

## D&T Year 6-Mechanical and Electrical systems at the fairground

In this unit of work children will research how electromagnetic motors work. They will look at how they are incorporated into 'Steady hand games', identifying and naming the components. They will also research fairground games which use a motor. They will create a clear design for their own games and pitch them to members of their class, making any improvements. They will work within a budget, evaluating both the product and cost of it when finished.

### In this unit children will:

- Research fairground sideshow games which use electrical systems and mechanical features – evaluate the design and look to see if the product has any other purpose.
- Develop design criteria for a fairground game which uses a mechanical / electrical system.
- Draw up a specification for their design – use annotated sketches and cross sectional designs. Plan the order of their work, choosing appropriate materials, tools and techniques. Use market research to inform plans, refining if necessary.
- Create a costing for their product and suggest ideas on how their product could be sold, highlighting the impact of time and resources.
- Confidently select the appropriate tools and techniques and use them safely, making modifications as they go along, using finishing techniques.
- Evaluate – considering the views of others/intended use.

### Prior Learning

**EYFS:** Explain what they are making then select materials to meet the criteria. Create their design using technical vocabulary. Use basic tools and adhesive.

**Y1:** Begin to understand the development of existing product - what they are used for and the materials used. Use this to develop own design ideas. Begin to assemble and join ideas and use simple finishing techniques.

**Y2:** Generate ideas by drawing on their own experience, suggesting what they are going to do. Handle tools safely and join things in different ways.

**Y3:** Understand that mechanical and electrical systems have an input, process and output with electrics used to make functional products.

**Y4:** Consider how to present products in an appealing way. Continue how to program a computer to monitor changes in the environment and control their products.

**Y5:** Produce a detailed step by step plan, explaining how their product will appeal. Understand how mechanical systems can create movement and complex electrical circuits can be used to create functional products.

### Cross Curricular Links

**Science** – Electrical circuits

**Art** – Sculpture

**Geography** – Our changing world

### Key Questions

- Why is it important to conduct market research when designing a product?
- Which fairground rides/games/sideshows use mechanical and electrical systems?
- Why is it important to stick to your budget when making your ride?
- Why is it important to know how sustainable your product is?

### Key Vocabulary

- **Annotated diagram** – A labelled drawing.
- **Aesthetics** – Appreciation of an object's appearance and whether it's pleasing.
- **Cross section** – A view of an object, either imaginary or made up by cutting through it.
- **Market research** – A way of finding out what people think of a product or an idea.
- **Design brief** – A statement of what needs to be designed and/or made.
- **Enlarged view** – To show greater detail by making the original larger.
- **Exploded drawing** – A 'blown apart' drawing showing how the components are joined together to make a product.
- **Circuit** – Complete path through which an electrical current passes through.
- **Gear** – A wheel with teeth around its edge, usually fixed to a shaft.
- **Pulley** – A grooved wheel over which a rope can run.
- **Reed switch** – A switch that is operated by a magnet.
- **Force** – Something that changes the speed of an object.
- **Profit** -Selling something for more than it cost you to make.

### Key Knowledge

- Market research helps you find out what people like and dislike about your product and can help you make important improvements to it.
- Carousel horses, swing boats, the ghost train and Steady hand games all use either a mechanical or electrical system.
- You need to work within your given budget, especially if you intend to sell your finished product and make a profit.