

## DT Curriculum Intent

Sileby Redlands Community Primary School enables our design technologists to become involved in, enjoy and appreciate the visual arts and discover how it can enrich their personal lives. Design technology contributes to the development of the whole child emotionally, aesthetically, physically, socially, and cognitively. We believe that every child at Sileby Redlands has the potential to be a design technologist. Across their primary years, our design technologists explore and learn that design technology impacts their own and others' lives, in contemporary life and in different times and cultures. They are taught confident and strong skills within the core elements of design, making, evaluating, and having the technical knowledge to build things. Cooking and nutrition is also an important factor in the lives of our design technologists and therefore, we celebrate cooking within every year group too. This provides all design technologists with the opportunity to express themselves imaginatively, creatively and safely whilst using technical tools. They learn to respond to the world around them artistically whilst developing their knowledge and understanding of various design technology elements.

## DT Curriculum Implementation

Design and Technology is a crucial part of school life and learning and it is for this reason that as a school we are dedicated to the teaching and delivery of a high-quality Design and Technology curriculum.

This is implemented through:

- A well thought out, whole school, yearly overview of the DT curriculum which allows for progression across year groups in all areas of DT (textiles, mechanisms, structures, food and electrical systems)
- Well planned and resourced projects providing children with a hands-on and enriching experience
- A range of skills being taught ensuring that children are aware of health and safety issues related to the tasks undertaken
- Each project from Year 1 to Year 6 addressing the principles of designing, making, and evaluating and incorporating relevant technical knowledge and understanding in relevant contexts.
- Pupils being introduced to specific designers, chefs, nutritionists, etc. helping to engender an appreciation of human creativity and achievement and increase the cultural capital from which they can draw in the future.

During the EYFS pupils explore and use a variety of media and materials through a combination of child initiated and adult directed activities.

## DT Curriculum Impact

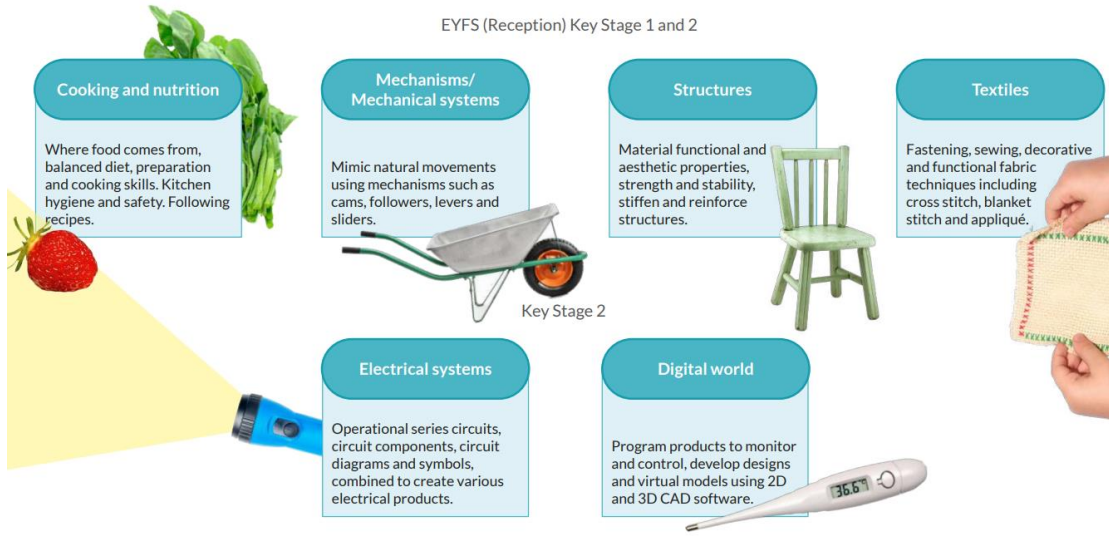
At Sileby Redlands, we enjoy celebrating our designers' achievements. Showcases, exhibitions and festivals are hosted, allowing every artist/designer to celebrate and share their work with other year groups, parents, carers, and teachers across our school throughout the year. School displays are regularly updated to ensure every year group has this opportunity to display their work also. Designers in EYFS and Key Stage 1 and 2 record their artwork and learning journey in a sketchbook, allowing the child and teacher to acknowledge their progress as an artist across the phase. Their design learning journey is also recorded within their Curriculum Journey book through taking photos etc. On-going formative assessments are made by the class teacher regularly. Pupil voice also plays an essential role in measuring the impact of our Design Technology curriculum across the school. Through pupil interviews, children can reflect on what they have learnt and its impact on our world today. These work together cohesively to evaluate standards in Design Technology across the school.

