



Design and Technology

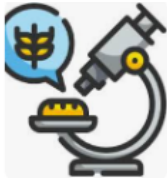
Year 4



Unit	Mechanisms  Levers and Linkages (Making a moving Card)	Food and Nutrition  Bread Product and Filling (Making bread)	Structures  Shell structures, including CAD (Food packaging)
National curriculum Purpose of Study & Aims	Purpose of study Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation. Aims The national curriculum for design and technology aims to ensure that all pupils: • develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world • build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users • critique, evaluate and test their ideas and products and the work of others • understand and apply the principles of nutrition and learn how to cook.		
National Curriculum: Key Stage 2	Key stage 2: Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to: Design		

	• 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. Make • 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 • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world Technical knowledge • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products. Cooking and Nutrition As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. Pupils should be taught to: • understand and apply the principles of a healthy and varied diet • prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques • understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.		
Title of Unit (Enquiry Question)	How can I create a greetings card that moves and is suitable for a family member or friend?	How can I design, make and evaluate a tasty and healthy bread-based lunch product with a filling?	How can I design and make packaging that protects a food product and looks appealing for customers?
Theme	Mechanisms Levers and linkages	Food Healthy and varied diet	Structures Shell structures (including using CAD)
Knowledge	Lesson 1 - I know what a lever and a linkage are and how they help things move. Lesson 2 - I know the difference between a fixed pivot and a loose pivot.	Lesson 1 - I know that products can be judged by their appearance, taste, texture and smell (aroma). Lesson 2 - I know how to create design criteria for a product that is suitable for a particular user and purpose.	Lesson 1 - I know how existing shell structures are made and what materials and techniques help them stay strong. Lesson 2 - I know that nets can be used to make 3D shapes like cubes and cuboids for packaging.

	Lesson 3 - I know which parts of a mechanism are the input (what I move) and the output (what moves). Lesson 4 – I know that accuracy affects how well a product works. Lesson 5 – I know that products can be improved through adjustments.	Lesson 3 - I know how to use different utensils and equipment safely to prepare and combine food. Lesson 4- I know different types of ingredients (fresh and processed) and where they come from (grown, reared or caught). Lesson 5- I know how to evaluate my product using the correct words to describe.	Lesson 3 - I know which materials are best for different jobs, based on their strength, stiffness and appearance. Lesson 4 – I know how features of construction influence quality and function. Lesson 5-I know that products can be improved through further adjustments and refinements.
Skills	Lesson 1 - I can investigate books or products that move and explain how they work. Lesson 2 - I can explain product ideas with drawings and simple models. Lesson 3 - I can choose the right tools and use them safely to cut, join and finish my work. Lesson 4 – I can assemble more complex mechanisms (levers, linkages). Lesson 5 - I can check my work to see how well it meets my design criteria and how I could improve it.	Lesson 1 - I can discuss ideas with others and use their suggestions to help me design an appealing food product. Lesson 2 - I can create and communicate my ideas using labelled sketches and digital tools, such as online recipes. Lesson 3 - I can plan the steps of my recipe and list the ingredients, utensils and equipment I will need. Lesson 4 - I can choose suitable ingredients with the right sensory qualities and prepare them safely using the correct equipment. Lesson 5 - I can carry out a sensory evaluation and evaluate my final product against my design criteria and other people's opinions.	Lesson 1 - I can work with others to create ideas and design criteria that meet the user's needs and make the product look attractive. Lesson 2 – I use computer aided design (CAD) to develop, model and communicate my packaging ideas. Lesson 3 – I plan the order of the steps I need to take when making my packaging. Lesson 4- I choose and use the right tools, materials and software to measure, cut, score, shape and assemble my structure accurately. Lesson 5 - I can test and evaluate my packaging against my design criteria and explain how well it meets the user's needs and purpose.
Vocabulary	mechanism, linkage, hinge, fixed pivot, input, output, linear, rotary,	texture, taste, preference, hygienic, edible, processed, savoury, seasonal,	three-dimensional (3-D), net, scoring, corrugating, packaging, laminating, lettering, graphics,

