Year 5 Medium Term Planning for the Learning Challenge Curriculum

Term: Summer DT Project: Buzz Wire Game

Previous Learning	**New Knowledge /Consolidation**	**End of Project Outcome**	**Environmental Links**	**Key Inventors/People**	**Project Vocabulary**
Have created a complete circuit using Raspberry Pi components (connector cables, resistor, LED, breadboard).	Altering the layout of the circuit to make it more compact. Adding elements to create a break/switch (wire frame).	To create a challenging buzz wire game that successfully incorporates a Raspberry Pi.	Research & discuss how sustainable the materials used are and why. Investigate how "unusual" the product is and compare the cost of purchasing a store-ready game with the cost of the components used to create our own.	Joseph Swan & his use of the incandescent lightbulb as part of creating circuits with a switch. **(Part of MakeStuffNE video).**	Analyse Hazard Develop Variation Specification Combining Support Manoeuvrability Switch & Resistor Sustainable Finish Fit for purpose Innovative

Section	Lesson	Key Skills	Learning Objective & Activity
Explore **Plan**	**1**	• Use research for design ideas • Make design decisions considering time and resources. • Clearly explain how parts of product will work. • Use computer-aided designs as part of the planning process • Evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose.	**To investigate how electrical circuits are used within different types of toy** Use internet services to investigate toys that use electrical circuits and how they use this. Investigate physical examples in class (buzz wire game, operation & Bop it). **To make design decisions based on the properties of available materials.** Select what materials to use for the base, considering materials that are sustainable, easy to shape/manipulate and sturdy. Use Seesaw template to list the materials selected and justify their choices.

			Use pens to design the shape of their wire, considering how to make the "course" challenging but achievable.
Make	**2 & 3**	• Use number of components within circuit, with support • Incorporate switch into a product • Use selected tools and equipment with good level of precision • Select appropriate materials, fit for purpose; explain choices, considering functionality • Select appropriate tools. • Mainly accurately measure, mark out, cut and shape materials and components • Mainly accurately assemble, join and combine materials and components • Measure accurately to increase precision • Ensure product is strong using strengthening techniques, folding, layering, rolling & Reinforce and strengthen structure. • Begin to be resourceful with practical problems • Understand and use electrical systems (circuits and multiple components) within a larger product. • Recognise that a switch opens and closes a circuit and associate this with whether or not an LED lights up or buzzer sounds within a simple series circuit.	**<u>To alter the layout of circuits to make them more compact.</u>** Using the MakeStuffNE resources, create a circuit that lights up an LED (based on the previous year). Explore different layouts and reposition the components to reduce the size of the circuit. Create a break and use connector cables to create a simple switch. **<u>To shape & combine different materials using appropriate tools.</u>** Use tools (pliers, scissors, screwdrivers, craft knives & knives) to shape materials to create a sturdy base & wire frame. Attach the circuit using appropriate materials (tin foil, tape). Test the game to ensure that the LED lights up when contact is made with the wire frame.
Evaluate	**4**	• Evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose (as part of explore in the planning process) • Evaluate ideas and finished product against specification, considering purpose and appearance.	**<u>To consider if the game was fit for purpose & appearance.</u>** Use Seesaw template to consider if the game worked as intended and how effective it was (using a score out of 10). Evaluate the finish of the project and consider how the appearance could be improved (compared with similar products that are sold to consumers).

		• Consider how sustainable materials are • Begin to evaluate how much products cost to make and how innovative they are.	Consider how sustainable the materials used were (using class discussion as a stimulus). **<u>To consider how innovative and sustainable the project was.</u>** Class discussion and mind map of how innovative the design is and how much the components would cost compared to similar products on sale.

Substantive Knowledge	Disciplinary Knowledge