Badger Hill PRIMARY SCHOOL

DT Long Term Plan Year Four 2023-24

	Autumn Term	Spring Term-A Wonderful World	Summer Term-Back to the Future
Topic	**Structures: Pavilions**	**Mechanical Systems: Making a slingshot car**	**Electrical Systems: Torches**
Sticky Knowledge	To know what a frame structure is To use the term free standing To talk about a design using the word aesthetic	To know what air resistance is and how it can affect speed/motion To know what kinetic energy is	To know and use the language conductor and insulator To explain what a battery is To know an electrical circuit must be complete for it to work
Vocabulary	3D shapes Cladding Design criteria Innovative Natural Reinforce Structure	chassis energy kinetic mechanism air resistance design structure graphics research model template	battery, conductor, electricity, switch, design criteria, LED, target audience, theme, equipment, bulb, circuit, insulator, component, diagram, model, input, aesthetics, ingredients buzzer, circuit diagram, series circuit, design, evaluation, shape, recyclable, assemble, packaging
Suggested Tasks	**Wow-** Discuss what is meant by a pavilion. Set the class a Challenge to build a pavilion using marshmallows and cocktail sticks! **Design-** Think about what makes something aesthetically pleasing! What kind of buildings appeal to people? **Make-** Follow a plan and look at where to reinforce and make strong. **Evaluate-** How was the design effective?- share designs in a gallery or open event	**Wow-** Ask children to bring in a toy car from home. Set up a race and discuss what makes toy cars go faster? How could we build a car so it could travel a long way? **Design-** Create a car with good air resistance-what would you like your car to look like? **Make-** Use accurate measuring and cutting skills-can they follow a plan? **Evaluate-** Who wins the race? Can they invite a judge into school?	**Wow-** Share children's knowledge in electricity! Create a true/false activity about electricity facts! **Design-** Design a torch ready for a camping trip for Year 4 children. **Make-** Use knowledge gained in science to create the torch **Evaluate-** Think about why your final product is successful

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Skills linked to outcomes	**Design** Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. Building frame structures designed to support weight	**Make** Creating a range of different shaped frame structures Making a variety of free standing frame structures of different shapes and sizes Selecting appropriate materials to build a strong structure and cladding Reinforcing corners to strengthen a structure Creating a design in accordance with a plan Learning to create different textural effects with materials	**Evaluate** Evaluating structures made by the class Describing what characteristics of a design and construction made it the most effective Considering effective and ineffective designs	**Technical (knowledge)** To understand what a frame structure is To know that a free-standing structure is one which can stand on its own	**Design** Designing a shape that reduces air resistance Drawing a net to create a structure from Choosing shapes that increase or decrease speed as a result of air resistance Personalising a design	**Make** Measuring, marking and cutting and assembling with increasing accuracy Making a model based on a chosen design	**Evaluate** Evaluate the speed of a final product based on the effect of shape on speed and the accuracy of workmanship on performance To know that air resistance is the level of drag on an object as it is forced through the air To understand that the shape of a moving object will affect how it moves due to air resistance To understand that products change and evolve over time To know that aesthetics means how an object or product looks in design and technology To know that a template is a stencil you can use to help you draw To know that a birds eye is a view from a high angle	**Technical (knowledge)** To understand that all moving things have kinetic energy To understand that kinetic energy is the energy that something has by being in motion	**Design** Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.	**Make** Making a torch with a working electrical circuit and switch. Using appropriate equipment to cut and attach materials. Assembling a torch according to the design and success criteria.	**Evaluate** Evaluating electrical products Testing and evaluating the success of a final product.	**Technical (knowledge)** To understand that electrical conductors are materials which electricity can pass through. To understand that electrical insulators are materials which electricity cannot pass through. To know that a battery contains stored electricity that can be used to power products. To know that an electrical circuit must be complete for electricity to flow. To know that a switch

							To know that graphics are images which are designed to explain or advertise something To know it is important to assess and evaluate design ideas against design criteria					can be used to complete and break an electrical circuit.
Assessment Opportunities	Use the quiz at the beginning and end of the unit. Adapt the knowledge catcher to suit the needs/outcomes of your class. Use as part of the evaluation within the unit.				Use the quiz at the beginning and end of the unit. Adapt the knowledge catcher to suit the needs/outcomes of your class. Use as part of the evaluation within the unit.				Use the quiz at the beginning and end of the unit. Adapt the knowledge catcher to suit the needs/outcomes of your class. Use as part of the evaluation within the unit.			

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Previous and Past learning experiences	**Why this topic now?** **This topic follows on from Y3 topic Structures: Castles (Y3)** **Next Steps Learning:** Playgrounds (Y6)	**Why this topic now?** **This topic follows on from Y2 Moving Monsters** **Next Steps Learning:** Making a pop-up book (Y5)	**Why this topic now?** **This is a new topic** **Next Steps Learning:** Doodlers (Y5)
National Curriculum Links	Design purposeful, functional, appealing products for themselves and other users based on design criteria. 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 talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Evaluate their ideas and products against design criteria. Evaluate a range of existing products Explore and use mechanisms in their products Investigate and analyse a range of existing products Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. 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 Investigate and analyse a range of existing products Evaluate their ideas and products against design criteria. Understand how key events and individuals in design and technology have helped shape the world Apply their understanding of computing to program, monitor and control their products Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Understand and use mechanical systems in their products	Understand how key events and individuals in design and technology have helped shaped the world Understand and use electrical systems in their products 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 talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. 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 Investigate and analyse a range of existing products Evaluate their ideas and products against design criteria.