# DT Curriculum Overview

Year Group	Subject Context (National Curriculum/ EYFS Framework)
EYFS	<p><u>Expressive Arts and Design (Exploring and Using Media and Materials)</u> Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p><u>Expressive Arts and Design (Being Imaginative)</u> Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.</p> <p><u>Physical Development (Moving and Handling)</u> Children handle equipment and tools effectively, including pencils for writing.</p>
Year 1/2	<p>Technical Knowledge</p> <ul style="list-style-type: none"> <li>•build structures, exploring how they can be made stronger, stiffer and more stable;</li> <li>•explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</li> </ul> <p>Cooking and Nutrition</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>•use the basic principles of a healthy and varied diet to prepare dishes;</li> <li>•understand where food comes from.</li> </ul>
Year 3/4	<ul style="list-style-type: none"> <li>•apply their understanding of how to strengthen, stiffen and reinforce more complex structures;</li> <li>•understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages];</li> <li>•understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors];</li> <li>•apply their understanding of computing to program, monitor and control their products.</li> <li>•understand and apply the principles of a healthy and varied diet;</li> <li>•prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques;</li> <li>•understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</li> </ul>
Year 5/6	<ul style="list-style-type: none"> <li>•apply their understanding of how to strengthen, stiffen and reinforce more complex structures;</li> <li>•understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages];</li> <li>•understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors];</li> <li>•apply their understanding of computing to program, monitor and control their products.</li> <li>•understand and apply the principles of a healthy and varied diet;</li> <li>•prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques;</li> <li>•understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</li> </ul>

# DT Overview of Units

There are six elements of the DT Curriculum.  
Cooking & nutrition, Structures, Mechanisms, Textiles,  
Electrical systems and Digital world.



Through careful planning, The children will learn each element at least once in each phase of their time at primary school.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>EYFS</b>		Cooking / Nutrition	Structures: Junk modelling		Structure - Boats	
<b>Year 1</b>			Cooking and Nutrition Smoothies	Structures: Construct a windmill	Mechanism. Wheel and axels	
<b>Year 2</b>	Structure: 3 little pigs		Mechanisms : making a moving pirate		Textiles. Pouches	Cooking and nutrition Making Wraps
<b>Year 3</b>				Food/ nutrition Eating Seasonally	Mechanisms Moving Monster	Computing to programme
<b>Year 4</b>	Structures: Pavilions	Electric Systems Torches				Textiles Fastenings
<b>Year 5</b>		Structure. Bridges.	Mechanisms. Popup book.			Electric systems. Steady hand game.
<b>Year 6</b>	Cooking & nutrition.		Textiles. Stuffed toys		Digital monitoring devices.	

