Mechanisms		Skills			Knowledge	Vocabulary
		Designing	Making	Evaluating		
EYFS	FS1 project: FS2 project:	Design by talking about what they intend to do, are doing and have done. Say who and what their products are for. Draw what they have made, with some children draw their ideas before they make.	Opportunities to make their own choices and to discuss the reasons for these. Learn procedures for safety and hygiene. Develop practical skills and techniques using a range of textile materials.	Ask questions about a range of existing products. Explore the designed and made world through the indoor and outdoor environment, and through roleplay.	**Levers and Sliders** -Early experiences of working with paper and card to make simple flaps and hinges. -Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. **Wheels and Axles** -Assemble vehicles with moving wheels using construction kits. -Explore moving vehicles through play. -Develop some cutting, joining and finishing skills with card. -Learn and using appropriate technical vocabulary.	Flaps vehicle Hinge. forwards Join backwards Wheels

Key Stage 1	Year 1 project: Year 2 project:	**Designing** • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through drawings and mock-ups with card and paper.	**Making** • Plan by suggesting what to do next. • Select and use tools, explaining their choices, to cut, shape and join paper and card. • Use simple finishing techniques suitable for the product they are creating.	**Evaluating** • Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.	**(Levers and Sliders)** • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project. **(Wheels and Axles)** • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project.	**Sliders and Levers** Mechanism Lever Slider Slot Guide or bridge **Wheels and axles** Axle dowel Axle holder Chassis Friction

Lower Key Stage 2	Year 3 project: Year 4 project:	**Designing** • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. .	**Making** • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. • Select from and use finishing techniques suitable for the product they are creating.	**Evaluating** • Investigate and analyse books and, where available, other products with lever and linkage mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make.	**Levers and Linkages** • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project **Pneumatics** Understand and use pneumatic mechanisms. • Know and use technical vocabulary relevant to the project.	**Levers and Linkages** Mechanism Lever Linkage Slot Guide or bridge Loose pivot Fixed pivot System **Pneumatics** Compressed Input Output Pivot Lever Pneumatic Hydraulic Pressure Inflate Deflate Syringe System
Upper Key Stage 2	Mechanical Systems Year 5 project:	**Designing** • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.	**Making** • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.	**Evaluating** • Compare the final product to the original design specification. • Test products with intended user and critically evaluate	**Pulleys and Gears** • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can	**Pulleys and Gears** Pulley Gear Drive belt Gearing up or down Mechanical system Driver Follower

	Yea 6 project:	• Develop a simple design specification to guide their thinking. • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.	• Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost.	the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project. Technical knowledge and understanding	be used to speed up, slow down or change the direction of movement. • Know and use technical vocabulary relevant to the project. **Cams** • Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. • Know and use technical vocabulary relevant to the project.	Mesh Motor spindle **Cams** Rotary motion Oscillating motion Reciprocating motion Cam Follower Lever Slider Guide Spacer