Medium Term Plan **Subject D&T** **Year Group: Year 5** **Term: Spring**

Topic: Mechanical Systems – Making a Pop Up Book

National Curriculum Objectives which are covered in this unit:

Design

Pupils should be taught to:

- Generate, develop, model and communicate their ideas through discussion and prototypes.
- 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.

Make

Pupils should be taught to:

- Select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetics qualities.
- Select from and use a wider range of tools and equipment to perform practical tasks [for example cutting, shaping, joining and finishing] accurately.

Evaluate

Pupils should be taught to:

- 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.

Technical knowledge

Pupils should be taught to:

- Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Lesson sequence - include the key concept, L.O. and brief description of lesson

WALT: design a pop-up book. Designing a pop-up book for younger children. Success criteria • I can remember that input is the motion used to start a mechanism and output is the motion that results from starting the input. • I know that structures use the movement of the pages to work. • I know that mechanisms control movement. • I can design a book with a front cover and four pages, including a mixture of structures and mechanisms. **Pupils with secure understanding indicated by:** producing a suitable plan for each page; naming each type of mechanism, input and output accurately. **Pupils working at greater depth indicated by:** producing a plan to a higher level of sophistication, particularly with more complex linkage systems.	**WALT: follow my design brief to make my pop-up book.** Creating the structure of the book and beginning to make the mechanisms for the pop-up features. Success criteria • I can use paper, card and glue to make my book structure. • I can make mechanisms and structures as detailed in my design template by using sliders, pivots and folds to create movement. **Pupils with secure understanding indicated by:** producing the structure of the book; sketching where the structures and mechanisms will be attached to each page; beginning to assemble the components necessary for their first mechanisms and structures. **Pupils working at greater depth indicated by:** using more demanding mechanisms and structures; creating a product of exceptionally high quality that is neatly and accurately cut and assembled.	**WALT: use layers and spacers to cover the working of mechanisms.** Securing the mechanisms onto the pages and giving the book a professional finish using layers and spacers to hide the mechanisms. Success criteria • I can complete the mechanisms and structures as detailed in my design template. • I can make my book look neater and more attractive by using layers and spacers to hide relevant parts of my mechanisms. **Pupils with secure understanding indicated by:** assembling the components necessary for all their structures/mechanisms; hiding the relevant parts of the mechanisms with layers using spacers where needed. **Pupils working at greater depth indicated by:** producing more demanding mechanisms/structures; making to an exceptionally high quality (neatly and accurately cut and assembled).	**WALT: create a high-quality product suitable for a target user.** Children add the finishing touches to their books, adding illustrations, colour and writing captions. Success criteria • I can complete the surface decoration of my pop-up book by adding the story through: pictures, captions. • I know that I need to consider the preferences and needs of the user. • I know that good quality making should be neat, accurate and securely assembled. **Pupils with secure understanding indicated by**: using a range of mechanisms and structures to illustrate their story and make it interactive for the users; using layers to hide mechanical elements; illustrating the story through the use of appropriate materials and captions. **Pupils working at greater depth indicated by:** including a wider range of more sophisticated mechanisms and structures; making to a high-quality; applying more sophisticated and demanding surface decoration.
Prior learning *List year groups and topics with connected learning*	Year 2 Mechanisms: Fairground Wheel Year 4 Mechanical Systems: Making a Slingshot		
Future learning *List year groups and topics with connected learning*	Year 6 Mechanical Systems: Automata Toys		
Key vocabulary to be explicitly taught	Criteria, design, input, mechanism, model, motion, reinforce, research		

Cross-curricular links	**English** Adding captions to their pop-up books to suit the audience. **Art** Drawing components for their pop-up books.
Enrichment *Give visit/visitor/first hand experience and focus*	
Useful websites/resources	**Knowledge organiser: DT - Y5 Bridges** **Vocabulary display: Structure: Bridges**