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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
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| 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,  |