CALVERLEY PARKSIDE

Design and Technology Planning

Throughout the year/ phase, there needs to be a balance of the following areas:

Construction Textiles Cooking and Nutrition

When planning sequences of learning, please refer to the school's Design and Technology planning guidance.

	Project 1	**Project 2**	**Project 3**
Year 1	Off-road travel (construction)	Super smoothies (Food)	Improving our local area
Year 2	Boat building (Construction)	Bridge to safety (Construction)	Holiday spending money- design a money holder (Textiles)
Year 3	Shaduf design (Construction)	Primitive sandals (Textiles)	French cafe (Food)
Year 4	Healthy trail bar (Food)	Roman catapults (Construction)	Victorian carousel (Construction-mechanical)
Year 5	Viking Shields	Mayan Grand Designs (Construction)	Rainforest Masterchef (Food)
Year 6	Greek Chariots (Construction-mechanical)	WW2 Bunting (Textiles)	River crossing (construction/ electrical)

Year 1		
Project 1- Off-Road travel (construction)	**Project 2- Super smoothies (Food and nutrition)**	**Project 3- Improving our local area**
Suggested sequence of learning: Introduce the hook/problem: to design and create a model of a car which could travel across an off-road surface. Children to think about what a car might have to look like to travel on an off-road surface. Look at some pictures of other actual vehicles and models of vehicles. Think about the materials they could use- boxes/ cotton reels/ wooden wheels. How can you make it so that the wheels go round? Children to produce a simple design of what their vehicle is going to look like. Add labels to the design. Children to make their models and then evaluate, saying what they liked about them and what they would change next time.	**Suggested sequence of learning:** Introduce the hook/problem: to design and create a healthy smoothie. Children take part in a taste test of different possible ingredients. Introduce them to some different fruits which they may not have experienced before. As a class, devise a way of recording opinions about the taste of the different fruits. Have a look at some real life smoothies and investigate the ingredients. What ingredients go well together? Start to introduce the idea of seasonality- some foods are only available at certain times of the year. Where have the ingredients come from? Children to design their own smoothies. Draw a picture of the ingredients and label them. Children to make their smoothies. For the softer fruits, such as banana, children can have a go at chopping using the bridge method (teacher to model first). Children to evaluate their smoothies- did you like the taste? What would you change if you did it again?	**Content to be added**

PROGRESSION			
	Construction	**Food and nutrition**	**Textiles**
Year 1	**Moon travel** This construction unit encourages children to think about the purpose of their design. What is it for and so what should it look like? The children will select from a limited range of materials.	**Super smoothies** This food and nutrition unit introduces the children to taste-testing possible ingredients. They also have a go at chopping some of the softer fruits. Children consider what makes a drink healthy and where different ingredients might come from.	

Year 2		
Project 1- Boat building (Construction)	**Project 2- Bridge to safety (Construction)**	**Project 3- Holiday spending money (Textiles)**
Suggested sequence of learning: Introduce the hook/problem: to design and create a prototype of a boat which could be used to travel from one island to another. Introduce the design criteria: the boat must float and must be able to be powered by the wind. It must be made from suitable materials Children to look at images of different boats and their design features (shape/ sails etc). Children to explore the different materials they could use for their models and carry out investigations to determine the suitability of the different materials. Children to draw and annotate a design of their boat. Children make the boat. As a class, test the boats based on the design criteria. Children evaluate their designs referring to which boats floated and travelled most effectively. What would they do to improve their designs?	**Suggested sequence of learning:** Introduce the hook/problem: to design and create a bridge across the River Thames to help more people cross the river and get to safety. Introduce the design criteria: must be a certain length (teacher to decide), must be strong, must be a certain width (teacher to decide). Children look at images of different bridges to look at design features (emphasis on how to make products stronger, stiffer or more stable from the AREs). Children look at the range of materials available to them for making the bridge, art straws, card, etc. . They explore using the materials and using different types of joins to support the bridge. Children draw and annotate a design of their bridge Children make the bridge in small groups using their design. Test as they go along, making changes in response to their success (if it isn;t strong enough, how could it be strengthened?). As a class, test the bridges according to the design criteria. Children evaluate by saying why the winning bridge was most successful and by saying what they would do to improve their bridge.	**Suggested sequence of learning:** Introduce the hook/problem: to design a holder to carry their spending money on their trip to the seaside. Introduce the design criteria: must be secure so that money does not fall out. It must fit in a pocket and should be aesthetically pleasing with a design which suits the person it is intended for. Children to look at a range of purses/ wallets and consider the materials they have been made from. Think about the materials available to make their own (felt/ cloth pieces). Children to practice using the relevant stitches. Children to draw and annotate a design for their money holder. Make the product individually. Evaluate the product, referring to the design criteria. What would they do to improve their designs?