## Substantive concepts in Design Technology

- Design
- Make
- Evaluate
- Technical Knowledge

## Disciplinary concepts in Design Technology

- Responsibility
- Similarity & Difference
- Cause and Consequence
- Expression

### DT Statutory Guidance and EYFS Framework

#### Substantive Knowledge

**Substantive Concepts**  
**Disciplinary Concepts**  
Design  
Make  
Evaluate  
Technical Knowledge

#### Substantive Knowledge

- Key facts and skills associated with the unit of work

#### Disciplinary Knowledge

**Responsibility**  
**Similarity and difference**  
**Cause and consequence**  
**Expression**

#### Disciplinary Knowledge

Specific skills and approaches developed to exploring DT

## Substantive knowledge

Substantive knowledge sets out the subject-specific content that is to be learned - i.e. the DT Curriculum units. This is the fingertip (specific) knowledge that children will learn and retain from each unit of work.

## Disciplinary knowledge

Disciplinary knowledge tells us how we know what we know; it is through disciplinary knowledge that pupils learn and use the skills needed to understand how to be an effective artist.

# DT Disciplinary Knowledge Progression

Year Group	Responsibility (working safely, how design can solve problems, choosing the right materials, responsibilities to customers to ensure quality / reliable products, healthy eating, quality ingredients)	Similarity and difference: (making comparisons, noting differences and drawing conclusions)	Cause and consequence: (identifying how things work, how an action can cause change/movement)	Expression: (Using terminology, evaluating, creating accurate designs, labelling and annotating, explaining processes, presenting)
EYFS	Learn to use simple equipment safely and appropriately.	Talk about how things feel are they hard, soft, smooth, rough, strong or weak.	Explore the purpose of a product.	Children communicate their ideas through talking & drawing
KS1	Learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures.	Compare two materials and their properties.	Explore purposeful, functional, appealing products for themselves and other users based on design criteria.	Children communicate their ideas through talking & drawing
LKS2	Learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures.	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.	Use research and develop design criteria to inform the design of innovative, functional & appealing products that are fit for purpose.	Children generate, develop, model and communicate their ideas through talking, drawing and where appropriate, information and communication technology.
UKS2	Learn to use a wider range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures.	Use a full range of materials and components and compare between materials.	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.

# DT Overview of Units

EYFS (Reception) Key Stage 1 and 2

## Cooking and nutrition

Where food comes from, balanced diet, preparation and cooking skills. Kitchen hygiene and safety. Following recipes.



## Mechanisms/ Mechanical systems

Mimic natural movements using mechanisms such as cams, followers, levers and sliders.



Key Stage 2

## Structures

Material functional and aesthetic properties, strength and stability, stiffen and reinforce structures.



## Textiles

Fastening, sewing, decorative and functional fabric techniques including cross stitch, blanket stitch and appliqué.



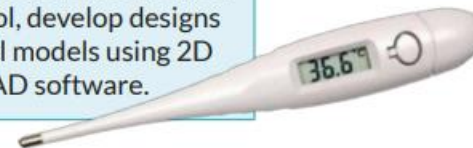
## Electrical systems

Operational series circuits, circuit components, circuit diagrams and symbols, combined to create various electrical products.



## Digital world

Program products to monitor and control, develop designs and virtual models using 2D and 3D CAD software.



## DT Curriculum Overview- EYFS

Unit Title	Cooking	Junk modelling/ Structure	Structure Boats
Substantive Concepts	<ul style="list-style-type: none"> <li>• Design</li> <li>• Make</li> <li>• Evaluate</li> <li>• Technical Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Design</li> <li>• Make</li> <li>• Evaluate</li> <li>• Technical Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Design</li> <li>• Make</li> <li>• Evaluate</li> <li>• Technical Knowledge</li> </ul>
Substantive Knowledge	<p>To explore fruits and vegetables and the differences between them.</p> <p>To use adjectives to describe how fruits and vegetables look, feel, smell and taste.</p> <p>To explore a pumpkin and describe it using the five senses.</p> <p>To design a fruit and vegetable soup recipe</p> <p>To practise cutting with a knife.</p> <p>To learn how to use a knife safely.</p> <p>To observe and help (where appropriate) with the use of tools to prepare ingredients.</p> <p>To describe the finished product and evaluate the process.</p>	<p><b>Planning and Materials:</b> Make verbal plans and choose materials.</p> <p><b>Model Development:</b> Create a junk model.</p> <p><b>Skill Improvement:</b> Enhance fine motor and scissor skills with various materials.</p> <p><b>Material Joining:</b> Join materials in different ways</p> <p><b>Model Description:</b> Describe the junk model and assembly process.</p> <p><b>Evaluation:</b> Verbally evaluate their own and others' models with adult support.</p>	<p><b>Design a junk model boat.</b></p> <p><b>Use exploration knowledge</b> to inform your design.</p> <p><b>Ensure the boat floats and is waterproof</b> by choosing the right materials.</p> <p><b>Predict and test materials</b> to see if they are waterproof.</p> <p><b>Predict and test existing boats</b> to see which floats best.</p> <p><b>Test your design</b> and reflect on improvements.</p> <p><b>Investigate how boat shapes and structures</b> affect movement.</p> <p><b>Understand that waterproof materials</b> do not absorb water.</p>

