Year 6 Medium Term Planning for the Learning Challenge Curriculum

Term: Spring DT Project: Mechanised Samaras

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 leaf 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**	• Evaluate products for function, cost, and sustainability. • Understand how mechanisms can be used to store & release energy in different directions. • Consider the impact of products beyond intended purpose. • Identify hazards and solutions in design.	**To explore a motion and come up with ideas on how to replicate this movement using a mechanism.** • Children explore existing twirling mechanisms (birthday card butterflies) 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.
Explore	**2**	• Generate and refine ideas using research and feedback. • Use detailed sketches, CAD, and prototypes.	**To create an exploded diagram to show the key features of a twirling butterfly mechanism.**

		• Plan the entire making process, considering challenges. • Use exploded diagrams to explore the key parts of products that they have created & adapted. • Investigate different benefits for using sustainable materials.	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 a variety of tools and materials for robust products. • Refine designs through testing and adjustments. • Apply finishing techniques for function and aesthetics. • Create a wind-up mechanism from strong materials (metal).	**<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. Explore how seeds travel - https://www.youtube.com/watch?v=WqgVks9NViQ. Discuss how natures creates the twirling “mechanism” for a distinct purpose (link this to environment). Class discussion to provide solutions to any problems encountered & the reasons for these (e.g. too many variables, not robust enough, different size).
Evaluate	**5**	• Test (including tasting), refine and assess if the product meets their design brief. • Identify strengths, weaknesses, and improvements.	**<u>To evaluate the success of a mechanical product.</u>** Test mechanisms then discuss their work and considering WWW and EBI. 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?
Substantive Knowledge			**Disciplinary Knowledge**