|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **STRUCTURES** | **Key vocabulary** | **Design** | **Make** | **Evaluate** |
| **Reception** | | | | |
| **Junk Modelling** | join  stick  cut  bend  slot  scissors  measure  materials  fix | Making verbal plans and material choices.  Developing a junk model. | Improving fine motor/scissor skills with a variety of materials.  Joining materials in a variety of ways (temporary and permanent).  Joining different materials together. Describing their junk model, and how they intend to put it together. | Giving a verbal evaluation of their own and others’ junk models with adult support. Checking to see if their model matches their plan. Considering what they would do differently if they were to do it again. Describing their favourite and least favourite part of their model. |
| **Boats** | waterproof  absorb  prediction  variable  experiment  investigation  float  sink  junk | Designing a junk model boat. Using knowledge from exploration to inform design | Making a boat that floats and is waterproof, considering material choices. | Making predictions about, and evaluating different materials to see if they are waterproof.  Making predictions about, and evaluating existing boats to see which floats best.  Testing their design and reflecting on what could have been done differently. Investigating the how the shapes and structure of a boat affect the way it moves. |
| **Year 1** | | | | |
| **Constructing a Windmill** | axle  design  model  packaging  template  stable  bridge  design criteria  net  structure  strong  weak | Learning the importance of a clear design criteria.  Including individual preferences and requirements in a design. | Making stable structures from card, tape and glue. Learning how to turn 2D nets into 3D structures. Following instructions to cut and assemble the supporting structure of a windmill.  Making functioning turbines and axles which are assembled into a main supporting structure. | Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn’t.  Suggest points for improvements. |
| **Year 2** | | | | |
| **Baby Bear’s Chair** | design criteria  natural  structure  shape  man-made  properties  stable  model  test | Generating and communicating ideas using sketching and modelling.  Learning about different types of structures, found in the natural world and in everyday objects. | Making a structure according to design criteria. Creating joints and structures from paper/card and tape.  Building a strong and stiff structure by folding paper. | Exploring the features of structures.  Comparing the stability of different shapes.  Testing the strength of own structures.  Identifying the weakest part of a structure.  Evaluating the strength, stiffness and stability of own structure |
| **Year 3** | | | | |
| **Constructing a castle** | 2D shapes  3D shapes  castle  design criteria  evaluate  façade  feature  flag  net  recyclable  scoring  stable  strong  structure  tab  weak | Designing a castle with key features to appeal to a specific person/purpose. Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. Designing and/or decorating a castle tower on CAD software. | Constructing a range of 3D geometric shapes using nets. Creating special features for individual designs. Making facades from a range of recycled materials | Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design. Suggesting points for modification of the individual designs. |
| **Year 4** | | | | |
| **Pavilions** | aesthetic  cladding  design criteria  evaluation  frame structure  function  inspiration  pavilion  reinforce  stable  structure  target audience  target customer  texture  theme | Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. | Creating a range of different shaped frame structures. Making a variety of free-standing frame structures of different shapes and sizes. Selecting appropriate materials to build a strong structure and cladding. Reinforcing corners to strengthen a structure. Creating a design in accordance with a plan. •Learning to create different textural effects with materials | Evaluating structures made by the class. Describing what characteristics of a design and construction made it the most effective. Considering effective and ineffective designs. |
| **MECHANISMS** | **Key vocabulary** | **Design** | **Make** | **Evaluate** |
| **Year 1** | | | | |
| **Making a Moving Story book** | assemble  design  evaluation  mechanism  model  sliders  stencil  target audience  template  test | Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving story book for a given audience. | Following a design to create moving models that use levers and sliders. | Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. Reviewing the success of a product by testing it with its intended audience. |
| **Wheels and Axles** | axle  axle holder  chassis  design  evaluation  fix  mechanic  mechanism  model  test  wheel | Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. Creating clearly labelled drawings that illustrate movement. | Adapting mechanisms, when:  -they do not work as they should.  -to fit their vehicle design.  -to improve how they work after testing their vehicle. | Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. |
