Year 5

Example D&T unit – Electrical systems: Doodlers

Lesson 1: Electrical systems and motors	Lesson 2: Meet the Doodlers	Lesson 3: Doodlers design and construction	Lesson 4: Doodlers evaluation
To understand how motors are used in electrical products	To investigate an existing product to determine the factors that affect the product's for and function	To apply the findings from research to develop a unique product	To evaluate the form and function of our product
Lesson outcome: Identify simple circuit components (battery, bulb and switch) with a basic explanation of their function. Explain that a series circuit is assembled in a loop to allow the electricity to flow along one path. Describe a motor as a circuit component that changes electrical energy into movement. Provide examples of motorised products that use movement to rotate or spin different parts.	**Lesson outcome:** Remove and replace different parts of a Doodler, as part of a team. Suggest ways to switch the configuration to amend the form or function of the Doodler.	**Lesson outcome:** Develop design criteria with consideration for the target user, the purpose of their Doodler, a key function and the Doodler's form and final appearance (e.g. fun, bright, soft). Explain simply why their Doodler has a certain configuration based on the findings of their investigation (e.g. I used four pens because the Doodler would fall over with two). Create a functional Doodler that creates scribbles on paper with or without a switch.	**Lesson outcome:** Identify and list each of the required materials, tools and circuit components required to build a Doodler.

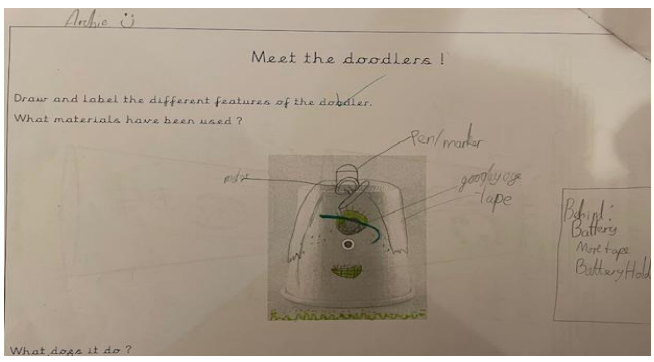
Lesson 1:

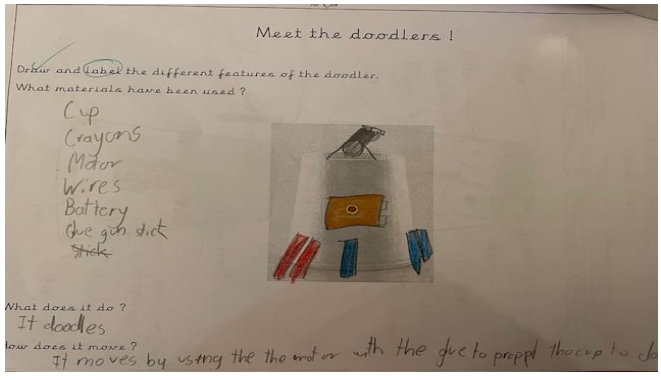
Children explored familiar devices that operate with a motor. We then explored how a simple circuit works and revisited the different components' names and functions. We then added a motor to explore how electricity travels around the circuit and activates the motor.

Lesson 2:

Children explored the form and the function of an existing Doodler. Children tested them to see how reliable their design was, that is when we discovered how the design can affect its function. They identified the different components and thought about their individual jobs. Which then, gave us ideas on the design of our own Doodlers.

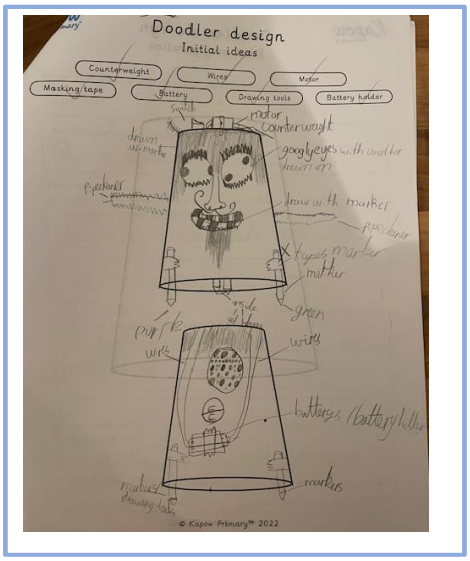
Doodlers components.

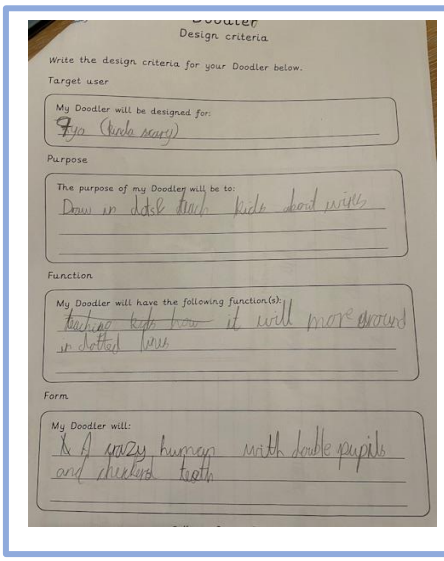


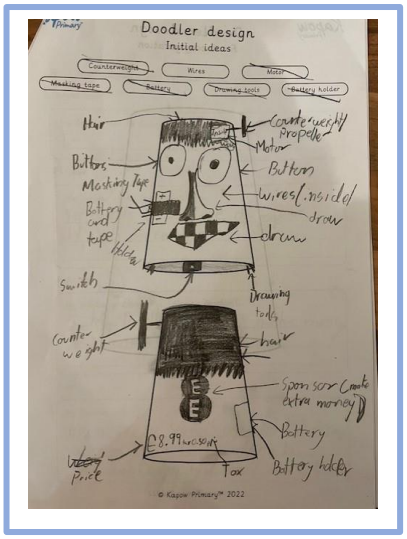


Lesson 3:

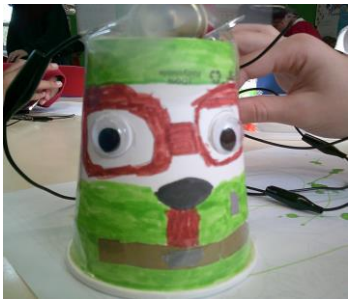
Children designed their Doodlers following their design criteria. They had to carefully consider the placement of all the different components (drawing tools, battery, motor, counterweight and wires) and of course … what their Doodlers would look like.







Children then, used their plans to make their Doodlers. They discovered that joining the different components could be challenging. They explored the different placements for their drawing materials and their electric components.



motor

counterweight

battery

wires

Lesson 4:

Children tested their Doodlers, some discovered that their design or the way they joined the materials prevented the Doodler from doodling – which made them respond by changing the placement of the components or adjusting the counterweight so that the motor could work. Some children were initially, unsuccessful, but with some support they realised that problem could be with one of the electrical circuits' components. Finally, they evaluated their Doodlers considering what went well and what has interfered with the Doodlers' performance.