Usability, Environment, Safety) criteria. Electronic control systems - lighthouses designed for KS1 children
Generate, develop, model and communicate their ideas through	annotated sketches, Cross-sectional diagrams,	annotated sketches, exploded diagrams,	annotated sketches, Cross-sectional diagrams,	annotated sketches, exploded diagrams,

	prototypes., computer-aided design	prototypes, pattern pieces,	CAD,	prototypes,
Design: Annotated sketches, Cross-sectional diagrams, exploded diagrams, prototypes., pattern pieces, computer-aided design	Moving cards- annotated sketches Fish cakes- Cross sectional diagrams Boxes- CAD, Prototypes Smoothies- cross section labelled diagrams	Cam toy- exploded diagrams Linked to Antarctica. A moving toy consisting of a penguin jumping out of the sea. Textile Purse- pattern pieces and prototypes Viking purses made from thick material, with a belt for the purse to hang from. Rainforest Cookies- Annotated sketches.	Panama boats- Annotated sketches and cross-sectional diagrams including birds eye view with measurements. CAD use for prototypes of design Shaduf- annotated sketches, exploded diagrams Apple pies - sketch a design for finished pie, show with a cross section to include the filling Seasonal salad- sketch salad as an exploded diagram to show which ingredients they have chosen for final design.	Electronic quiz board- annotated sketches, prototypes, exploded diagrams Calzone and pasties - children create a recipe that is matched to the tastes of their target audience (Y6 peers) Overnight oats - children create a recipe that is matched to the tastes of their target audience (family members)
Design: work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].	Context: Card- family Context: Fish cakes- Class snack Context: shell structure- culture Context:Smoothie- healthier than bought smoothie.	Context: Purse- culture Context: CAM- school Context: Cookies- community (fair)	Context- leisure (Legoland boat) Context- Shaduf Industry (Farmer Nile)	Context- Quiz board KS1 school children (school) Context- Electronic control system for KS1 children. Link to school/ industry (design a lighthouse) Context - children will design a calzone or pasty to meet the tastes of Y6 peers. Overnight oats- children create an overnight oats to meet the tastes of family members so that they can replicate their recipe at home.
Working with a wider range of tools and equipment to perform	For example cutting, joining, construction materials,	For example cutting, joining, finishing,	For example cutting, shaping, joining, finishing,	For example cutting, shaping, joining,

practical tasks		construction materials, textiles	construction materials,	construction materials,
Make: Tools and joining: For example cutting, shaping, joining, finishing, construction materials. Tools used	Moving Cards-Joining techniques, cutting skills, making prototypes, embellishing finished product Shell structure- polygons as a prototype to see how 3d shapes are formed. CAD-to design structure to set size. Joining card techniques focused on when making moving cards,embellishing finished product Smoothies-reinforcing tools used for cutting, chopping, grating etc.. Used for making smoothie.	Purses- cutting material, joining by sewing. CAM mechanisms- cutting cardboard, joining cams to the toy. Cookies - rolling pins, mixing, weighing, cutting,	Panama boats- scissors, tape, glue, net design is given as a choice to minimise joining Shaduf- tools used are workbenches and saws independently. Joining wood together- (Cardboard triangles) Apple pies and seasonal salad: slicing/cutting, mixing, breadcrumb technique (for pastry) Finishing for pastry and moulding a shape for the pastry crust.	Calzones/pasties - children will use rolling pins to roll out dough; a knife to cut the dough into circles (using a plate as a template); egg mix to bond pastry; a knife to cut ingredients such as onion; scales to weigh out different ingredients; graters to grate cheese. Children will also begin to use a hob to cook ingredients with adult supervision. Children use scales to measure out ingredients. Measuring, cutting, joining techniques used to construct electronic quiz board (and prototype) Measuring, cutting, joining techniques used to construct lighthouse to house programmable circuit
Make: select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities	Moving cards-selection of card, embellishing materials, split pins, Fish cakes-basic ingredients-fish, potatoes and what ingredients the child has chosen in accordance with the Eatwell plate. Treasure boxes-card, joining materials, embellishing materials Smoothie-basic	Viking Purses: Chn to use felt and thread to stitch with. Cam mechanism. A moving toy consisting of a penguin jumping out of the sea. Children will use cardboard, wooden cogs, dowling, PVA glue, string Cooking - Rainforest cookies. Ingredients - flour, brown sugar, coconut, butter, chocolate, raisins, cinnamon.	Panama boats: Chn to choose materials to use from: tin foil, cling film, electrical tape, PVA Glue (to waterproof) Shaduf: Chn will choose materials from: wood, pipe cleaners, cardboard triangles, straws, paper sauce cups, yoghurt pots, plasticine, PVA glue, electrical tape, cling film, lollipop sticks, string. Apple pies and seasonal	Calzone and pasties: children select ingredients based on peer feedback Electronic quizboards: children select materials based on their function and aesthetic appeal Control systems: children select materials to construct a lighthouse to house their programmable circuit