PROGRESSION			
	Construction	**Food and nutrition**	**Textiles**
Year 2	**Boat building** This construction unit requires the children to select from a range of materials. They will think about the best way to join materials (for example, the mast to the boat). This builds on the construction unit in Y1 by providing the children with more freedom when selecting materials and more independence when deciding how to join materials. **Bridge to safety** This builds on the construction unit earlier in Y2 by requiring the children to think carefully about the design brief. The children are required to investigate a range of existing bridges when deciding how to create their own. They will build on their experiences of selecting suitable materials in prior projects.		**Money holder** In this textiles unit, children will practice basic stitches and follow a design brief. They will learn and practice running stitches and over stitches.

Year 3		
Project 1- Shaduf design (Construction)	**Project 2- Sandals (Textiles)**	**Project 3- Cafe (Food and nutrition)**
Suggested sequence of learning:· Learn about a shaduf- what it was used for and how it was used. Children to look at a range of pictures. Decide what the design criteria for a shaduf would be: it needs to be able to lift water from a lower point to transfer it to a higher point. After learning about how they were used, children annotate a design to explain what the different components were and how they were used. Introduce children to some materials and tools that they will be able to use when making their own shaduf, for example wood from the frame. Children design their own structures using the materials. They will need to practice using the saws to cut the wood to the correct length. This should be carefully modelled by the teacher. Children will also need to practice tying knots and using string to bind pieces of wood together securely. Again, teacher to model this. Children make their shaduf. They will need to use trial and error to get the counter weight correct and place the lever in the correct place on the frame. Children test their designs by filling a container with water and seeing if they can fill the 'bucket' and move it. If necessary, children make tweaks to their shadufs and repeat the test. Children evaluate against the design criteria.	**Suggested sequence of learning:** Look at some primitive sandals used by Stone-Iron Age humans. Identify the materials they were made from and how they were joined. Compare to some modern sandals/footwear. What's the same? What's different? Set context of DT learning, eg designing a pair of modern sandals or slippers. Or designing a pair of stone age sandals. Decide the design criteria for the footwear according to what the product will be used for. Introduce children to the materials and tools available to them for this project. Tell them that a key factor in the success of the product will be their ability to join materials together by sewing.Children design their products using an annotated design. They practise sewing skills using scrap pieces of material. They should practise different stitches to find the strongest, eg. running stitch, overstitch. They use paper to draw a template for their design and then use template to cut out their pieces of material. Children then join the pieces together. Children finish their products by adding decoration or extra functional components according to their design . Evaluate the product by saying what went well, what was not as successful and what they would do differently next time.	**Suggested sequence of learning:** In this child-led project, children will work in groups to plan their own café. They will need to decide the following: · What type of food will be served in the cafe? Create a menu. · The branding for their café- think of a name and design a logo. · Food labelling so people know what's in their products. · · Children will prepare one item from their menu to sample. Children to learn about how to ensure good hygiene when preparing food and about how to cut ingredients safely using the bridge and claw method.

PROGRESSION			
	Construction	**Food and nutrition**	**Textiles**
Year 3	**Shaduf challenge** This construction project builds on ones from KS1 by introducing the children to a wider range of materials and tools (for example saws and drills). The children will be required to consider how to join materials in appropriate ways to achieve a desired strength. They will also start to evaluate their projects as they work through them as opposed to just at the end of the project.	**French cafe** This food and nutrition unit builds on previous ones as it encourages children to think about food labels and what is in their food. The children will also practice safe cutting techniques for a wider variety of ingredients. They will have the opportunity to prepare samples of foods as well as one full menu item (cold savoury).	**Sandals** This textiles project builds on the one from KS1 as it requires the children to use a paper template for their design. The children will experiment with the different stitches they have learnt to see which is most suitable. Introduce the children to the back stitch.

