# St Bernadette's Catholic Primary Voluntary Academy

## Design Technology Medium Term Planning - UKS2 Advent 2 Cycle A Worlds of Wonder

| | Learning Objective | Activity | Key Knowledge (By the end of the lesson) | | Vocabulary (Tier 3) |
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| | | | Substantive | Disciplinary | |
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| Lesson 1/2 | LO: To be able to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. | -Develop a simple design specification to guide their thinking.<br>-Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.<br>-Generate a design for a space buggy using CAD | -Know different methods of communicating ideas | • Create clear and detailed drawing of their planned product using CAD<br>• Design should show a chassis, wheels, body and decoration<br>• Share designs | annotated drawings, exploded diagrams<br>3D<br>Computer Aided Design (CAD)<br>Solutions<br>Esthetic |
| Lesson 3/4 | LO: To be able to select from and confidently use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.<br>To be able to understand and use mechanical systems in their products | -Make the chassis for their space buggy<br>-Incorporate a mechanism that will enable the buggy to move forward and backward.<br>-Add a cabin and flag | -Know how to measure accurately using appropriate equipment<br>-Know how to join and strengthen joints in wood<br>-Understand how to use an axis, can wheel and driver to make the wheels spin | • Make a structure that will support an upper carriage and decoration<br>• Ensure the axis, cam wheel and drive operate the wheels freely | Pulley – a grooved wheel over which a drive belt can run<br>Drive belt – the belt which connects and transfers movement between two pulleys<br>Axle – a central shaft for rotating wheels<br>Bearing – this retains the axle in position whilst allowing it to rotate |
| Lesson 5 | LO: To be able to understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. | -Construct a simple circuit using electrical wires, a motor, a cell and a switch.<br>-Use an elastic band to attach the motor to the cam wheel.<br><br>-Press the switch to connect the circuit and power the Moon buggy. | -Know how to complete a simple circuit<br>-Know how the composition of the circuit makes the driver go forward or backward | • Make a circuit that will power the buggy | Series circuit – a circuit with only one possible path for the current<br>Short circuit – an incorrect route in a circuit which misses out certain components and can cause the circuit to fail<br>Cell, switch, wires, motor |

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| Lesson 6 | LO:To be able to evaluate their ideas and products against their own design criteria and consider the views of others to improve their work | -Evaluate, test and compare their products. | -Understand that mechanical and electrical systems have an input, process and an output.<br>-Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.<br>-Know and use technical vocabulary relevant to the project.<br><br>-Identify the effects of friction that act between moving surfaces<br>-Recognize that some mechanisms including pulleys allow a smaller force to have a greater effect | • Test their product on different surfaces<br>• Make it move forward<br>• Race their product<br>• Give areas for improvement for themselves and others based on their criteria | Esthetic - pleasing to look at<br>Evaluate -to determine the significance, worth, or condition of usually by careful appraisal and study. |
| Lesson 7 | LO: To be able to apply their understanding of computing to program, monitor and control their products. | During their visit to the space centre the children will make a space buggy move using CAM software | -Understanding how coding can be used to create instructions<br>-Understand how those instructions can then be used to operate a device | • Create a simple code to move a device | Computer Aided Manufacturing - computer software is used to programme and control computer-aided machinery to automate the manufacturing process or move equipment |