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| **Design and Technology Programmes of study** **KS1****Design** * design purposeful, functional, appealing products for themselves and other users based on design criteria
* generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

**Make** * select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
* select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

 **Evaluate** * explore and evaluate a range of existing products
* evaluate their ideas and products against design criteria

**Technical knowledge** * build structures, exploring how they can be made stronger, stiffer and more stable
* explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

**Cooking and Nutrition*** use the basic principles of a healthy and varied diet to prepare dishes
* understand where food comes from.
 | **KS2****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*** 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.
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|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Designing and evaluating – underpin all topics throughout the year** | Draw simple labelled diagrams to show an intended outcomeTo discuss strengths and weaknesses of their own and others work. | Create detailed labelled plans following a given criteriaTo identify how products, fulfil their purposes and give ideas for improvement | To design products that are fit for purpose, sharing their thoughts and ideas with others.Suggest improvements to be made and give thoughts on how to implement them.To understand how British designers have impacted on daily lives and inventions influence the future**British Inventors****Autumn** | To use a number of different sources to inform their design of a product that is fit for purposeTo use evidence from research to inform strengths and weaknesses and how to overcome these.  | To use sources, labelled diagrams and cross sectional drawing to design products that meet a range of needsTo test and evaluate products against design criteria**Focus on inspirational designers in Autumn****Focus on iconic bridges in Spring for inspiration** | Create detailed criteria for designs for products that are aimed at specific individuals giving reasons for their choices |
| **Design**  | afterbeforedesignfirst/second (etc)generateideaslastnextplanproducttechnologythenwhen | appealat the samecollageconstructioncriteriaearlierfashionfunctionlatermodelobjectoverviewpasteperiodprocessprojectpurposereliefsincestyletime as | 3D projectionlabelmock-uporganiseprototypepurposerealisticresearchscalesketchversion | audiencecross-sectionculturalexploded diagramscale-bar | incorporatepreliminaryprocessreferencesketchbook | budgetdetailexplainfunctionlimitationpurposesophisticated |
| **Make**  | constructioncutdrawingmakemeasurepaintingprintingsticktrace | axlesjoinknitleversmechanismsewsliderstextiletoolswheels | assemblecircuitconstructdigital graphicsdyefabricfabric paints hemmingprecisiontie-dyeweave | backstitchblanket stitchbulbbuzzerfinishing techniquemotorprogramscoreseriestemplatewhip stitch | camgearhydrauliclight emitting diode (LED)leverpneumaticpulley | light dependent resistorpintape |
| **Evaluate**  | differenteffectimprovephotographsharesimilar | comparecontrastcritiquedepthdescribelayerstablestiffstrongsuggestviews | clarifyopinionquality | aestheticalterappealcharacteristicconventiondevelopfit for purposeimpactimprovementinnovativeness pattern piecerestartstructureuniquecompare contrast | constructivefeedbackreasonablerefinesensitivesuggestion | analysecritiqueshowcasefunctionality  |
| **Electronics** |  |  | Begin to understand how electrical products work and how they are important in our daily livesBegin to make simple circuits and program a virtual light sign**Light up signs****Spring**  |  |  | To design and use an appropriate circuit for their fairground ride to include a rotating part. **Fairgrounds****Autumn** |
| **Key vocabulary** |  |  | LightLEDprogramcircuitdesignprototypestructure |  |  | Recap Year 3 and algorithmannotated sketchcomputer-aided controlflow chartmonitormotion sensorprogrammerresearchsoftwarerotation  |
