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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. | | | | |
|  | **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 outcome  To discuss strengths and weaknesses of their own and others work. | Create detailed labelled plans following a given criteria  To 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 purpose  To 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 needs  To 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** | after  before  design  first/second (etc)  generate  ideas  last  next  plan  product  technology  then  when | appeal  at the same  collage  construction  criteria  earlier  fashion  function  later  model  object  overview  paste  period  process  project  purpose  relief  since  style  time as | 3D projection  label  mock-up  organise  prototype  purpose  realistic  research  scale  sketch  version | | audience  cross-section  cultural  exploded diagram  scale-bar | incorporate  preliminary  process  reference  sketchbook | budget  detail  explain  function  limitation  purpose  sophisticated | |
| **Make** | construction  cut  drawing  make  measure  painting  printing  stick  trace | axles  join  knit  levers  mechanism  sew  sliders  textile  tools  wheels | assemble  circuit  construct  digital graphics  dye  fabric  fabric paints  hemming  precision  tie-dye  weave | | backstitch  blanket stitch  bulb  buzzer  finishing technique  motor  program  score  series  template  whip stitch | cam  gear  hydraulic  light emitting diode (LED)  lever  pneumatic  pulley | light dependent resistor  pin  tape | |
| **Evaluate** | different  effect  improve  photograph  share  similar | compare  contrast  critique  depth  describe  layer  stable  stiff  strong  suggest  views | clarify  opinion  quality | | aesthetic  alter  appeal  characteristic  convention  develop  fit for purpose  impact  improvement  innovativeness  pattern piece  restart  structure  unique  compare  contrast | constructive  feedback  reasonable  refine  sensitive  suggestion | analyse  critique  showcase  functionality | |
| **Electronics** |  |  | Begin to understand how electrical products work and how they are important in our daily lives  Begin 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** |  |  | Light  LED  program  circuit  design  prototype  structure | |  |  | | Recap Year 3 and  algorithm  annotated  sketch  computer-aided  control  flow chart  monitor  motion sensor  programmer  research  software  rotation |
| **Construction** | Build simple 3D structures  Improve 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 strengthen  Build 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** | card  construction  join  lever  movement  pivot  slider |  | annotated sketch  cellophane  computer-aided  design brief  structure  frame | |  | Recap Year 3 and compressed forces  beams  arches  computer-aided  pulley system  straws  suspension  tape  wood | Kalimba  design brief  structure  pitch | |
| **Mechanisms** |  | Use levers and sliders  Create and use simple mechanisms within a product  Create 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 linkages  Select, 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** |  | axels  cardboard  chassis  design  dowel  wheels  lever  pivot  component  mechanism |  | | Recap year 2 and  design  lever  linkages  properties  pulleys  structures | Recap Year 4 and  Gears  Mechanism | | Recap Year 5 and  annotate  appearance  computer-aided  design  pattern  circuit  cams |
| **Textiles** |  | Cut out shapes from a variety of fabrics and materials.  Use a range of strategies to join different materials together  To 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 stitching  To 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** |  | fabric  materials  needle  over  running stitch  puppet  under  ross stitch  template  thread  woodland |  | | Recap year 2 and  annotate  cotton  design brief  straight stitch  stocking  sketch  blanket stich  existing  products  hem  zigzag stich  compare  contrast | Recap Year 4 and  appearance  challenges  pattern  purpose  stitching  strength  structure | |  |
| **Food and Nutrition** | To learn about different types of food and where it has come from,  To identify healthy and balanced foods  To recognise the food groups within a meal  Cut, peel, grate ingredients to make fruit kebabs  **Teddy bears picnic**  **Summer** |  |  | | To identify which food is native to the UK and where other foods originate  To identify how seasonality and current events can affect the production of foods  To make healthy choices and explain why  Measure 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 climates  Discuss 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** | blend  chop  diet  fruit  grow  nutritious  ingredients  label  mix  plant  salad  smoothie  taste  vegetables  vitamins |  |  | | Recap Year 1 and  annotate  appearance  chop  slice  fresh  grate  portion  texture  dough  yeast  seasonal |  | | Recap Year 3 and  allergy  fold  gluten  herbs  intolerance  kneed  mix  nutrients  pour  processed  separate (egg white/yolk)  smooth  spice  texture  kneading  blending |