

# Design and Technology

How are we doing so far?

The New Curriculum

Scheme of Work

## How are we doing so far?

Planning	Selecting	Making	Evaluating
47/375	29/375	53/375	36/375
13%	7%	14%	10%

# Planning for the New Curriculum

## What's new?

1. More emphasis on 'effective' DT and creating 'innovative' products in KS2
2. Two strands: Designing and Making + Cooking and Nutrition
3. Importance in making on-going changes and improvements during making stages
4. Looking into seasonality of ingredients and how they are caught/reared etc
5. Computing and coding of products in KS2
6. Researching key events and individuals in KS2

# Planning for the New Curriculum

## Planning and teaching effective Design and Technology

*A resource outlining the skills that should to be met according to the 2014 Design and Technology curriculum*

<u>Year Group</u>	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer Term</u>
<b>Year 1</b>	<b>Mechanisms</b> Sliders and levers	<b>Structures</b> Freestanding structures	<b>Food</b> Preparing fruit and vegetables
<b>Year 2</b>	<b>Mechanisms</b> Wheels and axles	<b>Food</b> Preparing fruit and vegetables	<b>Textiles</b> Templates and joining techniques
<b>Year 3</b>	<b>Structures</b> Shell structures (including computer aided design)	<b>Food</b> Healthy and varied diet	<b>Textiles</b> 2D shape to 3D product
<b>Year 4</b>	<b>Mechanical Systems</b> Levers and linkages	<b>Electrical Systems</b> Simple circuits and switches (including programming and control)	<b>Food</b> Healthy and varied diet
<b>Year 5</b>	<b>Structures</b> Frame structures	<b>Food</b> Celebrating culture and seasonality	<b>Electrical Systems</b> More complex switches and circuits (including programming, monitoring and control)
<b>Year 6</b>	<b>Textiles</b> Combining different fabric shapes (including computer aided design)	<b>Mechanical Systems</b> Pulleys or gears	<b>Food</b> Celebrating culture and seasonality

## Design and Technology – Skills to be met

Skill	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
<p><b><u>Background Research – Lesson 1</u></b></p> <p>Exploring context and existing products</p>	<p>Understand what a product is and who it is for</p> <p>Understand how a product works and how it is used</p> <p>Identify where you might find this product</p>	<p>Understand what a product is and who it is for</p> <p>Understand how a product works and how it is used</p> <p>Identify where you might find this product</p> <p>Identify the materials used to make the product</p> <p>Express an opinion about the product</p>	<p>Identify who made the product, when it was made and what its purpose is</p> <p>Identify what the product has been made from</p> <p>Evaluate the product on design and use</p> <p><b>Brain Builders:</b> Research facts about famous inventors/ chefs / designers <del>etc</del> linked to product</p>	<p>Identify who made the product, when it was made and what its purpose is</p> <p>Identify what the product has been made from</p> <p>Evaluate the product on design and use</p> <p><b>Brain Builders:</b> Research facts about famous inventors/ chefs / designers <del>etc</del> linked to product</p>	<p>Identify who made the product, when it was made and what its purpose is</p> <p>Identify what the product has been made from and how environmentally friendly the materials are</p> <p>Evaluate the product on design, appearance and use</p> <p>Identify the cost to make the product</p> <p><b>Brain Builders:</b> Research facts about famous inventors/ chefs / designers <del>etc</del> linked to product</p>	<p>Identify who made the product, when it was made and what its purpose is</p> <p>Identify what the product has been made from and how environmentally friendly the materials are</p> <p>Evaluate the product on design, appearance and use</p> <p>Identify the cost to make the product and whether it has any other purposes <del>eg</del>.</p> <p>Leading innovation of the time, trend setting</p> <p><b>Brain Builders:</b> Research facts about famous inventors/ chefs / designers <del>etc</del> linked to product</p>
<p><b><u>Design Criteria – Lesson 2</u></b></p> <p>Understanding their intended users and their own product</p>	<p>Explain what product they will be designing and making</p> <p>Explain who their product will be used by</p> <p>Describe what their product will be used for</p>	<p>Use own experiences and existing products to develop ideas</p> <p>Explain what product they will be designing and making</p> <p>Explain who their product will be used by</p>	<p><b>Brain Builders:</b> Understand and gather information about what a particular group or people want from a product</p> <p>Describe the purpose of their product and how it will work</p>	<p><b>Brain Builders:</b> Understand and gather information about what a particular group or people want from a product</p> <p>Describe the purpose of their product</p> <p>Identify design features that will appeal to intended users</p>	<p><b>Brain Builders:</b> Understand and gather information about what a particular group or people want from a product, using questionnaires, surveys <del>etc</del>.</p> <p>Describe the purpose of their product</p>	<p><b>Brain Builders:</b> Understand and gather information about what a particular group or people want from a product, using questionnaires, surveys <del>etc</del>.</p> <p>Describe the purpose of their product</p>

