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Design	Make	Evaluate
▪ List tools needed before starting the activity. ▪ Plan the sequence of work e.g. using a storyboard. ▪ Record ideas using annotated diagrams. ▪ Use models, kits and drawings to help formulate design ideas. ▪ Combine modelling and drawing to refine ideas. ▪ Devise step by step plans which can be read / followed by someone else. ▪ Use exploded diagrams and cross-sectional diagrams to communicate ideas. ▪ Sketch and model alternative ideas. ▪ Decide which design idea to develop.	▪ Make prototypes. ▪ Develop one idea in depth. ▪ Use researched information to inform decisions. ▪ Produce detailed lists of ingredients / components / materials and tools. ▪ Use a computer to model ideas. ▪ Select from and use a wide range of tools. ▪ Cut accurately and safely to a marked line. ▪ Select from and use a wide range of materials. ▪ Use appropriate finishing techniques for the project. ▪ Refine their product – review and rework/improve.	▪ Research and evaluate existing products (including book and web based research). ▪ Consider user and purpose. ▪ Identify the strengths and weaknesses of their design ideas. ▪ Give a report using correct technical vocabulary. ▪ Consider and explain how the finished product could be improved related to design criteria. ▪ Discuss how well the finished product meets the design criteria of the user. Test on the user! ▪ Understand how key people have influenced design.

Food	Textiles	Structures	Mechanical and Electrical Systems and ICT
▪ Prepare food products taking into account the properties of ingredients and sensory characteristics. ▪ Weigh and measure using scales. ▪ Select and prepare foods for a particular purpose. ▪ Work safely and hygienically. ▪ Show awareness of a healthy diet (using the eatwell plate). ▪ Use a range of cooking techniques. ▪ Know where and how ingredients are grown and processed. ▪ Consider influence of chefs e.g. Jamie Oliver and school meals, Hugh Fearnley-Whittingstall and sustainable fishing etc.	▪ Use the correct vocabulary appropriate to the project. ▪ Create 3D products using patterns pieces and seam allowance. ▪ Understand pattern layout. ▪ Decorate textiles appropriately (often before joining components). ▪ Pin and tack fabric pieces together. ▪ Join fabrics using over sewing, back stitch, blanket stitch or machine stitching (closer supervision). ▪ Combine fabrics to create more useful properties. ▪ Make quality products.	▪ Use the correct terminology for tools materials and processes. ▪ Use bradawl to mark hole positions. ▪ Use hand drill to drill tight and loose fit holes. ▪ Cut strip wood, dowel, square section wood accurately to 1mm. ▪ Join materials using appropriate methods. ▪ Build frameworks to support mechanisms. ▪ Stiffen and reinforce complex structures.	▪ Develop a technical vocabulary appropriate to the project. ▪ Use mechanical systems such as cams, pulleys and gears. ▪ Use electrical systems such as motors. ▪ Program, monitor and control using ICT.

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Possible Cross-curricular links, especially opportunities for English, Mathematics and Computing within teaching:	
English links	• Written report on the effectiveness of their product.
Mathematics links	• Creatin 3d shapes as a structure
Computing links	•
Other links	•

Possible Experiences including visits/visitors/other:

Consider what could augment your planning to really enthuse the children in your class:

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Display/Resources:

Consider what resources could be brought into the classroom and what display work could be completed either before/during or after topic is taught:

Session	Key Objective from skills listed above (What is it that you want the children to learn?)	Possible Activities including use of Computing and other technologies, and showing at least 3 differentiations	Outcomes/Evidence of what they have learnt (Where will this be found? Will it be in a book? Topic book? Display? Photographic evidence?	Possible extension into homework if appropriate to enhance and deepen learning
1	To look at a range of familiar products that use rotating parts.	How many different fairground rides have you been on? What were they like? How did they move? Invite children to share their ideas. Look at the different pictures of fairground rides on the slides. Ask questions for each of the different pictures: How does the ride turn? Can you see the mechanism that turns the ride? How are the components joined together? Explain that lots of fairground rides and other everyday objects use electric motors to make them work.	Annotated sketches in books.	Can children find anything else that works using a rotating motor?

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		Show children the picture of the circuit with a motor on. How does the motor work? Children to share ideas (this will have been covered earlier in the school term during science) . How many other objects can you think of that might use an electric motor to make parts rotate? Children to discuss ideas with a partner then share with the class. LA - Ask children to sketch one of the fairground rides from the Picture Cards and ask them to label how the rotating parts work using the vocabulary on the sheet to help. MA - children to sketch two of the fairground rides from the Picture Cards and label how the rotating parts work on each ride B.		
2	To investigate ways of using electrical motors to create rotating parts.	Can chn remember from science lessons the components needed to make an electrical circuit with a motor? Provide groups of children with equipment – can they get the motor working? How can we use this to make a fairground ride with a rotating? part? What would we need to attach to the motor? What different kinds of rotating parts could we have? Chn share their ideas. Go through the information on the ppt showing how pulley and belt systems can be used to transfer movement from one axle to another. How could we use this in a design for a fairground ride? Tell children that today they will be investigating how to use these systems to create different kinds of fairground rides. What rides do you think might use systems like this? Children to discuss and share ideas. Provide children with wires, motors, switches, card and any other appropriate materials and ask them to create a circuit that would be suitable for making a merry-go-round	Children to be able to draw diagrams in their books of working circuits – photographs to also be stuck in book	

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3	To investigate ways of making a framework for a fairground ride.	Show children the pictures of various fairground rides and ask them to think about how they could create the frameworks for these rides using e.g. card, wood, doweling, etc. . Go through the ppt showing different ways of strengthening materials and joins, e.g. using added triangles and diagonals. Children to work through the differentiated challenges describing how they could use the ideas in their designs for their own fairground rides – children to work in groups of 3. Each group to be provided with a variety of resources. .	Annotated pictures / photos to be put in DT books	Children to think of ideas for their own fairground ride.
4	To be able to design a fairground ride with a rotating part.	What ideas have you had so far about how you could design your own fairground ride? Encourage children to think about the work they have done on using circuits and motors, and on creating stable frameworks. Explain that over the next few lessons they will be working in 3s designing, making and evaluating their own fairground rides. What kind of ride do you think you would like to make? Which part will rotate? How will you control the movement? How will you make your framework? Children to share ideas. All children – children to work in 3s to design their own fairground ride. Chn to take into consideration how the ride will rotate, the structure etc. Make sketches and annotate in books.	Annotated sketches of designs in books.	
5	To be able to make a fairground ride following a design.	Ask children to get out their fairground designs and give them a few minutes to look through them to remind themselves of what they need to do. Challenge children to describe the making process to the class to ensure they have thought carefully about how they will go about making their fairground ride. Go through the questions on the ppt: How will you make sure your finished product will look like your original design? How will you make sure your framework structure is stable? What will you do if	Photographs to be stuck in DT books	

		something goes wrong? How can you make sure you will work safely with the various tools, materials and electrical components? In their groups children to follow their designs to create their own fairground rides with rotating parts		
6	To be able to evaluate a finished product.	Fairground rides to be put on display in the classroom. Give children some time to look at the other rides and examine how they work. Which designs do you like best? Why? Go through the questions on the ppt as a class: Why do you think it is so important to evaluate a finished product? What did you like best/worst about designing and making your fairground ride? What would you do differently if you were to make your fairground ride again? Children to discuss their ideas with a partner. Children to complete the Evaluation of their own product taking into account the questions discussed in the main session. When finished, children to go back to their original design and annotate any changes they would make if they were to create their fairground ride again	Evaluations to be stuck in books	