Mindful moments timer (Digital World)

Year 4 /5 **Term** Autumn 2 **Subject** DT

National Curriculum Coverage	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 Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately 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 Apply their understanding of computing to program, monitor and control their products

Key Skills	**Key Knowledge**
Year 4 Writing design criteria for a programmed timer (Micro:bit). Exploring different mindfulness strategies and using this research to inform my design criteria. Developing a prototype case. Using and manipulating shapes and clipart and using computer-aided design (CAD) to produce a logo. Creating a 3D structure using a net. Programming a Micro:bit to time a set number of seconds/minutes upon button press Analysing a range of timers Evaluating my Micro:bit program against points on my design criteria Finding and fixing the bugs (debug) in my code. Year 5 Researching (books, internet) for a particular (user's) animal's needs. Developing design criteria based on research. Generating multiple housing ideas using building bricks. Understanding what a virtual model is and the pros and cons of traditional and CAD modelling- creating a logo. Placing and manoeuvring 3D objects, using CAD, to create a 3D structure Changing the properties of, or combining one or more 3D objects, using CAD. Explaining key functions in my program (audible alert, visuals).	What are variables in programming? What are the features of a Micro:bit? What is an algorithm? How do we check for errors? Why do we check for errors?

Previous knowledge	**Current Year**	**Future learning**
R/1 , 1 / 2, 3/ 4 Coding in Computing Curriculum	• Writing design criteria for a programmed timer (Micro:bit). • Exploring different mindfulness strategies and using this research to inform my design criteria. • Developing a prototype case.	5/ 6 Game Creater and Coding in Computing

	• Using and manipulating shapes and clipart and using computer-aided design (CAD) to produce a logo. • Creating a 3D structure using a net. • Programming a Micro:bit to time a set number of seconds/minutes upon button press • Analysing a range of timers • Evaluating my Micro:bit program against points on my design criteria Finding and fixing the bugs (debug) in my code.	
Vocabulary: Logo, Loop, Model, Prototype, Variable, Assemble, Debug		

What are Pneumatic Toys?- Mechanisms

Year Year 4/ 5 **Term** Spring 2 **Subject** Design Technology

National Curriculum Coverage	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 Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately 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 Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Key Skills	**Key Knowledge**
Year 4 Designing a toy that uses a pneumatic system. Developing design criteria from a design brief. Generating ideas using thumbnail sketches and exploded diagrams. Learning that different types of drawings are used in design to explain ideas clearly. Creating a pneumatic system to create a desired motion. Building secure housing for a pneumatic system.	How do pneumatic systems operate and work? How can pneumatic systems be used as part of a mechanism? How do pneumatic systems operate?

Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. Selecting materials due to their functional and aesthetic characteristics. Manipulating materials to create different effects by cutting, creasing, folding and weaving. Using the views of others to improve designs. Testing and modifying the outcome, suggesting improvements. Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. Year 5 Designing a pneumatic toy which uses a mixture of structures and mechanisms. Naming each mechanism, input and output accurately. Creating a design brief to make a pneumatic toy, neatly and with focus on accuracy. The design brief should be specific and appealing. Making mechanisms and/or structures using sliders, pivots and folds to produce movement. Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. Evaluating the work of others and receiving constructive feedback on own work. Suggesting points for improvement to ensure that other products that are created in the future are to a high standard.	What are thumbnail sketches?

Previous knowledge	Current Year	Future learning
Year R / 1 • Explain that wheels move because they are • attached to an axle. • Recognise that wheels and axles are used in • everyday life, not just in cars. • Identify and explain vehicle design flaws using the correct vocabulary. • Design a vehicle that includes functioning wheels,axles and axle holders. • Make a moving vehicle with working wheels and axles. • Explain what must be changed if there are any operational issues. Year 1/2 • Identify the correct terms for levers, linkages and • pivots. • Analyse popular toys with the correct terminology. • Create functional linkages that produce the desired • input and output motions.	• Draw accurate diagrams with correct labels, arrows and explanations. • Correctly identify definitions for key terms. Identify five appropriate design criteria. • Communicate two ideas using thumbnail sketches. • Communicate and develop one idea using an exploded diagram. • Select appropriate equipment and materials to build a working pneumatic system. • Assemble their pneumatic system within the housing to create the desired motion. • Create a finished pneumatic toy that fulfills the design brief.	Year 5 / 6 • Work independently to produce an accurate, functioning car chassis. • Design a shape that is suitable for the project. • Attempt to reduce air resistance through the design of the shape. • Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed. • Construct car bodies effectively. • Conduct a trial accurately and draw conclusions and improvements from the results.

• Design monsters suitable for children, which satisfy • most of the design criteria. • Evaluate their two designs against the design • criteria, using this information and the feedback of • their peers to choose their best design. • Select and assemble materials to create their • planned monster features. • Assemble the monster to their linkages without affecting their functionality. Year 3 /4 • Draw accurate diagrams with correct labels, arrows and explanations. • Correctly identify definitions for key terms. Identify five appropriate design criteria. • Communicate two ideas using thumbnail sketches. • Communicate and develop one idea using an exploded diagram. •		
Vocabulary: mechanism, lever, pivot, linkage, pneumatic system, component, adapt, motion		

What could be healthier?- Food

Year Year 4 / 5 **Term** Summer 2 **Subject** Design Technology

National Curriculum Coverage	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 Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics 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 and apply principles of a healthy and varied diet Prepare and cook 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

Key Skills	**Key Knowledge**
Year 4	Where does meat comes from?

Adapting a recipe. Exploring the ways in which the nutritional value will change as the recipe alters. Using equipment safely Write an amended method for a recipe Design appealing packaging Taste test and evaluate their new adapted recipe and give constructive criticism Reflect on their own adaptation and review Year 5 Adapting a traditional recipe understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients Writing an amended method for a recipe to incorporate the relevant changes to ingredients Designing appealing packaging to reflect a recipe Cutting and preparing vegetables safely Using equipment safely, including knives, hot pans and hobs Knowing how to avoid cross-contamination Following a step by step method carefully to make a recipe Identifying the nutritional differences between different products and recipes Identifying and describing healthy benefits of food groups	How can I make a recipe healthier? What is a nutritional calendar? What does cross-contamination mean? How can I stay hygienic when cooking? What does it mean to substitute a food ingredient?

Previous knowledge	Current Year	Future learning
Year R/1 • Fruit smoothies • Soup Year 1/2 • Food dippers • Healthy Wrap Year 4/5 • Adapting a recipe- biscuits.	• Understand how beef gets from the farm to our plates. • Present a subject as a poster with clear information in an easy to read format. • Contribute ideas as to what a 'healthy meal' means. • Notice the nutritional differences between different products and recipes. • Recognise nutritional differences between two similar recipes and give some justification as to why this is. • Work as a team to amend a Bolognese recipe with healthy adaptations. • Follow a recipe to produce a healthy Bolognese sauce. • Design packaging that promotes the ingredients of the Bolognese.	KS3- Food Technology

Vocabulary: beef, reared, processed, ethical, diet, ingredients, supermarket, farm, balanced