

<b>Our Lady and St Edward's Knowledge Organiser</b>	<b>Year 5- Design and technology</b>	<b>Autumn</b>	<b>Mechanisms: Polar Explorers</b>
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**Outcome:** Look at how vehicles have changed for explorers over time. Design vehicles that move, considering efficiency on the snow

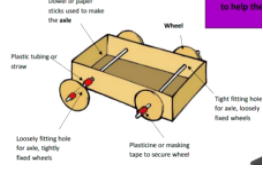
<b>Key Knowledge and Concepts</b>	<b>Key Vocabulary</b>
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Design, Make, Evaluate...

- Why are wheels made differently for use in the snow and ice?
- What makes a good arctic vehicle? • Which materials would be most suitable for the components of your vehicle?
- What are your design criteria?
- How can you test if your vehicle is fit for purpose?
- Can you design or model your vehicles? • How will you join our materials together? • How can you improve our design?

**Mechanisms**

Use scientific knowledge of the transference of forces to appropriate mechanisms and materials for your vehicle.



choose



Wheel: A circular piece which fits onto an axle and turns.  
 Axle: A rod that enables the wheel to turn.  
 Axle holder: Part of a vehicle which the axle fits through and turns.  
 Chassis: The frame or base which a vehicle is built on.  
 Body: The main outer shell of the vehicle.  
 Free: When a wheel or axle is attached to another part of the vehicle loosely so that it can move.  
 Fixed: When a wheel or axle is attached to another part of the vehicle so tightly that it cannot move.  
 Balance: An even distribution of weight enabling someone or something to remain upright and steady.  
 Mechanism: Something that creates movement.  
 Prototype: A first version or model of a product from which other forms are developed.  
 Design Criteria: Precise goals that a project must achieve in order to be successful.  
 Design: A plan or drawing to show the look and function of a building or other object before it is made.  
 Evaluate: Decide if your design or structure meets its purpose.  
 Function: Use or purpose of the design or structure.  
 Purpose: The reason for which something is created.

<b>Key Information about The Arctic</b>	<b>Health and Safety</b>
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The Polar Regions surround the North and the South poles, lying within the polar circles. The Northern region of the Polar ice caps rest on the **Arctic** Ocean whereas the Southern region lies in the continent of **Antarctica**.

**Sir Edmund Hillary**  
 In 1958 he was part of the Commonwealth Trans-Antarctic Expedition which was the first party to reach the South Pole by motor vehicle.

**Ann Bancroft**  
 An American explorer who gained notoriety after becoming the first woman to cross both polar ice caps and reach the North and South poles.

**All children should to be supervised when using equipment**





<b>What I should already know:</b>	<b>By the end of this unit, I will know:</b>
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- 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 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
- Explore and evaluate a range of existing products.
- Build structures exploring how they can be made stronger, stiffer and more stable.

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
- Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

