Medium Term Plan **Subject D&T** **Year Group: Year 2** **Term: Summer**

Topic: Mechanisms: Fairground wheel

National Curriculum Objectives which are covered in this unit:

Design

Pupils should be taught to:

- Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.
- Design purposeful, functional, appealing products for themselves and other users based on design criteria.

Make

Pupils should be taught to:

- Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.

Evaluate

Pupils should be taught to:

- Explore and evaluate a range of existing products.

Technical knowledge

Pupils should be taught to:

- Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.
- Build structures exploring how they can be made stronger, stiffer and more stable.

Lesson sequence - include the key concept, L.O. and brief description of lesson

WALT: explore wheel mechanisms and design a fairground wheel. Understanding how wheels work and creating a design for a fairground wheel. Success criteria • I can describe how axles help wheels to move a vehicle. • I can evaluate different designs. • I can design and label a working wheel. **Pupils with secure understanding indicated by:** designing and labelling a wheel; considering the designs of others and making comments about their practicality or appeal. **Pupils working at greater depth indicated by:** explaining each part of a fairground wheel's function when creating their design; incorporating the most practical aspects of other designs and suggesting improvements; justifying their choices for each aspect of their design.	**WALT: select materials with appropriate properties.** Exploring and experimenting to work out the most suitable materials and techniques for creating a fairground wheel model. Success criteria • I can describe the properties of different materials. • I can select appropriate materials for my wheel. • I can build a wheel on an axle. **Pupils with secure understanding indicated by:** considering the material properties, shape, construction and mechanisms of their wheel; selecting material properties and labelling their designs; constructing a wheel on an axle for the fairground wheel. **Pupils working at greater depth indicated by:** explaining whether they have selected a free or fixed axle and justifying their choice; selecting appropriate materials for each component in their wheel design while justifying their choices.	**WALT: build and test a moving wheel.** Applying an understanding of structures to build and assemble a frame and wheel and adapt the design as necessary. Success criteria • I can build a stable structure. • I can test elements of my design. • I can adapt my design as necessary. • I can make the wheel rotate. **Pupils with secure understanding indicated by:** building a stable structure with a rotating wheel; testing and adapting their designs as necessary. **Pupils working at greater depth indicated by:** justifying design or construction decisions using evidence; ensuring that their structure rotates smoothly, without resistance.	**WALT: conduct a simple survey to gather opinions.** Surveying the class to find out how the residents would like the fairground wheel to be decorated and adding this to the design. Success criteria • I can recall that a survey is used to find out what people like. • I can tally results. • I can use my results to inform the design. **Pupils with secure understanding indicated by:** surveying the class to further inform their fairground wheel design. **Pupils working at greater depth indicated by:** writing a survey question and range of answers independently.	**WALT: finish and evaluate a structure with a rotating wheel.** Creating pods and decorative touches whilst ensuring the wheel still rotates freely. Success criteria • I can add pods for the correct number of people. • I can ensure that my pods stay upright when rotating around a fixed point. • I can explain my decisions for the pod design. • I can evaluate a wheel mechanism and adapt it as necessary. **Pupils with secure understanding indicated by:** following a design plan to make a completed spinning wheel model; ensuring at least one pod rotates with the spinning wheel. **Pupils working at greater depth indicated by:** producing a high-quality working wheel model, with rotating pods and decoration inspired by the local area or survey; explaining any changes made. **WALT:**
Prior learning *List year groups and topics with connected learning*	Reception Junk modelling/Boats Year 1 Construct windmills			
Future learning *List year groups and topics with connected learning*	Year 3 Construct a castle Year 5 Bridges			
Key vocabulary to be explicitly taught	design brief design criteria evaluate frame model opinion rotate survey			

Cross-curricular links	**Mathematics** Geometry – properties of shapes Pupils should be taught to: • Identify and describe the properties of 2-D shapes, including the number of sides, and line of symmetry in a vertical line. See National curriculum - Mathematics - Key stages 1 and 2. **Science** Uses of everyday materials Pupils should be taught to: • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. **Art** Pupils should be taught: • To use a range of materials creatively to design and make products. • To use drawing, painting and sculpture to develop and share their ideas, experiences and imagination. • To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form and space. • About the work of a range of artists, craft makers and designers, describing the differences and similarities between different practices and disciplines, and making links to their own work. **British values** • Mutual respect. • Tolerance of those with different faiths and beliefs. See Promoting fundamental British values as part of SMSC in schools (non-statutory advice) –
Enrichment *Give visit/visitor/first hand experience and focus*	
Useful websites/resources	**Knowledge organiser: D&T - Y2 Fairground wheel** **Vocabulary display: Mechanisms: Fairground wheel**