

**St. Bridget’s C of E Primary Design and Technology Progression of Skills and Knowledge Overview**

*Inspiring, nurturing and educating our children to serve God by reaching their full potential, serving our local community and by looking after our environment as global citizens of today and tomorrow.*

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| **Year Group** | **Mechanisms** **Year 1** | **Mechanisms** **Year 2** | **Mechanical Systems Year 3** | **Mechanical Systems Year 5** |
|  | Making a moving Storybook | Wheels and Axles | Making a Moving Monster | Automata Toys |
| Skills | Design | Explaining how to adapt mechanisms,using bridges or guides to control themovement.Designing a moving story book for agiven audience. | Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move.Creating clearly labelled drawings that illustrate movement. | Creating a class design criteria for amoving monster.Designing a moving monster for aspecific audience in accordance with adesign criteria. | Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement.Understanding how linkages change the direction of a force.Making things move at the same time.Understanding and drawing cross-sectional diagrams to show the inner-workings of my design. |
| Make | Following a design to create movingmodels that use levers and sliders. | Adapting mechanisms, when:● they do not work as they should.● to fit their vehicle design.● to improve how they work aftertesting their vehicle.  | Making linkages using card for levers and split pins for pivots.Experimenting with linkages adjustingthe widths, lengths and thicknesses of card used.Cutting and assembling componentsneatly. | Measuring, marking and checking the accuracy of the jelutong and dowel pieces required.Measuring, marking and cutting components accurately using a ruler and scissors.Assembling components accurately to make a stable frame.Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles.Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set. |
| Evaluate | Testing a finished product, seeingwhether it moves as planned and if not,explaining why and how it can be fixed.Reviewing the success of a product bytesting it with its intended audience | Testing wheel and axle mechanisms,identifying what stops the wheels fromturning, and recognising that a wheelneeds an axle in order to move. | Evaluating own designs against designcriteria.Using peer feedback to modify a finaldesign. | Evaluating the work of others and receiving feedback on own work.Applying points of improvement to their toys.Describing changes they would make/do if they were to do the project again. |
| Knowledge | Technical | To know that a mechanism is the parts of an object that move together.To know that a slider mechanism moves an object from side to side.To know that a slider mechanism has aslider, slots , guides and an object.To know that bridges and guides are bits of card that purposefully restrict the movement of the slider. | To know that wheels need to be round to rotate and move.To understand that for a wheel to move it must be attached to a rotating axle.To know that an axle moves within an axle holder which is fixed to the vehicle or toy.To know that the frame of a vehicle(chassis) needs to be balanced. | To know that mechanisms are acollection of moving parts that worktogether as a machine to producemovement.To know that there is always an input and output in a mechanism.To know that an input is the energy that is used to start something working.To know that an output is the movement that happens as a result of the input.To know that a lever is something thatturns on a pivot.To know that a linkage mechanism ismade up of a series of levers. | To understand that the mechanism in an automata uses a system of cams, axles and followers.To understand that different shaped cams produce different outputs. |
| Additional | To know that in Design and technologywe call a plan a ‘design’ | To know some real-life items that usewheels such as wheelbarrows, hamsterwheels and vehicles. | To know some real-life objects thatcontain mechanisms. | To know that an automata is a hand powered mechanical toy.To know that a cross-sectional diagram shows the inner workings of a product.To understand how to use a bench hook and saw safely.To know that a set square can be used to help mark 90° angles. |