LKS2 Cycle A Phase Overview

Design and Technology LKS2 Cycle A			
Cooking and nutrition Eating Seasonally **Mechanisms/Mechanical systems** Pneumatic toys	**Structures:** Constructing a castle **Electrical systems:** Electrical poster	**Textiles:** Cross-stitch and applique	**Digital World:** Electronic charm
Cooking and nutrition/Mechanisms/Mechanical systems **<u>Composite pieces</u>** To design and make a tart, using seasonal ingredients. To design, make and decorate a pneumatic toy, including thumbnail sketches and exploded-diagrams.	**Structures/Electrical systems** **<u>Composite pieces</u>** To design and construct a 3D castle using a net and recycled materials. To design and assemble a final product, incorporating a simple electrical circuit.	**Textiles** Composite piece Using cross-stitch and applique to design and make an Egyptian cushion/collar.	**Digital World** **<u>Composite piece</u>** To design and develop a program, house and promote a Micro: bit electronic charm to use in low light conditions.

Subject Specific Vocabulary

<u>Cooking and nutrition: Eating Seasonally</u>

Climate, Dry climate, Exported, Imported, Mediterranean climate, Nationality, Nutrients, Polar climate, Recipe, Seasonal food, Seasons, Temperature climate, Tropical climate.

<u>Mechanisms/Mechanical systems</u>

Exploded-diagram, Function, Input, Lever, Linkage, Mechanism, Motion, Net, Output, Pivot, Pneumatic systems, Thumbnail sketch.

<u>Structures: Constructing a castle</u>

2D shapes, 3D shapes, Castle, Design criteria, Evaluate, Façade, Feature, Flag, Net, Recyclable, Scoring, Stable, Strong, Structure, Tab, Weak.

<u>Electrical systems: Electrical poster</u>

Battery, Bulb, Circuit, Circuit component, Crocodile wires, Electrical system, Final design, Information design, Initial ideas, Peer assessment, Research, Self-assessment, Sketch.

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Textiles: Cross-stitch and applique

Accurate, Applique, Cross-stitch, Cushion, Decorate, Detail, Fabric, Patch, Running-stitch, Seam, Stencil, Stuffing, Target audience, Target customer, Template

Digital World: Electronic charm

Analogue, Badge, CAD, Control, Design requirements, Develop, Digital, Digital revolution, Digital world, Display, Electronic, Electronic products, Fasten, Feature, Function, Initiate, Key features, Layers, Loops, Micro: bit, Monitor, Net, Point of sale, Product, Product design, Program, Sense, Simulator, Smart wearables, Stand, Technology, Template, Test, User.

Skills

Design	Make	Evaluate
Cooking and nutrition I can create a healthy and nutritious recipe for a savoury tart using seasonal ingredients (taste, texture, smell and appearance). **Mechanisms/Mechanical systems** I can design a toy which uses a pneumatic system. I can develop design criteria from a design brief. I can generate ideas using thumbnail sketches and exploded diagrams. I know that different types of drawings are used in design to explain ideas, clearly. **Structures** I can design a castle with key features to appeal to a specific person/purpose. I can draw and label a castle design, using 2D design. I can label the 3D shapes, materials needed and colours. I can design and decorate a castle tower on CAD design.	**Cooking and nutrition** I can prepare myself to cook safely. I can prepare my work space to cook safely in. I can follow the instructions within a recipe. **Mechanisms/Mechanical systems** I can create a pneumatic system to create a desired motion. I can build secure housing for a pneumatic system. I can use syringes and balloons to create different types of pneumatic systems to make a functional pneumatic toy. I can select materials due to their functional and aesthetic characteristics. I can manipulate materials to create different effects by cutting, creasing folding and weaving. **Structures** I can construct a range of 3D geometric shapes, using nets. I can create special features for individual designs. I can make facades from a range of recycled materials.	**Cooking and nutrition** I can use design criteria to test and review dishes. I can describe the benefits of seasonal fruits and vegetables. I can describe the benefits on the environment. I can suggest points for improvement when making a seasonal tart. **Mechanisms/Mechanical systems** I can use the views of others to improve designs. I can test and modify the outcome of designs. I can suggest improvements for a design. I can understand the purpose of an exploded-diagram. **Structures** I can evaluate my own work and the work of others. I can comment on the aesthetics of the finished product. I can compare the finished product to the original design. I can suggest points for modification of the individual designs.