| **Year 2** | | | | |
| **Fairground Wheel** | axle  decorate  evaluation  Ferris wheel  mechanism  stable  strong  test  waterproof  weak | Selecting a suitable linkage system to produce the desired motion. Designing a wheel. | Selecting materials according to their characteristics. Following a design brief. | Evaluating different designs. Testing and adapting a design. |
| **Making a Moving Monster** | evaluation  input  lever  linear  motion  linkage  mechanical  mechanism  motion  oscillating motion  output  pivot  reciprocating motion  rotary motion  survey | Creating a class design criteria for a moving monster.  Designing a moving monster for a specific audience in accordance with a design criteria. | Making linkages using card for levers and split pins for pivots. Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. Cutting and assembling components neatly. | Evaluating own designs against design criteria. Using peer feedback to modify a final design. |
| **Year 3** | | | | |
| **Pneumatic Toys** | exploded diagram  function  input  lever  linkage  mechanism  motion  net  output  pivot  pneumatic system  thumbnail sketch | Designing a toy which uses a pneumatic system. Developing design criteria from a design brief. Generating ideas using thumbnail sketches and exploded diagrams. Learning that different types of drawings are used in design to explain ideas clearly. | Creating a pneumatic system to create a desired motion. Building secure housing for a pneumatic system. Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. Selecting materials due to their functional and aesthetic characteristics. Manipulating materials to create different effects by cutting, creasing, folding and weaving. | Using the views of others to improve designs. Testing and modifying the outcome, suggesting improvements. Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. |
| **Year 4** | | | | |
| **Making a Slingshot Car** | aesthetic  air resistance  chassis  design  design criteria  function  graphics  kinetic energy  mechanism  net structure | Designing a shape that reduces air resistance. Drawing a net to create a structure from. Choosing shapes that increase or decrease speed as a result of air resistance. Personalising a design. | Measuring, marking, cutting and assembling with increasing accuracy. Making a model based on a chosen design. | Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **COOKING AND NUTRITION** | **Key vocabulary** | **Design** | **Make** | **Evaluate** |
| **Reception** | | | | |
| **Soup** | fruit  vegetables  safety  knife  blade  tool  edge  handle  chop  slice  cut  saucepan  blender  chopping board  hob  boil  blend  mix  packaging  recyclable  metal  plastic  reusable | Designing a soup recipe as a class. Designing soup packaging. | Chopping plasticine safely. Chopping vegetables with support. | Tasting the soup and giving opinions. Describing some of the following when tasting food: look, feel, smell and taste. Choosing their favourite packaging design and explaining why. |
| **Year 1** | | | | |
| **Fruit and Vegetables** | fruit  vegetable  seed  leaf  root  stem  smoothie  healthy  carton  design  flavour  peel  slice | Designing smoothie carton packaging by-hand or on ICT software. | Chopping fruit and vegetables safely to make a smoothie. | Tasting and evaluating different food combinations. Describing appearance, smell and taste. Suggesting information to be included on packaging. |
| **Year 2** | | | | |
| **A Balanced Diet** | alternative  diet  balanced diet  evaluation  expensive  healthy  ingredients  nutrients  packaging  refrigerator  sugar  substitute | Designing a healthy wrap based on a food combination which work well together. | Slicing food safely using the bridge or claw grip. Constructing a wrap that meets a design brief. | Describing the taste, texture and smell of fruit and vegetables. Taste testing food combinations and final products. Describing the information that should be included on a label. Evaluating which grip was most effective |
| **Year 3** | | | | |
| **Eating Seasonally** | climate  dry climate  exported  imported  Mediterranean climate  nationality  nutrients  polar climate  recipe  seasonal food  seasons  temperate climate  tropical climate | Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. | Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. Following the instructions within a recipe. | Establishing and using design criteria to help test and review dishes. Describing the benefits of seasonal fruits and vegetables and the impact on the environment. Suggesting points for improvement when making a seasonal tart. |
| **Year 4** | | | | |
| **Adapting a recipe** | adapt  budget  cooling rack  creaming  equipment  evaluation  flavour  ingredients  method  net  packaging  prototype  quantity  recipe  rubbing  sieving  target audience  unit of measure  utilities | Designing a biscuit within a given budget, drawing upon previous taste testing judgements. | Following a baking recipe, from start to finish, including the preparation of ingredients. Cooking safely, following basic hygiene rules. Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet). | Evaluating a recipe, considering: taste, smell, texture and appearance. Describing the impact of the budget on the selection of ingredients. Evaluating and comparing a range of food products. Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins). |
