 Design & Technology: Skills Progression Year Six

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|  | **Autumn** | **Spring** | **Summer 1** | **STEM Week** | **Additional projects** |
| **Year 6** | **Should your creature be fierce or friendly?** | **What would the scissors say on screen?** | **What sort of light will work for you?** | **How should puppets tell their story?** |  |
| **BIG task details** | The big task is for children working in  groups to design and make a statue of a creature that will welcome visitors to the  classroom during the day or act as a guardian “after school” and deter  intruders. It has to be large enough to create an immediate impression, stable so that it doesn’t fall over, stiff so that it keeps its shape, strong so that it doesn’t break easily, durable so that it lasts a long time, made from readily available and inexpensive materials, and  impressive through quality of construction and finish. | The big task is to build a multimedia  software presentation using an authoring program previously introduced during ICT lesson time. The new presentation should be attractive and easy to use for younger children and should help them to learn about using tools in the classroom. | The big task is to design and make a light that is suitable for use in a particular situation. The device will be constructed from card, found materials and technical components. It will be powered by a battery and controlled by switches. | The big task is for children working in groups to write a short story with a message and then design and make the puppets and puppet theatre that can be used to tell the story. Planning the  production is an important part of the activity, with the performance as its climax. |  |
| **Small tasks** | **Focused practical tasks**  1 Designing and making a small creature statue  2 Exploring fierce and friendly creatures  3 Drawing things bigger  4 Making structures stronger and stiffer  5 Making structures more stable  6 Fastening materials | **Focused practical tasks**  1 Exploring tools  2 Exploring multimedia software  3 Investigating user needs and  preferences  4 Modelling design ideas on paper  5 Modelling design ideas on screen  6 Writing the specification | **Focused practical tasks**  1 Looking at lights  2 Investigating torches  3 Making simple circuits  4 Investigating switches  5 Writing a specification | **Focused practical tasks**  1 Exploring puppets and puppet theatres  2 Writing a simple play script  3 Making examples of different types of  Puppets  4 Designing a stage    5 Making curtains  6 Designing scenery |  |
| **Vocab** | statue, gargoyle, totem pole, temple, **grid, vertical lines, strength, strong, stable, fastenings,**  dragon, welcome, deter, intruder, **horizontal lines,** stiffness, stiff, welcomer, guardian  expression (on face), **scale, scaling up** | **names of sample tools**, interactive, educational, interview, **storyboard, authoring software,**  **multimedia, presentation, digital image,** sound  **visual style, navigation file** | **battery, bulb, flex, plug, reflective, transparent, wire, bulb holder, wire push switch, toggle**  **switch, opaque, circuit, current strippers, insulation, series, switch, slide switch,**  **path, conductor, insulator parallel** | control, 3-dimensional (3D), characters, dialogue, **pulley, clearance, rotation, backdrop, slots,**  **2-dimensional (2D), scenery,** locations, message, **story lighting effect, sound effect, series, parallel,**  **silhouettes,** stage, theatre line **operator, production**, performance |  |
| **Tools** | stapler, bodkin needle paper punch, felt tip markers, pencils,  rulers, rubbers, scissors,  stiff stapler, | pencils | pliers and/or wire cutters/strippers, small screwdrivers, scissors and/or snips for  cutting paper, card or plastic, rulers, junior hacksaw and sawing board for cutting  wooden strip, pencils. | pencils, computer and printer (optional) scissors, needles, paint brushes, junior hacksaw, sawing board, drill bits, hand stapler, glue gun, wire strippers, screwdriver drill, bradawl. |  |
| **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  **Technical knowledge**   apply their understanding of how to strengthen, stiffen and reinforce more complex structures | **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 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 computing to program, monitor and control their products | **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] | **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 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 measure and mark out card accurately, to cut, bend and fold card  carefully;  t to observe and record animal form  and behaviour;  t to produce decorative effects on card;  t to scale up using a grid;  t about these simple structures concepts:  – strength and stiffness;  – balance and stability;  t effective techniques for joining card. | t about the range of tools used for design & technology across the school age range;  t to explore and evaluate the features of educational software;  t to find out and analyse the needs and preferences of the user group;  t to use authoring software to design a multimedia educational resource;  t to work collaboratively in teams. | t to think about the requirements of a light  for a particular purpose in terms of:  – what it should look like and  – how it might work;  t to investigate the performance and  working of existing torches;  t some techniques for constructing  simple circuits;  t about switches, batteries and light  bulbs and how these can be arranged  to provide lighting. | t to develop their designs by thinking about the purpose of the products, the intended audience and other possible  users;  t to develop their ideas through sketching and working with fabrics,  paper, card and wood;  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 produce  different types of movement;  t to use simple electrical circuits to control lights;  t to plan and implement complex operations – puppet performance. |  |