 Design & Technology: Skills Progression Year Five

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|  | **Autumn**  | **Spring**  | **Summer 1** | **STEM Week** |  **Additional Projects** |
| **Year 5** | **How fast should your buggy be?** | **How could a carrier make the job easier?** | **How do you take your tea?** | **How will your beast open its mouth?** |  |
| **BIG task details** | The big task is for children to design and make a controllable, battery-powered toy vehicle using card, wood, found materials and a variety of mechanical andelectrical components. | To design and make a carrier that meets the needs of a person (who may be the child) who has to carry particular items. | To discover a particular person’spreferences for a hot drink and to meetthose preferences by serving a drink thatmeets this specification. | The big task is to design and make an animal with a moving mouth from studying their own mouth and head movements and those of animals. The mechanisms used by the children are restricted to a cam and follower, a simplecrank or a crank and slider. |  |
| **Small tasks** | **Focused practical tasks**1 Exploring moving toys2 Making a simple picture frame3 Making spinning tops4 Exploring technical systems5 Exploring networks and surface decoration | **Focused practical tasks**1 Looking at carrying2 Investigating paper carrier bags3 Investigating handles4 Disassembling paper carrier bags5 Testing paper carrier bags6 Considering appearance and the environment 7 Investigating carriers for shopping8 Creating a specification | **Focused practical tasks**1 Why people make tea2 Finding out the needs and preferences of the consumer3 Investigating the extraction process4 Learning how to make a hot drinksafely5 Writing a specification for a hot drink | **Focused practical tasks**1 Drawing animals2 Drawing a comic strip to show mouth movement 3 Exploring animal shape and colour4 Exploring ways to make movement |  |
| **Vocab** | vehicle, battery, abrasive, hexagon, **mechanism, belt drive, simple, compound, gear, worm and wheel,****motor, chassis, periphery push** to make switch, **push to break switch, on-off switch, pulley****axle wheel,** forwards, backwards, reverse, flashing LED (light emittingdiode**), series circuit, parallel circuit, bulb holder, buzzer, network** | retail outlet**, logos, integral**, observation, sensitive, predicting, **plaiting, seam**drawing, **structure stiffen, fibre, reinforce** | tea, leaf, ,bud, pluck, wither, crush, **preferences,** allergy, **extraction,** kettle, **design specification,**granules, powder, dried fruit, **dietary requirements**, boil, steam **tasting notes**,herbs, **infusion, evaluation** | outline, expression, roar, **net, length, mechanism, crank, crank and specification,**shape, trace, chew, gawp, lick, **width, height, slider, cam, shaft, cam and lever, design decision,****detail**, peck**, proportion movement, rotation, oscillation, adjustments,****reciprocation, evaluation, review** |  |
| **Tools** | pencils, rulers, scissors,  abrasive boards, junior hacksaws, hand drills, 6 mm bits | pencils, staplers, needle and thread, paper punch,plastic sheet, stiff plastic sheet, fasteners, click rivets | kettle, clearcontainers,timers, pencils,tea strainerpencils, teapot, spoons,cups andsaucers | thick and thin water- based felt tip pens,A3 squared card to draw nets, pliers, bradawl, pencils, thin junior hacksaw,stiff wire, scissors |  |
| **Skills: Design, Make , Evaluate** | **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 and prototypes **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, according to their functional properties and aesthetic qualities **Evaluate**   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 electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]  | **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, linkages]  | **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 **Make**  select from and use a wider range of tools and equipment to perform practical accurately  select from and use a wider range of materials and components, including 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 **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.  | **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  |  |
| **Learning purposes** | t to develop their ideas through sketching and working with technical components, wooden strip, paper,card and found materials;t to develop their designs by thinkingabout the purpose of the toy and the needs of possible users;t to mark, measure, cut and joinmaterials with increasing accuracy;t to use a variety of tools with precisionand care;t to use simple mechanisms to provide atransmission system;t to use simple electrical circuits to operate motors, lights and buzzers. | t about the problems of carrying;t about the structure of paper carrier bags; t to investigate the performance ofpaper carrier bags;t about the appearance and sustainability of carrier bags used forshopping; t about other carriers used for shopping. | t about a common food product, and how it is produced, sold and preparedin the home; t to find out and record the needs and preferences of a member of their ownfamily; t to observe and record the process ofextraction, leading to a greater understanding of how hot drinks aremade; t about health and safety issues when using kettles and hot water. | t to draw simple animal forms;t to observe and record both movementand shape; t to cut materials to length accurately;t to draw shapes and nets accurately;t to construct 3D shapes from nets;t to produce decorative effects on card;t to understand simple mechanisms;t to make simple mechanical components.  |  |