| **Construction**  | Build simple 3D structuresImprove structures by making them stronger, stiffer**Homes** **Autumn**Attach features to a product using the appropriate material (glue, tape)To join and combine shapes to make a kite with tape or glue**Kites****Spring**  |  | Create a framework using diagonal struts to strengthenBuild 3D structure showing an understanding of how to strengthen and reinforce**Photo frames****Summer** |  | Use a range of materials to test bridge construction considering beams,arches, pillars or piers. Select the most appropriate materials to create a 3D structure, ensuring it is strengthened and reinforced as a suspension bridge **Building bridges****Summer** | Select the most appropriate materials to create a 3D structure, ensuring it is strengthened and reinforced with the ability to make a sound.Test a range of materials to ensure the strength and pitch of the instrument makes the product functional**Making African instruments****Spring** |
| **Key vocabulary** | cardconstructionjoinlevermovementpivotslider |  | annotated sketchcellophanecomputer-aided design briefstructureframe |  | Recap Year 3 and compressed forcesbeamsarchescomputer-aided pulley systemstrawssuspensiontapewood | Kalimbadesign briefstructurepitch |
| **Mechanisms**  |  | Use levers and slidersCreate and use simple mechanisms within a productCreate and use levers, sliders, wheels and axels. **Making fire engines****Autumn****Moving minibeasts****Spring** |  | Create and use a product with a simple moving mechanism Select, create and use the most appropriate mechanism for a specific purpose.**Storybooks** **Spring** | To describe and design a product using simple gears, pulleys, cams and linkagesSelect, create and use the most appropriate mechanism and materials for a specific purpose.**Chinese inventions****Spring** | Create and use simple gears, pulleys, cams or linkages linked with an electrical circuit to create a product.**Fairgrounds** **Autumn** |
| **Key vocabulary** |  | axelscardboardchassisdesigndowelwheelslever pivotcomponent mechanism |  | Recap year 2 and designleverlinkagespropertiespulleysstructures | Recap Year 4 and GearsMechanism  | Recap Year 5 andannotateappearancecomputer-aided designpatterncircuitcams |
| **Textiles** |  | Cut out shapes from a variety of fabrics and materials.Use a range of strategies to join different materials togetherTo practise using a simple running stitch to join materials together**Puppets** **Summer**  |   | To develop and improve accuracy in joining materials together using a range of strategies including stitchingTo use a simple running stitch to join materials together in an accurate way.Create a 3D product with purpose using a range of stitching techniques (running, cross, back)**Seasonal stockings****Autumn** | Create a 3D decorative product with purpose using a range of stitching techniques (running, cross, back)Combine materials for more useful purposes, identifying and fixing snags and glitches. **Fashion and textiles****Autumn** |  |
| **Key vocabulary** |  | fabricmaterialsneedle overrunning stitchpuppetunderross stitchtemplatethreadwoodland |  | Recap year 2 andannotatecottondesign briefstraight stitchstockingsketchblanket stichexisting productshemzigzag stichcomparecontrast | Recap Year 4 andappearancechallengespatternpurposestitchingstrengthstructure |  |
| **Food and Nutrition**  | To learn about different types of food and where it has come from, To identify healthy and balanced foodsTo recognise the food groups within a mealCut, peel, grate ingredients to make fruit kebabs**Teddy bears picnic****Summer**  |  |  | To identify which food is native to the UK and where other foods originateTo identify how seasonality and current events can affect the production of foodsTo make healthy choices and explain whyMeasure and weigh the appropriate ingredients following a given recipe- Bread**Seasonal food****Summer** |  | To identify which foods grow at different times of year and in different climatesDiscuss and evaluate whether a meal is balanced or not Combine food ingredients appropriately (kneading, stirring, whisking etc)To plan how to have a healthy/affordable meal. Combine ingredients more accurately using a range of cooking techniques Measure and weigh the appropriate ingredients following a given recipe**Great British dishes****Summer** |
| **Key vocab** | blendchopdietfruitgrownutritiousingredientslabelmixplantsaladsmoothietastevegetablesvitamins |  |  | Recap Year 1 and annotateappearancechopslicefreshgrateportiontexturedoughyeastseasonal |  | Recap Year 3 and allergyfoldglutenherbsintolerancekneedmixnutrientspourprocessedseparate (egg white/yolk)smoothspicetexturekneadingblending  |