Year 4		
Project 1- Healthy trail bar (Food and nutrition)	**Project 2- Roman catapults (Construction)**	**Project 3- Victorian carousel (Construction- electrical)**
Suggested sequence of learning: Introduce the hook/ problem: The children need to create a healthy trail bar which they can take with them on their hike in the mountains. Investigate other snacks which people might take with them on long walks. What things are important (high energy/ high protein/ slow release energy etc). Taste test the ingredients. Investigate other recipes- what additional ingredients are required to bind it together? Children to work in design groups to create an annotated diagram of their trail bar, including listing the main ingredients and quantities. Children to make the product in their design groups. They should also design some packaging for their product. Evaluate their product.	**Suggested sequence of learning:** Introduce the hook/ problem: To design and make a model of a roman catapult to defend your settlement. Investigate Roman catapults- what did they look like? What were they used for? What were they made out of? The design criteria for the catapult is that it can propel a marble a minimum distance of at least 50cm. Children to consider the different materials they could use. Children must use saws and a drill to make their products.The use of these must be carefully modelled by the teacher. Children draw an annotated design for their product based on research of catapult designs. Children build catapults. Test the catapults according to the design criteria. Evaluate their own and others catapults. Suggest improvements and top tips.	**Suggested sequence of learning:** Introduce the hook/ problem: To design and make a model of a Victorian fairground ride. Children to investigate different Victorian fairground rides- what they looked like and why they were so popular. Design criteria- The appearance must reflect the Victorian period and it must move by battery power. The children will be provided with the details of which electrical components to use, but they must decide how to secure the components to the model. Children to produce an annotated design for their model based on their research. They must consider how the componentry will be fastened on to the model. Children to make the model in small groups. Evaluate the model against the design criteria and consider- what were you pleased with and what would you change next time?

PROGRESSION			
	Construction	**Food and nutrition**	**Textiles**
Year 4	**Roman catapults** This construction project builds on the one in Y3 by introducing the concept of forces. The children will be required to work out how to propel an object as far as possible. They will use the skills they practiced in Y3 (cutting/ joining etc). **Victorian fairground rides- electrical** This construction project builds on the one they have done earlier in the year by introducing electrical components.	**Healthy Trail Snack** This builds on the previous food and technology unit as it encourages children to be thinking about the specific qualities of the product they are creating, for example, the need for it to contain a high amount of energy. They will also start to think about the importance of suitable packaging.	

Year 5		
Project 1- Viking Shields	**Project 2- Mayan Grand Designs (Construction)**	**Project 3- Rainforest Masterchef (Food and nutrition)**
Suggested sequence of learning: Introduce the hook/ problem: Children to design a prototype of a Viking shield which they could take into battle. Children to investigate different Viking shield designs. What would they have been made from? Why were the designs important/ what did they signify? Design criteria: The shield needs to be a suitable shape and size. It needs to have a carefully considered design. Children to experiment with a variety of different designs before chasing the one they want to use for their own shield. Children to make their shields using sturdy cardboard and paint. How can they make the metal sections look like metal? What could be used for the centre of the shield? Children to evaluate their final designs against the design criteria, taking into account feedback from peers.	**Suggested sequence of learning:** Introduce the hook/ problem: To design and make a model of a Mayan dwelling. Children to investigate what a Mayah house looked like. What materials may have been used and why? Link to knowledge about the areas the Mayans lived in. Design criteria: The house design needs to reflect the houses of the time, including the materials which are used. All elements of the house need to be as realistic as possible. There needs to be a base to the house. The house needs to be stable and the roof needs to have an element of resistance to water. Children to produce an annotated design, considering the materials they will use and, crucially, how these will be fastened together. Children to make their design, individually or in pairs. As they go through the making process, they need to be constantly evaluating and making the necessary changes. These can be recorded in the design diary. Test the houses for stability and resistance to water. Evaluate the final designs.	**Suggested sequence of learning:** In this project, children will compete in a MasterChef competition, completing different tasks as they go: Blind taste testing of different fruits and vegetables. ‘Dissecting’ meals into the different ingredients they are made from. Categorising foods into the main food group they belong to. Ability to find key information from packaging, eg. Best before date or use by date, country of origin, nutritional information Knife skills, eg. ability to safely and competently use bridge and claw techniques for chopping vegetables Food hygiene quiz Creating a ‘signature’ dish which they make in a small group. **This unit needs to include some cooking processes (ie, not just cold savoury food).**

PROGRESSION			
	Construction	**Food and nutrition**	**Textiles**
Year 5	**Mayan Grand Designs** This construction project will require the children to use the skills and techniques they have learnt in lower KS2. They will also be required to consider a wider range of natural materials and alternative ways of joining materials (for example binding). They will be required to test their end product for specific qualities (such as resistance to water).	**Rainforest Masterchef** This food and nutrition unit builds on previous ones as children will have the opportunity to 'dissect' a meal into the different ingredients it is made from. They will develop their ability to cut safely and their understanding of good food hygiene. They will be expected to use their knowledge and understanding of ingredients, including the different food groups, to prepare their own dish. This unit will include the children cooking hot food. They will also explore the concept of seasonality and develop their understanding of where and how certain ingredients are grown etc.	