	ingredients-from 3 different nutritional groups depending on what the group has chosen in accordance with the Eatwell plate.		salads: chn to select ingredients from trying the ingredients and peer feedback.	
Textiles		Viking Purses- running stitch and blanket stitch to hold purses together. Purses made from felt.		
Health and safety	Joining materials Scissors Knives-correct cutting mathds to be reinforced. Boiling water-cooking potatoes	Joining materials Scissors Needles Cutting tools for cam mechanisms Hot oven for cookies Using saws and workbenches correctly.	Shaduf: Using saws and workbenches correctly. Apple pies and seasonal salad: use claw and bridge grip and explain safety involving a knife.	Calzone and Pasty: Recap claw and bridge hold positions when cutting. Electronic quizboards: Design criteria sheet to consider how to make the product safe.
Evaluate				
Investigate and analyse existing products.	Investigating moving parts in cards and books. Taste testing fish products-both hot and cold. Disassembling boxes to investigate how the box is joined. Taste testing bought smoothies and comparing their ingredients- are they nutritional good?	Purses - do they work? Can you put coins in them and keep them safe? Cam mechanisms - do they work? Does the penguin jump out of the sea? Taste testing the Rainforest cookies.	Cardboard boats: test out with water and cubes for weight. Does it fit the design requirements? Shaduf: test out designs with water, does the lever mechanism work? Does it fit the design requirements? Apple pies and Seasonal salad: Chn to try a mixture of pies that are readily available in supermarkets to think about ingredients. Chn try a mixture of salad ingredients that are seasonal such as: radishes/cucumber, carrots, rocket etc.	Calzones and pasties: children taste samples and ingredients. Which do they like/dislike? Which ingredients would they swap? Electronic quiz boards: children bring in games (including circuit games such as operation) to assess how they work and analyse functional aesthetic considerations

Evaluate their ideas. Consider the views of others to improve their work.	Individual evaluations. Did the moving mechanism work and fulfil their criteria? Did the fishcake fulfil their criteria? Did it meet Eatwell criteria too? Did the Celtic cauldron fit inside the box?	Does the purse match the design? Is it fit for purpose? Does the toy move effectively? Do the cookies taste nice? Can you taste the different choices? What would you do to improve them next time?	Panama Boat and Shaduf: Evaluate the designs as a class, using class feedback. Apple pie and seasonal salad: evaluate through using the senses and allow others to try the creations. Chn then to complete an evaluation sheet to show what they liked/disliked and how/what they would choose to change if they made it again.	Calzone and Pasty: children complete an evaluation sheet, considering if they prefer a pasty or calzone. Vegetarian or meat. Also, what were the differences between the two are. Justifying their answer. Electronic quiz boards: children tested these out on the KS1 children. Took feedback about design and ease of use. Control systems: children to evaluate based on feedback from KS1 children.
Understand how key events and individuals in design and technology have helped shape the world	Compare with other cooks for example-Nadiya Hussain "Nadiya's Family Favourites" Where do smoothie ingredients come from? Research different countries and discuss importing fruit, oats etc..	Rainforest cookies - Fairtrade and sustainable ingredients	Panama boat- James Dyson Apple pie making - show factory versus homemade versions both locally and around the world.	Electronic quiz boards- Thomas Edison and/or Alexander Graham Bell
Technical knowledge	strengthen, levers and linkages	strengthen, stiffen [for example, gears, cams, levers and linkages]	strengthen, stiffen and reinforce more complex structures (year 2 science link) [for example, gears, pulleys, cams, levers and linkages]	understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products
Technical Knowledge: Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	Moving cards-so that the card does not collapse Treasure box-joining sides of the box to make a stable 3d structure.	Viking purses - ensure that they are held together securely by ensuring that stitching is strong enough. Cam mechanisms - ensure that the moving parts move	Shaduf: how to make structures secure by reinforcing corners.	Electronic quiz boards: consider how to reinforce boards so they are robust enough to be used by KS1 children