## DT Curriculum Overview- Year 1

Unit Title	Cooking & Nutrition- Smoothies	Structures: Construct a windmill	Mechanisms- Wheel and axels	
Substantive Concepts	<ul style="list-style-type: none"> <li>• Design</li> <li>• Make</li> </ul>	<ul style="list-style-type: none"> <li>-Evaluate</li> <li>-Technical Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> </ul>	<ul style="list-style-type: none"> <li>-Evaluate</li> <li>-Technical Knowledge</li> </ul>
Substantive Knowledge	<ul style="list-style-type: none"> <li>• Describe fruits and vegetables and explain how to identify fruits.</li> <li>• Name a range of places that fruits and vegetables grow.</li> <li>• Describe basic characteristics of fruit and vegetables.</li> <li>• Prepare fruits and vegetables to make a smoothie.</li> </ul>	<ul style="list-style-type: none"> <li>• Learning the importance of a clear design criteria.</li> <li>• Including individual preferences and requirements in a design.</li> <li>• Making stable structures from card.</li> <li>• Following instructions to cut and assemble the supporting structure of a windmill.</li> <li>• Making functioning turbines and axles which are assembled into a main supporting structure.</li> <li>• Cutting evenly and carefully.</li> <li>• Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.</li> <li>• Suggesting points for improvement.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain that wheels move because they are attached to an axle.</li> <li>• Recognise that wheels and axles are used in everyday life, not just in cars.</li> <li>• Identify and explain vehicle design flaws using the correct vocabulary.</li> <li>• Design a vehicle that includes functioning wheels, axles and axle holders.</li> <li>• Make a moving vehicle with working wheels and axles.</li> <li>• Explain what must be changed if there are any operational issues.</li> </ul>	

## DT Curriculum Overview- Year 2

Unit	Structure: 3 little pigs	Mechanisms: Making a moving pirate	Textiles: pouches	Cooking & Nutrition: Making Wraps
Substantive Concepts	<ul style="list-style-type: none"> <li>• Design</li> <li>• Make</li> </ul>	<ul style="list-style-type: none"> <li>-Evaluate</li> <li>-Technical Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> </ul>	<ul style="list-style-type: none"> <li>-Evaluate</li> <li>-Technical Knowledge</li> </ul>
Substantive Knowledge	<ul style="list-style-type: none"> <li>• Identify man-made and natural structures.</li> <li>• Identify stable and unstable structural shapes.</li> <li>• Identify features that make a model stable.</li> <li>• Work independently to make a stable structure, following a demonstration.</li> <li>• Explain how their ideas would be suitable</li> <li>• Produce a model using the appropriate materials and construction techniques.</li> <li>• Explain how they made their model strong, stiff and stable.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the correct terms for levers, linkages and pivots.</li> <li>• Analyse popular toys with the correct terminology.</li> <li>• Create functional linkages that produce the desired input and output motions</li> <li>• Design a pirate suitable for children, which satisfy most of the design criteria.</li> <li>• Evaluate their two designs against the design criteria, using this information and the feedback of their peers to choose their best design.</li> <li>• Assemble the pirate to their linkages without affecting their functionality.</li> </ul>	<ul style="list-style-type: none"> <li>• Sew a running stitch with regular-sized stitches and understand that both ends must be knotted.</li> <li>• Prepare and cut fabric to make a pouch from a template.</li> <li>• Use a running stitch to join the two pieces of fabric together.</li> <li>• Decorate their pouch using the materials provided.</li> </ul>	<ul style="list-style-type: none"> <li>• Name the main food groups and identify foods that belong to each group.</li> <li>• Describe the taste, feel and smell of a given food.</li> <li>• Think of three different wrap ideas, considering flavour combinations.</li> <li>• Construct a wrap that meets the design brief and their plan.</li> </ul>