	oscillating.	harvested healthy/varied diet	innovative, prototype
Designer	Peter Dahmen  Card and paper designer	Paul Ainsworth  Local Chef	James Dyson  Inventor and designer
Career Links	 Mechanical Design Engineer	 Food Technologist	 CAD Designer/Technician
Resources	- books and other products with lever and linkage mechanisms - lever and linkage teaching aids - card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue - left/right handed	- information about foods from around the world, basic recipes - range of relevant Example foods to taste and evaluate - suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons – various sizes, parchment paper,	- collection of shell structures for different purposes and users - card, squared paper, coloured paper, adhesive tape, masking tape, PVA glue, glue spreaders, acetate sheet, pencils, felt-tip pens, rulers,



scissors, cutting
mats, card drill,
finishing media and
materials

plastic film

right/left handed
scissors
• computer with
computer-aided
design (CAD)
software such as
Techsoft Primary
or Microsoft Word, printer



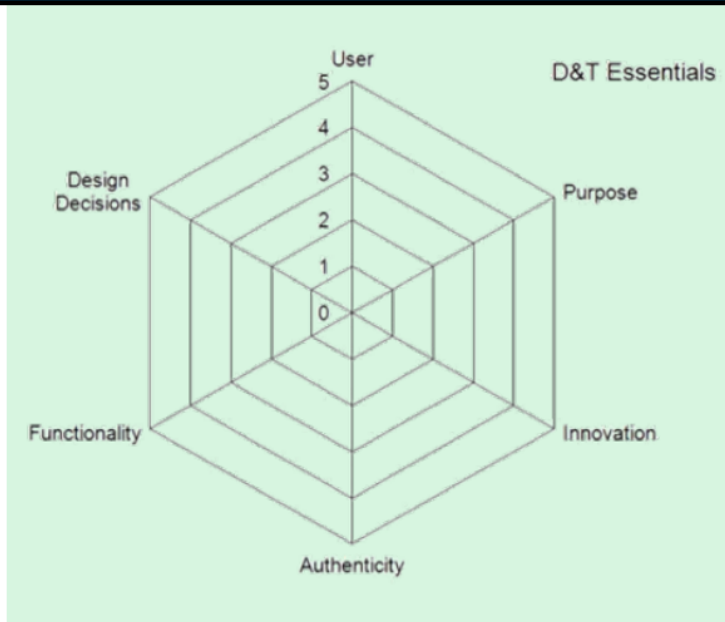
Lower Key Stage 2 - End of Unit Assessment



My Design Criteria

- User:
- Purpose:
-
-
-
-

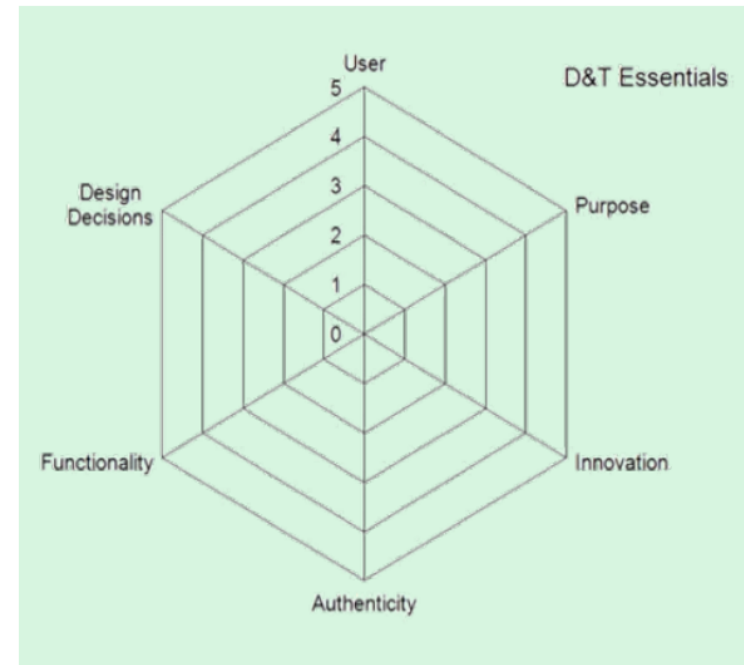
Peer Review of My Design and Final Product



Peer Review: Is the Design Criteria Met?

Yes ☐ No ☐ Partly ☐

Self Evaluation of My design and Final Product



Self Evaluation: Is the Design Criteria Met?

Yes ☐ No ☐ Partly ☐