| **TEXTILES** | **Key vocabulary** | **Design** | **Make** | **Evaluate** |
| **Reception** | | | | |
| **Bookmarks** | thread  weave  pattern  sew  sewing needle  embroider  design  evaluate | Discussing what a good design needs. Designing a simple pattern with paper. Designing a bookmark. • Choosing from available materials. | Developing fine motor/cutting skills with scissors. Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. Using a prepared needle and wool to practise threading. | Reflecting on a finished product and comparing to their design. |
| **Year 1** | | | | |
| **Puppets** | decorate  design  fabric  glue  model  hand puppet  safety pin  staple  stencil  template | Using a template to create a design for a puppet. | Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing steps for construction. | Reflecting on a finished product, explaining likes and dislikes. |
| **Year 2** | | | | |
| **Pouches** | accurate  fabric  knot  pouch  running-stitch  sew  shape  stencil  template  thimble | Designing a pouch. | Selecting and cutting fabrics for sewing. Decorating a pouch using fabric glue or running stitch. Threading a needle. Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. Neatly pinning and cutting fabric using a template. | Troubleshooting scenarios posed by teacher. Evaluating the quality of the stitching on others’ work. Discussing as a class, the success of their stitching against the success criteria. Identifying aspects of their peers’ work that they particularly like and why |
| **Year 3** | | | | |
| **Egyptian Collars** | accurate  applique  cross stitch  decorate  detail  fabric  patch  running stitch  seam  stencil  target audience  target customer  template | Designing and making a template from an existing cushion and applying individual design criteria. | Following design criteria to create a cushion or Egyptian collar. Selecting and cutting fabrics with ease using fabric scissors. Threading needles with greater independence. Tying knots with greater independence. Sewing cross stitch to join fabric. Decorating fabric using appliqué. Completing design ideas embellishing the collars based on design ideas. | Evaluating an end product and thinking of other ways in which to create similar items. |
| **Year 4** | | | | |
| **Fastenings** | aesthetic  assemble  book sleeve  design criteria  evaluation  fabric  fastening  mock-up  net  running stitch  stencil  target audience  target customer  template | Writing design criteria for a product, articulating decisions made. Designing a personalised book sleeve. | Making and testing a paper template with accuracy and in keeping with the design criteria. Measuring, marking and cutting fabric using a paper template. Selecting a stitch style to join fabric. Working neatly by sewing small, straight stitches. Incorporating a fastening to a design. | Testing and evaluating an end product against the original design criteria. Deciding how many of the criteria should be met for the product to be considered successful. Suggesting modifications for improvement. Articulating the advantages and disadvantages of different fastening types |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ELECTRICAL SYSTEMS**  **(KS2 ONLY)** | **Key vocabulary** | **Design** | **Make** | **Evaluate** |
| **Year 3** | | | | |
| **Electrical Posters** | battery  bulb  circuit  circuit component  crocodile wires  electrical product  electrical system  final design  information design  initial ideas  peer assessment  research  self-assessment  sketch | Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. Generate a final design for the electric poster with consideration to the client’s needs and design criteria. Design an electric poster that fits the requirements of a given brief. Plan the positioning of the bulb (circuit component) and its purpose. | Create a final design for the electric poster. Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. Measure and mark materials out using a template or ruler. Fit an electrical component (bulb). Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). | Learning to give and accept constructive criticism on own work and the work of others. Testing the success of initial ideas against the design criteria and justifying opinions. Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs. |
| **Year 4** | | | | |
| **Torches** | battery  bulb  buzzer  cell  component  conductor  copper  design criteria  electrical item  electricity  electronic item  function  insulator  series circuit  switch  test  torch  wire | Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. | Making a torch with a working electrical circuit and switch. Using appropriate equipment to cut and attach materials. Assembling a torch according to the design and success criteria | Evaluating electrical products. •Testing and evaluating the success of a final product. |