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| Year 6 | | |
| KS2 National Curriculum Objectives | | |
| When designing and making, pupils should be taught to:  **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. | | |
| Year 6 Key Skills | | |
| Autumn Term | Spring Term | Summer Term |
| **Design**   * Designing a stable structure that is able to support weight * Creating frame structure with focus on triangulation   **Make**   * Making a range of different shaped beam bridges * Using triangles to create truss bridges that span a given distance and supports a load * Building a wooden bridge structure * Independently measuring and marking wood accurately * Selecting appropriate tools and equipment for particular tasks * Using the correct techniques to saws safely * Identifying where a structure needs reinforcement and using card corners for support   **Evaluate**   * Improving a design plan based on peer evaluation * Testing and adapting a design to improve it as it is developed * Identifying what makes a successful structure   **Technical knowledge**   * Exploring how to create a strong beam * Identifying arch and beam bridges and understanding the terms: compression and tension * Identifying stronger and weaker structures * Finding different ways to reinforce structures * Understanding how triangles can be used to reinforce bridges * Articulating the difference between beam, arch, truss and suspension bridge |  | **Design**   * After experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement * Understanding how linkages change the direction of a force * Making things move at the same time   **Make**   * Measuring, marking and checking the accuracy of the jelutong and dowel pieces required * Measuring, marking and cutting components accurately using a ruler and scissors * Assembling components accurately to make a stable frame * Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles * Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set   **Evaluate**   * Evaluating the work of others and receiving feedback on own work * Applying points of improvements * Describing changes, they would make/ do if they were to do the project again   **Technical knowledge**   * Using a bench hook to saw safely and effectively * Exploring cams, learning that different shaped cams produce different follower movements * Exploring types of motions and direction of a motion |
| Year 6 Curriculum Enrichment Opportunities | | |
| Enterprise Week –  Children involved in making a product to sell at the Christmas Fair. Children will consider Purpose, Product, user. |  |  |
| Year 6 Vocabulary | | |
| Evaluate, Dowel, Square, Tools, Materials, Processes. |  | Gear, Pulley, Cam, Egg, Round, Mechanism, |