# Scheme of Work: Projects on a Page

- Recommended by DT Association and teachers
- Easy to follow
- Ensures skills are met whilst providing more flexibility
- Provides CPD training and information to support teachers





<b>1. Year Groups</b> <b>Years 3/4</b>	<b>2. Aspect of D&amp;T Mechanisms</b>  <b>Focus</b> <b>Lever and Linkages</b>	<b>4. What could children design and make?</b> storybook poster class display greetings card information book storyboard other - specify	<b>5. Intended users</b> themselves younger children older children teenagers parents grandparents friends other - specify	<b>6. Purpose of products</b> celebration event information pleasure interests hobbies campaign educational other - specify	<b>16. Resources</b> books with lever and linkage mechanisms lever and linkage teaching aids card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, glue sticks scissors, cutting mats, finishing media and materials	<b>17. Vocabulary</b> mechanism lever, linkage, pivot, slot, bridge, guide user, purpose, function system, input, process, output linear, rotary, oscillating, reciprocating prototype design criteria innovative appealing design brief
<b>3. Key learning in design and technology</b>  <b>Prior learning</b> <ul style="list-style-type: none"> <li>Understand and use mechanisms such as flaps, sliders and levers</li> <li>Experience of basic cutting, joining and finishing techniques with paper and card</li> </ul> <b>Designing</b> <ul style="list-style-type: none"> <li>Generate initial ideas and design criteria through discussion</li> <li>Use sketches and prototypes to develop, model and communicate ideas</li> </ul> <b>Making</b> <ul style="list-style-type: none"> <li>Use appropriate tools with some accuracy to cut, shape and join paper and card</li> <li>Use finishing techniques suitable for the product they are creating</li> </ul> <b>Evaluating</b> <ul style="list-style-type: none"> <li>Investigate and analyse books with lever and linkage mechanisms</li> <li>Evaluating their own products against criteria, intended purpose and user</li> </ul> <b>Technical knowledge and understanding</b> <ul style="list-style-type: none"> <li>Understand and use lever and linkage mechanisms</li> <li>Distinguish between fixed and loose pivots</li> </ul>	<b>7. Links to topics and themes</b> to be completed by the teacher	<b>8. Possible contexts</b> home school leisure culture enterprise environment local community	<b>9. Project title</b> to be completed by the teacher	<b>10. Investigative, Disassembly and Evaluative Activities (IDEAs)</b> <ul style="list-style-type: none"> <li>Children investigate, analyse and evaluate books which have a range of lever and linkage mechanisms</li> <li>Use questions to develop children's understanding e.g. <i>What do you think will move in the picture? How will you see it move? What part of the picture is oval and how did it move? How do you think the mechanism works? What else could move in the picture? How effective do you think it is?</i></li> </ul>	<b>11. Related learning in other subjects</b> <ul style="list-style-type: none"> <li>English - participate in discussion and evaluation of books with moving pictures</li> <li>English - asking questions to check understanding, develop vocabulary and build knowledge</li> </ul>	<b>12. Focused Practical Task (FPTs)</b> <ul style="list-style-type: none"> <li>Demonstrate a range of lever and linkage mechanisms to the children using prepared teaching aids</li> <li>Use questions to develop children's understanding e.g. <i>Which card strip is the lever? Which card strip is acting as the linkage? Which part of the system is the input and which part the output? What does the type of movement tell you of? Which are the fixed pivots and which are the loose pivots?</i></li> <li>Demonstrate the safe and accurate use of measuring, marking out, cutting, pinning and finishing skills and techniques</li> <li>Children should develop their knowledge and skills by replicating one or more of the teaching aids</li> </ul>
				<b>13. Related learning in other subjects</b> <ul style="list-style-type: none"> <li>Mathematics - using the language of position and direction to describe movement</li> <li>English - ask relevant questions to extend their understanding and build vocabulary and knowledge</li> <li>Mathematics - using a ruler to measure to the nearest cm, half cm or mm</li> <li>Art and design - using colour, pattern, line, shape</li> </ul>	<b>18. Key competencies</b> problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other - specify	<b>19. Health and Safety</b> Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task.
		<b>14. Design and Make Activity (DMA)</b> <ul style="list-style-type: none"> <li>Develop a design brief with the children within a context which is authentic and meaningful</li> <li>Discuss with children the purpose of the products they will be designing and making and who the products will be for. Ask the children to generate a range of ideas, encouraging innovative responses. Agree on design criteria that can be used to guide the development and evaluation of the children's products</li> <li>Using annotated sketches and prototypes, ask the children to develop, model and communicate their ideas</li> <li>Ask the children to consider the main stages in making before assembling high quality products, drawing on their knowledge, understanding and skills learnt through IDEAs and FPTs</li> <li>Evaluate the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed</li> </ul>	<b>15. Related learning in other subjects</b> <ul style="list-style-type: none"> <li>English - ask relevant questions to extend their understanding and build vocabulary and knowledge</li> <li>Computing - digital graphics and text could be incorporated into final products as the background or moving parts</li> <li>Art and design - using and developing drawing techniques</li> <li>Art and design - using colour, pattern, line, shape</li> </ul>	<b>20. Overall potential of project</b> 		

