 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 and  electrical 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’s  preferences for a hot drink and to meet  those preferences by serving a drink that  meets 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 simple  crank or a crank and slider. |  |
| **Small tasks** | **Focused practical tasks**  1 Exploring moving toys  2 Making a simple picture frame  3 Making spinning tops  4 Exploring technical systems  5 Exploring networks and surface decoration | **Focused practical tasks**  1 Looking at carrying  2 Investigating paper carrier bags  3 Investigating handles  4 Disassembling paper carrier bags  5 Testing paper carrier bags  6 Considering appearance and the environment  7 Investigating carriers for shopping  8 Creating a specification | **Focused practical tasks**  1 Why people make tea  2 Finding out the needs and preferences of the consumer  3 Investigating the extraction process  4 Learning how to make a hot drink  safely  5 Writing a specification for a hot drink | **Focused practical tasks**  1 Drawing animals  2 Drawing a comic strip to show mouth movement    3 Exploring animal shape and colour  4 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 emitting  diode**), 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, clear  containers,  timers, pencils,  tea strainer  pencils, teapot, spoons,  cups and  saucers | 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 thinking  about the purpose of the toy and the needs of possible users;  t to mark, measure, cut and join  materials with increasing accuracy;  t to use a variety of tools with precision  and care;  t to use simple mechanisms to provide a  transmission 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 of  paper carrier bags;  t about the appearance and sustainability of carrier bags used for  shopping;  t about other carriers used for shopping. | t about a common food product, and how it is produced, sold and prepared  in the home;  t to find out and record the needs and preferences of a member of their own  family;  t to observe and record the process of  extraction, leading to a greater understanding of how hot drinks are  made;  t about health and safety issues when using kettles and hot water. | t to draw simple animal forms;  t to observe and record both movement  and 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. |  |