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Electrical systems I can carry out research based on a given topic to develop a range of initial ideas. I can generate a final design for the electrical poster. I can consider the clients needs and the design criteria. I can design an electrical poster that fits the design of a given brief. I can plan the positioning of the bulb (circuit component) and its purpose. **Textiles** I can design and make a template from an existing cushion. I can apply individual design criteria. **Digital World** I can problem solve by suggesting potential features on a Micro:bit and justify my ideas. I can develop design ideas for a technology pouch. I can draw and manipulate 2D shapes, using computer aided design, to produce a point of sale badge.	**Electrical systems** I can create a final design for the electric poster. I can mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. I can measure and mark materials out using a template or a ruler. I can fit an electrical component (bulb). I can learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). **Textiles** I can follow design criteria to create a cushion or Egyptian collar. I can select fabrics. I can use fabric scissors to cut fabric, with ease. I can thread needles. I can tie a knot. I can sew cross-stitch to join fabric. I can decorate fabric using applique I can complete design ideas with stuffing and sew the edges (Cushions). I can embellish the collars based on design ideas (Egyptian collars). **Digital World** I can use a template when cutting and assembling a pouch. I can follow a list of design requirements. I can select and use the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch. I can apply functional features such as using foam to create soft buttons. I can write a program to control (button press) and /or monitor (sense light) that will initiate a flashing LED algorithm.	**Electrical systems** I can learn to give and accept constructive criticism on my own work and the work of others. I can test the success of initial ideas against the design criteria and justify my opinions. I can review developing design ideas and check that they fulfil the client's needs. **Textiles** I can evaluate an end product. I can think of other ways, in which, to create a similar item. **Digital World** I can analyse and evaluate an existing product. I can identify the key features of a pouch.

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Knowledge (I will know…)	
Technical	**Additional**
Cooking and nutrition I know that not all fruits and vegetables can be grown in the UK. I know that climate affects food growth. I know that vegetables and fruit grow in certain seasons. I know that cooking instructions are known as a 'recipe'. I know that imported food is food which has been brought into the country. I know that exported food is food that has been sent to another country. I understand that imported foods travel from far away and this can negatively impact on the environment. I know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. I understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. I know the safety rules for using, storing and cleaning a knife safely. I know that similar coloured fruits and vegetables often have similar nutritional benefits. **Mechanisms/Mechanical systems** I know how pneumatic systems work. I understand that pneumatic systems can be used as part of a mechanism. I know that pneumatic systems operate by drawing in, releasing and compressing air. **Structures** I know that wide and flat based objects are more stable. I know the importance of strength and stiffness in structures. **Electrical systems** I know that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. I know the common features of an electrical product; switch, battery or plug, dials, buttons etc. I know common electrical products (kettle, remote control etc). I know that an electrical product uses an electrical system to work (function). I know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.	**Mechanisms/Mechanical systems** I understand how sketches, drawings and diagrams can be used to communicate design ideas. I know that exploded-diagrams are used to show how different parts of a product fit together. I know that thumbnail sketches are small drawings to get ideas down on paper quickly. **Structures** I know the features of a castle; flag, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse. I know the purpose of the above features of a castle. I know that a façade is the front of a structure. I know that a castle needed to be strong and stable to withstand enemy attacks. I know that a paper net is a flat 2D shape that can become a 3D shape once assembled. I know that a design specification is a list of success criteria for a product. **Electrical systems** I know the importance and purpose of information design. I know how materials choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached). **Digital world** I know what the 'Digital Revolution' is and features of some of the products that have evolved as aresult. I know that in design and technology the term 'smart' means a programmed product. I know the difference between analogue and digital technologies. I know what is meant by 'point of sale display'. I know that CAD stands for 'Computer-aided design'.

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Textiles I know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. I know that when two edges of fabric have been joined together it is called a seam. I know that it is important to leave space on the fabric for the seam. I know that some products are turned inside out after sewing so the stitching is hidden. **Digital world** I know that, in programming, a 'loop' is code that repeats something again and again until stopped. I know that a micro:bit is a pocket sized, codeable computer.	