**Years 3/4 Mechanisms**  
**Levers and Linkages**

**Instant CPD**

**Teaching aids to demonstrate levers and linkages**  
 ● Fixed pivot  
 ○ Loose pivot

**Pupils' mechanisms can be added to children's working pictures as an extension. However, to build on work with simple levers and sliders in KS1, it is important to focus children's learning during this project on levers and linkages.**

**Designing and making a greetings card with moving parts for family and friends**  
 An iterative process is the relationship between a pupil's idea and how they are communicated and clarified through activity. This is an example of how the iterative design and make process might be experienced by an individual pupil during this project.

**THOUGHT**  
 What sort of greetings card shall I make?  
 What part will move?  
 How will it appeal to the user?  
 How will it move?  
 Which lever and linkage mechanism will work best for my greetings card?  
 What media and materials will I use?  
 Who will I work with?  
 How long will it take?  
 What order will I work in?  
 What tools and techniques will I use?  
 More thoughts... approximating, reflecting, refining  
 Will the greetings card meet the needs of the user and achieve its purpose?

**ACTION**  
 Discussing ideas, drawing annotated sketches, generating design criteria  
 Discussing ideas, modelling possible lever and linkage mechanisms  
 Discussing and evaluating mock-ups and prototypes against design criteria  
 Discussing, exploring and trialling media and materials  
 Negotiating, developing and agreeing a plan of action  
 More actions... building, testing, modifying  
 Evaluating the greetings card with the intended user and against design criteria

**Making a pop-up from a small section of a recycled box:**  

1. Cut a slice off a small box.
2. Glue two sides to the paper.
3. Stick a picture to pop up on the front.

**Lever and linkage mechanisms usually produce oscillating or reciprocating movement:**  
 Linear - in a straight line  
 Reciprocating - backwards and forwards in a straight line e.g. a slider  
 Rotary - round and round e.g. a wheel, can, pulley, gear wheel  
 Oscillating - backwards and forwards in an arc e.g. a lever

**Useful resources at [www.dta.org.uk](http://www.dta.org.uk):**  
 - Levers and Linkages 'Let's Get Practical' Support Pack  
 - D&T Primary 17 issue on mechanisms including levers and linkages  
 D&T Association publications:  
 - Primary Worksheets and Lesson Plans - Unit 4B Storybooks

**Glossary**  
 - Mechanism - a device used to create movement in a product.  
 - Lever - a rigid bar which moves around a pivot. Levers are used in many everyday products. In this project children will use card strips for levers and paper fasteners for pivots.  
 - Linkage - the card strips joining one or more levers to produce the type of movement required. The term 'linkage' is also used to describe the lever and linkage mechanism as a whole.  
 - Slot - the hole through which a lever is placed to enable part of a picture to move.  
 - Guide or bridge - a short card strip used to keep lever and linkage mechanisms in place and control movement.  
 - Loose pivot - a paper fastener that joins card strips together.  
 - Fixed pivot - a paper fastener that joins card strips to the backing card.  
 - System - a set of related parts or components used to create an outcome. Systems have an input, process and an output. In a lever and linkage mechanism, the 'input' is where the user pushes or pulls a card strip. The 'output' is where one or more parts of the picture are.

Page to support planning

Page to support subject knowledge

# My next steps

Continue to order resources

Look into software to support computer based  
work

Be available