## DT Curriculum Overview- Year 3

Unit Title	Cooking Food & Nutrition: Eating Seasonally	Mechanisms: Moving Monster	Computing to programme
Substantive Concepts	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> <li>Evaluate</li> <li>Technical Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> <li>Evaluate</li> <li>Technical Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> <li>Evaluate</li> <li>Technical Knowledge</li> </ul>
Substantive Knowledge	<ul style="list-style-type: none"> <li>Explain that fruits and vegetables grow in different countries based on their climates.</li> <li>Understand that seasonal fruits and vegetables grow in a given season.</li> <li>Understand that eating seasonal fruit and vegetables positively affects the environment.</li> <li>Design a tart recipe using seasonal ingredients.</li> </ul>	<ul style="list-style-type: none"> <li>Draw accurate diagrams with correct labels, arrows and explanations.</li> <li>Correctly identify definitions for key terms.</li> <li>Identify five appropriate design criteria.</li> <li>Communicate two ideas using thumbnail sketches.</li> <li>Communicate and develop one idea using an exploded diagram.</li> <li>Select appropriate equipment and materials to build a working pneumatic system.</li> <li>Assemble their pneumatic system within the housing to create the desired motion.</li> <li>Create a finished pneumatic toy that fulfills the design brief.</li> </ul>	<ul style="list-style-type: none"> <li>Write a program that initiates a flashing LED panel, or another pattern, on the virtual micro:bit when a button is pressed.</li> <li>Identify errors, if testing is unsuccessful, by comparing their code to a correct example.</li> <li>Explain the basic functionality of their finished program.</li> <li>Suggest key features for a way to attach the product to the user, with some consideration for the overall theme and the user.</li> <li>Create annotated diagrams to help illustrate how their product is worn.</li> <li>Follow basic design requirements using computer-aided design, drawing at least one shape with a text box and bright colours, following a demonstration.</li> <li>Evaluate their design using a focus group.</li> </ul>

## DT Curriculum Overview- Year 4

Unit Title	Structures: Pavilions	Electrical Systems: Torches	Textiles: Fastenings
Substantive Concepts	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> <li>Evaluate</li> <li>Technical Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> <li>Evaluate</li> <li>Technical Knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> <li>Evaluate</li> <li>Technical Knowledge</li> </ul>
Substantive Knowledge	<ul style="list-style-type: none"> <li>Produce a range of free-standing frame structures of different shapes and sizes.</li> <li>Design a pavilion that is strong, stable and aesthetically pleasing.</li> <li>Select appropriate materials and construction techniques to create a stable, free-standing frame structure.</li> <li>Select appropriate materials and techniques to add cladding to their pavilion.</li> </ul>	<ul style="list-style-type: none"> <li>Identify electrical products and explain why they are useful.</li> <li>Help to make a working switch.</li> <li>Identify the features of a torch and how it works.</li> <li>Describe what makes a torch successful.</li> <li>Create suitable designs that fit the success criteria and their own design criteria.</li> <li>Create a functioning torch with a switch according to their design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>Identify the features, benefits and disadvantages of a range of fastening types.</li> <li>Write design criteria and design a sleeve that satisfies the criteria.</li> <li>Make a template for their book sleeve.</li> <li>Assemble their case using any stitch they are comfortable with.</li> </ul>

