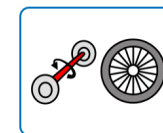


# Year 1: Autumn Mechanisms: Making a Moving Storybook



| Enquiry Question       | How can we make a model move using levers and sliders?  |   |   |   |  |
|------------------------|---|---|---|---|--|
|                        | Required Prior Knowledge  |   | Knowledge to be taught  |   |  |
| Substantive Knowledge  | <ul style="list-style-type: none"><li>The names and properties of construction materials like cardboard, bottle tops, tubes and straws. (Reception Autumn 1)</li><li>Wheels helps a vehicle move smoothly (Reception Summer 2)</li></ul>          |   | <ul style="list-style-type: none"><li>A mechanism is the parts of an object that move together.</li><li>A slider mechanism moves an object from side to side.</li><li>A slider mechanism has a slider, slots , guides and an object.</li><li>Bridges and guides are bits of card that purposefully restrict the movement of the slider.</li><li>In Design and technology we call a plan a ‘design’.</li></ul> |   |  |
| Disciplinary Knowledge |   |   |   |   |  |
| Design                 | <ul style="list-style-type: none"><li>Explain how to adapt mechanisms, using bridges or guides to control the movement.</li><li>Design a moving story book for a given audience.</li></ul>  |   |   |   |  |
| Make                   | <ul style="list-style-type: none"><li>Follow a design to create moving models that use levers and sliders.</li></ul>  |   |   |   |  |
| Evaluate               | <ul style="list-style-type: none"><li>Test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed.</li><li>Review the success of a product by testing it with its intended audience.</li></ul> |   |   |   |  |
| Vocabulary             | assemble, design, evaluation, mechanism, model, sliders, stencil, target audience, template, test   |   |   |   |  |
| Teaching Sequence      | <ul style="list-style-type: none"><li>Explore examples</li><li>Make connections to previous learning</li><li>Make closer observations through sketching</li></ul>   | <ul style="list-style-type: none"><li>Model key techniques for children to try</li><li>Practise techniques/make a prototype</li></ul> | <ul style="list-style-type: none"><li>Design own project</li></ul>  | <ul style="list-style-type: none"><li>Apply skills and knowledge learned to own project</li></ul> | <b>ASSESSMENT</b><br><br>Evaluate own work |
| Learning Questions     | What are sliders?   | How do sliders make things move?  | Can I design my own moving storybook?   | Can I construct my own moving picture?  | Can I evaluate my finished product?        |
| Mastery Keys           | ➤ Can design and make a model that moves using levers and sliders.  |   |   |   |  |





| Enquiry Question       | How can we make a model move using wheels and axles?   |   |  |  |  |
|------------------------|--|---|--|--|--|
|                        | Required Prior Knowledge   |   |  | Knowledge to be taught   |  |
| Substantive Knowledge  | <ul style="list-style-type: none"><li>The names and properties of construction materials like cardboard, bottle tops, tubes and straws. (Reception Autumn 1)</li><li>Wheels helps a vehicle move smoothly (Reception Summer 2)</li></ul> |   |  | <ul style="list-style-type: none"><li>Wheels need to be round to rotate and move.</li><li>For a wheel to move it must be attached to a rotating axle.</li><li>An axle moves within an axle holder which is fixed to the vehicle or toy.</li><li>The frame of a vehicle (chassis) needs to be balanced.</li><li>Some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.</li></ul> |  |
| Disciplinary Knowledge |  |   |  |  |  |
| Design                 | <ul style="list-style-type: none"><li>Create clearly labelled drawings that illustrate movement..</li><li>Design a vehicle that includes wheels, axles and axle holders which will allow the wheels to move.</li></ul>                   |   |  |  |  |
| Make                   | <ul style="list-style-type: none"><li>Adapt mechanisms when:<br/>They do not work as they should; to fit their vehicle design; to improve how they work after testing their vehicle</li></ul>  |   |  |  |  |
| Evaluate               | <ul style="list-style-type: none"><li>Test mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move.</li></ul>  |   |  |  |  |
| Vocabulary             | axle, axle holder, chassis, diagram, dowel, equipment, mechanism, wheel  |   |  |  |  |
| Teaching Sequence      | <ul style="list-style-type: none"><li>Explore examples</li><li>Make connections to previous learning</li><li>Make closer observations through sketching</li></ul>  | <ul style="list-style-type: none"><li>Model key techniques for children to try</li><li>Practise techniques/make a prototype</li></ul> | <ul style="list-style-type: none"><li>Design own project</li></ul> | <ul style="list-style-type: none"><li>Apply skills and knowledge learned to own project</li></ul>  | <b>ASSESSMENT</b><br><br>Evaluate own work |
| Learning Questions     | How do wheels move?  | What stops wheels from turning?   | Can I design my own moving vehicle?                                | Can I construct my own moving vehicle?   | Can I evaluate my finished project?        |
| Mastery Keys           | ➤ Can design and make a moving vehicle with wheels and axles.  |   |  |  |  |



