Year 6 Medium Term Planning for the Learning Challenge Curriculum

Term: Spring DT Project: Mechanised Butterflies

Previous Learning	New Knowledge /Consolidation	End of Project Outcome	Environmental Links	Key Inventors/People	Project Vocabulary
Pupils have created a less complicated wind up mechanism for a paddle boat in Y4 using different material (plastic). Wire has been cut and manipulated to create a larger structure when creating a buzz wire game in Y5.	Manipulation of wire on a smaller and more complex scale. Reapplication of a twirling mechanism using more components (4 instead of 2).	To create a butterfly that can be wound up and twirls when released.	Discuss the concept of using available materials that can be repurposed (wire, hair pins, safety pins, elastic/loom bands) rather than mass produced plastic components.	N/A	Hazard Cross Section Exploded Diagram Combining Manoeuvrability Motion (force) Kinetic Analyse Sustainable Finish Fit for purpose Innovative

Section	Lesson	Key Skills	Learning Objective & Activity
Explore	**1**	• Use observation techniques to identify the way a butterfly fly's and use creative thinking	**To explore a motion and come up with ideas on how to replicate this movement using a mechanism.** • Children visit butterfly word and research and observe the way a butterfly flies. • Children explore existing twirling mechanisms made from plastic and analyse the key features (head, frame, wings, elastic) • Children take part in a class discussion based on how they could use/ create a mechanism to replicate this movement in a different material (metal) . • Children come up with ideas and share opinions. • Children use existing knowledge of mechanisms to come up with ideas. • Teacher demonstrate appropriate techniques. • YouTube video demonstration to set expectation

Plan / Design	**2**	• Create their own design criteria and specification • Follow and refine a logical plan. • Use annotated sketches, cross-sectional planning and exploded diagrams • Clearly explain how parts of design will work, and how they are fit for purpose	**<u>To create an exploded diagram to show the key features of a twirling butterfly mechanism.</u>** Children draw the key features of an existing butterfly mechanism (made from plastic). Measurements/scale are added using a ruler. Children consider then annotate how the parts will be created using available resources (wire, hair pins, safety pins, elastic/loom bands). Pupils create their wings making choices regarding design, pattern, shape and size (wings to be refined during testing, e.g. trimming). **Wings are then to be added to existing (mass produced) mechanisms.**
Make	**3 & 4**	• Use selected tools and equipment precisely • Follow, and adapt detailed step-by-step plans (how to video) • Accurately measure, mark out, **cut and shape** materials and components • Accurately assemble, join and **combine materials** and components • Be resourceful with practical problems • Select appropriate tools.	**<u>To manipulate wire using appropriate tools to create a twirling mechanism</u>** Manipulate wire (safety pin, hair pin, 3x paper clips) to replicate a twirling mechanism powered by an elastic band. DIY video - https://www.youtube.com/watch?v=-h3dFZntpnk Class discussion to provide solutions to any problems encountered. Discuss why these DIY mechanisms are unsuitable for our wings (e.g. too many variables, not robust enough, different size).
Evaluate	**5**	• Test and evaluate final product • Evaluate ideas and finished product against specification (planning), considering purpose and appearance.	**<u>To evaluate the success of a mechanical product.</u>** Children work in pairs to use their iPad to video their butterfly flying. Children create a video of themselves talking about their work and considering WWW and EBI. Children compare their metal mechanisms to the mass-produced product, exploring functionality and the overall appearance of the product. What would you change about the project? How could we improve the way it looks/ works? Children then upload a video to seesaw as evidence.
Substantive Knowledge			**Disciplinary Knowledge**