## DT Curriculum Overview- Year 5

Unit Title	Structures: Bridges	Mechanisms: Pop up books	Electric systems: Steady hand game
Substantive Concepts	<ul style="list-style-type: none"> <li>• Design</li> <li>• Make</li> </ul> <p style="text-align: right;">-Evaluate -Technical Knowledge</p>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> </ul> <p style="text-align: right;">-Evaluate -Technical Knowledge</p>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> </ul> <p style="text-align: right;">-Evaluate -Technical Knowledge</p>
Substantive Knowledge	<ul style="list-style-type: none"> <li>• Identify stronger and weaker shapes.</li> <li>• Recognise that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight.</li> <li>• Identify beam, arch and truss bridges and describe their differences.</li> <li>• Use triangles to create simple truss bridges that support a load (weight).</li> <li>• Cut beams to the correct size, using a cutting mat.</li> <li>• Smooth down any rough cut edges with sandpaper.</li> <li>• Follow each stage of the truss bridge creation as instructed by their teacher.</li> <li>• Complete a bridge, with varying ranges of accuracy</li> <li>• Identify some areas for improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Produce a suitable plan for each page of their book.</li> <li>• Produce the structure of the book.</li> <li>• Assemble the components necessary for all their structures/mechanisms.</li> <li>• Hide the mechanical elements with more layers using spacers where needed.</li> <li>• Use a range of mechanisms and structures to illustrate their story and make it interactive for the users.</li> <li>• Use appropriate materials and captions to illustrate the story.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain simply what is meant by 'form' (the shape of a product) and 'function' (how a product works).</li> <li>• State what they like or dislike about an existing children's toy and why.</li> <li>• Learn about skills developed through play and apply this knowledge in a survey of one or more children's toys.</li> <li>• Identify the components of a steady hand game.</li> <li>• Design a steady hand game of their own according to their design criteria,</li> <li>• Create a secure base for their game,</li> <li>• Make and test a functioning circuit and assemble it within a case.</li> </ul>

## DT Curriculum Overview- Year 6

Unit Title	Cooking & Nutrition	Textiles: stuffed toys	Digital: Monitoring devices
Substantive Concepts	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> </ul> <p style="text-align: right;">-Evaluate -Technical Knowledge</p>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> </ul> <p style="text-align: right;">-Evaluate -Technical Knowledge</p>	<ul style="list-style-type: none"> <li>Design</li> <li>Make</li> </ul> <p style="text-align: right;">-Evaluate -Technical Knowledge</p>
Substantive Knowledge	<ul style="list-style-type: none"> <li>• Describe the process of beef production.</li> <li>• Research a traditional recipe and make changes to it.</li> <li>• Add nutritional value to a recipe by selecting ingredients.</li> <li>• Prepare and cook a version of chilli sauce.</li> </ul>	<ul style="list-style-type: none"> <li>• Design a stuffed toy, considering the main component shapes of their toy.</li> <li>• Create an appropriate template.</li> <li>• Join two pieces of fabric using a blanket stitch.</li> <li>• Neatly cut out their fabric.</li> <li>• Use appliqué or decorative stitching to decorate</li> <li>• Identify what worked well and areas for improvement.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe what is meant by monitoring devices and provide an example.</li> <li>• Explain briefly the development of thermometers from thermoscopes to digital thermometers.</li> <li>• Write a program that monitors the ambient temperature and alerts someone when the temperature moves from a specified range.</li> <li>• Identify errors (bugs) in the code and ways to fix (debug) them.</li> <li>• Build a variety of brick models to invent Micro:bit case, housing and stand ideas, evaluating the success of their favourite model.</li> <li>• Explain key pros and cons of virtual modelling vs physical modelling.</li> </ul>