DT Long Term Plan Year Two 2023-24

	Autumn Term	Spring Term-A Wonderful World	Summer Term-Back to the Future
Topic	**Structure: Baby Bears Chair (or a similar activity linked to narrative topic)**	**Mechanisms: Fairground Wheels**	**Mechanisms: Making a moving monster (link to a topic/narrative)**
Sticky Knowledge	To understand the word stable To know that a structure is made of different parts To use the words strong and stiff	To know the main features of a Ferris wheel – wheel, frame, pods, base, axle and axle holder To understand a linkage system	To identify the correct terms for levers, linkages and pivots. To understand and make a linkage system To use the words input and output to describe a mechanism
Vocabulary	design criteria man-made natural properties structure stable shape model test	Ferris wheel pods axle axle holder frame mechanism design design-criteria wheel	Axle design criteria input linkage mechanical output pivot wheel
Suggested Tasks	**Wow-** Dependent on the narrative you are linking the activity to-make an example that does not work! Children to start thinking about why and what a good structure might need! **Design-** Using the world around them to create and improve the design. **Make-** Create a structure linked to a narrative and focus on making it individual! **Evaluate-** Compare and test the structure –what can they improve?	**Wow-** Ignite the interest of the children through using a range of images. Where might the children have seen a Ferris wheel before-focus on some history around the Ferris wheel. What could they see from the top? **Design-** Design the wheel according to where it might be placed. This could link to geography **Make-** Have a very clear design brief and experiment with different materials **Evaluate-** How can we improve our own designs? What might we need to test?	**Wow-** Children to invent a 'monster' or creature – this could link to history or geography! Could a monster invade the classroom? **Design-** Who or what is the creature or monster for? What would they need to think about? **Make-** Revisit linkage systems-recall and recap on previous knowledge **Evaluate-** Using the design criteria hold an exhibition to evaluate each other's designs. How does feedback help us change our design?
Skills linked to outcomes	**Design** Generate and communicate ideas using sketching and modelling Learning about different types of structures **Make** Making a structure according to design criteria Creating joints and structures from **Evaluate** Exploring the features of structures Comparing the stability of different shapes **Technical (knowledge)** To know that shapes and structures with wide, flat bases or legs are the most stable.	**Design** Select a suitable linkage system to produce the desired motion Design a wheel **Make** Selecting materials according to their characteristics Following a design brief **Evaluate** Evaluating different designs Testing and adapting a design **Technical (knowledge)** To know the main features of a Ferris wheel – wheel, frame, pods, base, axle and axle holder	**Design** Creating a class design criteria for a moving monster Designing a moving monster for **Make** Making linkages using card for levers and split pins for pivots Experimenting with **Evaluate** Evaluating own designs against design criteria Using per feedback to **Technical (knowledge)** To know that mechanisms are a collection of moving parts that work together as a

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	found in the natural world and in everyday objects	paper/card and tape Building a strong and stiff structure by folding paper	Testing the strength of own structures Identifying the weakest part of a structure Evaluating the strength, stiffness and stability of own structure	To understand that the shape of a structure affects its strength To know that materials can be manipulated to improve strength and stiffness To know that a structure is something which has been formed or made from parts To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move To know that a 'strong' structure is one which does not break easily.				To know that it is important to test my design as I go along so that I can solve any problems that may occur	a specific audience in accordance with a design criteria	linkages adjusting the widths, lengths and thicknesses of card used. Cutting and assembling components neatly	modify a final design	machine to produce movement. To know that there is always an input and an output in a mechanism. To know that an input is the energy that is used to start something working. To know that an output is the movement that happens as a result of the input. To know that a lever is something that turns on a pivot. To know that a linkage mechanism is made up of a series of levers. To know some real life objects that contain mechanisms.

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				To know that a 'stiff' structure is one which does not bend easily. To know that a natural structure are those found in nature To know that man-made structures are those made by people								
Assessment Opportunities	Use the quiz at the beginning and end of the unit. Adapt the knowledge catcher to suit the needs/outcomes of your class. Use as part of the evaluation within the unit.				Use the quiz at the beginning and end of the unit. Adapt the knowledge catcher to suit the needs/outcomes of your class. Use as part of the evaluation within the unit.				Use the quiz at the beginning and end of the unit. Adapt the knowledge catcher to suit the needs/outcomes of your class. Use as part of the evaluation within the unit.			
Previous and Past learning experiences	**Why this topic now? This topic follows on from EYFS topic Structures: Boats and Y1 topic Windmills** **Next Steps Learning:** Constructing a castle (Yr3) Pavilions (Yr5)				**Why this topic now? This is a new topic** **Next Steps Learning:** Making a moving monster (Y2) Making a slingshot car (Y4) Making a pop-up book (Y5)				**Why this topic now? This topic follows on from Y2 Fairground Wheels** **Next Steps Learning:** Making a slingshot car (Y4) Making a pop-up book (Y5)			
National Curriculum Links	Design purposeful, functional, appealing products for themselves and other users based on design criteria. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. Select from and use a range of tools and equipment to perform				Design purposeful, functional, appealing products for themselves and other users based on design criteria. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. Select from and use a range of tools and equipment to perform practical				Design purposeful, functional, appealing products for themselves and other users based on design criteria. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology.			

	practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Evaluate their ideas and products against design criteria. Build structures, exploring how they can be made stronger, stiffer and more stable.	tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Evaluate their ideas and products against design criteria. Evaluate a range of existing products Build structures, exploring how they can be stronger, stiffer and more stable Explore and use mechanisms in their products	Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Evaluate their ideas and products against design criteria. Evaluate a range of existing products Explore and use mechanisms in their products