Year 6		
Project 1- Greek chariots (Construction- mechanical)	**Project 2- WW2 Bunting (Textiles)**	**Project 3- River crossing (Construction- electrical)**
Suggested sequence of learning: Look at some moving vehicles from across time (including a chariot). Explain that all of these vehicles would have been designed before being built. This design process may have looked different depending on the time. It could have involved discussion between designer and maker, annotated drawings, prototypes, computer aided design. Children should understand that all products go through a design process. Look at the designs of Greek chariots and discuss what they think the design criteria for a chariot was: one or two people can stand inside it, it has walls for protection, it has wheels so it can be pulled by horses. As a class, decide the design criteria for the chariots they will make. This must include that the chariot needs to be powered by an elastic band. Introduce children to the materials that they will be able to use to make their own chariots: square dowels, round dowels, card, PVA glue, wooden wheels of different sizes, lollipop sticks. Introduce children to the tools that they will be using: scissors, saw, drill, PVA glue. Children do some online research to inform the design of their chariot. They could be directed to search for chariots using the terms 'DT' and 'KS2' to get images of products made by children. Children draw a design of their chariot and annotate it. Children practise sawing skills by cutting pieces of dowelling using saws. Needs clearly modelling by T first. Children create the base of their chariot and once dry attach the axel and wheels. They then create the walls using card or lollipop sticks. They then attach some	**Suggested sequence of learning:** Children will design and make their own bunting in this project. Each child will design and make one triangle and they will be put together to make a class display. Throughout the sequence of learning, children will: Recap different stitches that they have learnt so far in DT: running stitch and over stitch. Practise both of these stitches joining pieces of scrap material together. Design bunting following research on suitable designs. Do this on paper first. Children to look at real examples of bunting to see how it has been constructed. Each bunting triangle needs to be double thickness. The bunting must include additional design elements/ decoration which are sewn on to the bunting. Consideration must also be given to how their bunting will fasten on to the ribbon which will hold the bunting up.	**Suggested sequence of learning:** Introduce the hook/ problem:The children need to design a method of crossing a river using a cable and basket design. Children to use iPads and laptops to research different types of river crossing. Focus attention on the cable and basket crossings. Why would these be used instead of a permanent bridge structure? Design criteria: The crossing model must have a supporting structure at each end. The crossing must be battery powered and the basket must be able to hold at least 20g without the structure collapsing. The crossing must span a gap of at least 50cm. Children to work in design teams to produce an annotated design for their crossing. This must include the materials which are going to be used, how they are going to fastened together to ensure strength and stability and how the electrical mechanism will work. Initially, children will need to work this out for themselves. Children to build the structures in their design teams. Test the crossings against the design criteria and then evaluate.

string/ wood to act as the reins for the chariot. Test chariots by attaching the 'reins' to a vehicle. Can the chariot be powered by the elastic band? Evaluate the chariots in a piece of written work detailing successes, areas for development and top tips for future chariot builders.		

PROGRESSION			
	Construction	**Food and nutrition**	**Textiles**
Year 6	**Greek chariots- mechanical** In this construction project, the children will use the skills and techniques they have practiced in the previous years (selecting materials/ cutting/ joining etc). It builds on previous units by introducing the requirement to make the chariot move mechanically. The children will be in control of solving the problem of how to do this. **River crossing- electrical** This construction project builds on previous ones by requiring the children to refer to their experiences of using electrical componentry in Y4 to work out independently how to make the basket move along the rope. They will use their experience of selecting appropriate materials, cutting and joining to ensure that their structure is stable.		**WW2 bunting** This textiles project builds on the previous ones as it introduces the children to the blanket stitch. They will need to select the most appropriate stitch to use. They will also use needles with a smaller eye. The children will need to add an applique design to their bunting and then use a blanket stitch to sew the two sides of the bunting together.