| Enquiry Question              | How can we make a functioning windmill?   |   |
|-------------------------------|---|---|
|                               | Required Prior Knowledge  | Knowledge to be taught  |
| <b>Substantive Knowledge</b>  | <ul style="list-style-type: none"> <li>Castles often had features like towers, walls, battlements, drawbridges and gates. (Reception Summer 1)</li> <li>Different ways to join materials e.g. folding, taping, stapling, threading. (Reception Spring 2)</li> </ul>   | <ul style="list-style-type: none"> <li>A windmill harnesses the power of wind for a purpose like grinding grain or generating electricity.</li> <li>The three main parts of a windmill are the turbine, axle and structure.</li> <li>Cylinders are a strong type of structure and are the main shape used for windmills and lighthouses.</li> <li>Axles are used in structures and mechanisms to make parts turn in a circle.</li> <li>Different structures are used for different purposes.</li> <li>A structure is something that has been made and put together.</li> <li>The sails or blades of a windmill are moved by the wind.</li> <li>A structure is something built for a reason.</li> <li>Stable structures do not topple.</li> <li>Adding weight to the base of a structure can make it more stable.</li> </ul> |
| <b>Disciplinary Knowledge</b> |   |   |
| <b>Design</b>                 | <ul style="list-style-type: none"> <li>Learn the importance of a clear design criteria.</li> <li>Include individual preferences and requirements in a design.</li> </ul>  |   |
| <b>Make</b>                   | <ul style="list-style-type: none"> <li>Make stable structures from card.</li> <li>Follow instructions to cut and assemble the supporting structure of a windmill.</li> <li>Make functioning turbines and axles which are assembled into a main supporting structure.</li> <li>Find the middle of an object.</li> <li>Puncture holes.</li> <li>Add weight to structures.</li> <li>Create supporting structures.</li> <li>Cut evenly and carefully</li> </ul> |   |
| <b>Evaluate</b>               | <ul style="list-style-type: none"> <li>Evaluate a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.</li> <li>Suggest points for improvements.</li> </ul>   |   |
| <b>Vocabulary</b>             | <b>axle, base, centre, equal, evaluate, middle, rotate, rotor, rotor blades, sails, same, stable, strong, structure,</b>  |   |



|                    | test, weak, wind, windmill  |  |  |   |  |
|--------------------|---|--|--|---|--|
| Teaching Sequence  | <ul style="list-style-type: none"> <li>Explore examples</li> <li>Make connections to previous learning</li> <li>Make closer observations through sketching</li> </ul> | <ul style="list-style-type: none"> <li>Model key techniques for children to try</li> <li>Practise techniques/make a prototype</li> </ul> | <ul style="list-style-type: none"> <li>Design own project</li> </ul> | <ul style="list-style-type: none"> <li>Apply skills and knowledge learned to own project</li> </ul> | <b>ASSESSMENT</b><br><br>Evaluate own work |
| Learning Questions | What is a windmill?   | How is the structure stable?   | Can I design my own windmill?  | Can I construct my own windmill?  | Can I evaluate my finished project?        |
| Mastery Keys       | ➤ Can design and make a functioning windmill with a stable structure.   |  |  |   |  |