		smoothly and are steady		
Technical Knowledge: understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages	Levers and linkages-children make different systems as prototypes to explore.	Understand how a cam mechanism works.	Shaduf: Levers make work **easier** to do by allowing a **smaller force** to have a **greater effect. Linked to year 5 science unit on mechanisms.**	
Technical Knowledge: understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]				Electronic quiz boards incorporate circuits Control systems incorporate circuits
Technical Knowledge: Apply their understanding of computing to program, monitor and control their products				Control systems: children use software to program, monitor and control their products (lighthouses)
Cooking and Nutrition	caught	grown, and processed.	grown, and processed.	grown, reared, processed.
Understand and apply the basic principles of a healthy and varied diet	Eat well guide- find/place ingredients they are using and discuss which portion of a balanced diet it covers.	Eat well guide- find/place ingredients they are using and discuss which portion of a balanced diet it covers.	Eat well guide- find/place ingredients they are using and discuss which portion of a balanced diet it covers.	Eat well guide- find/place ingredients they are using and discuss which portion of a balanced diet it covers.
prepare and cook predominantly savoury dishes dishes (see skills sheet)	Fish cakes- Smoothies-try savoury smoothies- kale, spinach, avocado.	Rainforest biscuits-	Apple pies- Seasonal salad-	Calzone vs pasty- Overnight layered oats-
understand seasonality	Use new potatoes in the summer Discuss importing	Ingredients are from the rainforest where there are no seasons.	Apples in autumn Seasonal leaves and salad items: http://www.eattheseasons.c	Use http://www.eattheseasons.co.uk/june.php to review fruits and berries that are

	fruit-which fruits/vegetables are seasonal?		o.uk/november.php As appropriate.	in season. Incorporate into the design of overnight oats.
know where and how a variety of ingredients are grown, reared, caught and processed.	Investigate and research the fishing industry and potato farming.	Understand that the ingredients for the rainforest cookies come from rainforest areas and are not grown here.	Use apples from the apple tree outside the school office. Explore harvest and food storage.	Review the environmental, social and economic benefits of eating local food. Review the origin of fruits used in overnight oats.
Vocabulary	**Lever and Linkages** pivot, slot, mechanisms lever and linkage system, input, process, output linear, rotary, oscillating, , prototype, **Fish Cakes and Smoothies** basic recipes of equipment, utensils, techniques and ingredients **Roman Treasure Boxes** shell structure, three-dimensional (3-D) shape, net, prism, vertex, edge, face, length, width, breadth, capacity marking out, scoring, computer with computer-graphics, decision, aided design (CAD) prototype	**Viking Purses** running stitch, blanket stitch, materials, felt, drawstring, needle, thread, pattern, template **Penguin toy** pivot, slot, cam mechanism, lever and linkage system, input, process, output, rotary, oscillating, prototype **Rainforest cookies** recipe, equipment, utensils, technique, ingredients, cream (cream ingredients together), fold (fold ingredients together), weigh	**Boats**: Weight, mass, 2D, 3D, net, ballast, purpose, buoyancy/buoyant, dimensions. **Shadufs:** Lever, weight, balance, counter balance, lift, purpose, materials, support, strength, triangles. **Apple pies:** Variety, sweet, tart, sour, pastry - short crust/puff, garnish, slice/dice, stew. **Salads:** Availability, leaves, chop, grate, dress.	**Calzones and pasties** garnish, functional, ingredients **Electronic quiz boards** electrical component circuit cell design criteria techniques prototype adhesive strengthen rigid flexible bradawl assemble dismantle evaluate target audience joining corrugated equipment mechanism environment material **Control systems** circuit component input/output Light Dependent Resistor cell battery positive/ negative algorithm sequence loop variables debug programme crocodile clip buzzer series