

Year Four: Design and Technology (Mechanisms)

Enquiry Question

About this unit

Children will design their own grabber for underwater collection and make a prototype - Ocean Grabber/litter collector

National Curriculum Objectives

- To select appropriate tools and techniques for making their product.
- To measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques (for example cutting, shaping, joining and finishing) accurately.
- To use simple graphical communication techniques.
- To join and combine materials and components accurately in temporary and permanent ways.

'Sticky' Knowledge & Skills

- To be able to measure and cut accurately
- To use computer graphic programmes to generate suitable designs
- To make design modifications and improvements which ensure the product meets the criteria.

'Big Six' Vocabulary

grabber	sampling	control
pivot	prototype	modification

Prior Learning

To select tools and techniques for making their product.
To measure, mark out, cut, score and assemble components with more accuracy.
To work safely and accurately with a range of simple tools to think about their ideas as they make progress and be willing to change things if this helps them to improve their work.
Understand how to use a mechanical system in their product (for example, gears, pulleys, cams, levers and linkages).

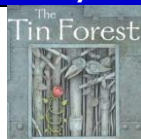
Key Questions

Designing:
What is the aim of your concept creation?
What features **must** our design include? Why?
Making:
What's gone right so far? What needs to change?
Evaluating:
How satisfied are you with your product?
How would this need to be adapted before being put into production?

Future Learning

- To select appropriate materials, tools and techniques.
- To measure and mark out accurately.
- To use skills in using different tools and equipment safely and accurately.
- To cut and join with accuracy to ensure a good-quality finish to the product.
- To apply their understanding of how to strengthen, stiffen and reinforce more complex structures using a range of equipment including ICT.
- To understand how to use a mechanical system in their product (gears, pulleys, cams, levers and linkages).

Key Texts









Assessment Opportunities

- ✓ Evaluate and reasoning their choices.
- ✓ How they have incorporated the skills into their final products

Unit Outcome

To combine materials forming an ocean grabber
Design modifications and improvements, make and evaluate the ocean grabber.
To use computer generated graphical tools.

Learning Sequence	1	2	3	4	5	6
	 <p>Problem & Research</p>	 <p>Ideas</p>	 <p>Make</p>	 <p>Make</p>	 <p>Make</p>	 <p>Evaluate</p>
	<p>Research –importance of scientists researching the bottom of the Antarctic and Arctic Oceans and collecting samples of organisms Grabber and marine animals Problem - to design appropriate sampling tool for use</p>	<p>Design a sampling grabber tool. What sorts of things are they aiming to collect? Criteria: use card, split pins, rubber bands, string, bulldog clips, bluetac Make a grabber and housing unit for it that will collect samples</p>	<p>Make the prototype design following instructions</p>	<p>Evaluation of prototype and design modifications and improvements,</p>	<p>FTP practise graphic techniques, e.g. Print out produce names in different fonts/styles, to include computer generated name/logo for the grabber Complete modifications</p>	<p>Test and evaluate design modifications and improvements with their knowledge of existing grabbing tools</p>