Tonacliffe Primary School Design and Technology Progression Document – Mechanisms

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| **EYFS** | • 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.  • Assembled vehicles with moving wheels using construction kits.  • Explore moving vehicles through play.  • Gained some experience of designing, making and evaluating products for a specified user and purpose.  • Developed some cutting, joining and finishing skills with card. | | |
|  | **KS1** | **LKS2** | **UKS2** |
| **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. | 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. | Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.  Develop a simple design specification to guide  their thinking.  Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. |
| **Making** | Select from and use a range of tools and  equipment to perform practical tasks such as  cutting and joining to allow movement and  finishing.  Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. | 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. | Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if  appropriate, allocate tasks within a team.  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. |
| **Evaluating** | Explore a range of existing books and everyday products that use simple sliders and levers.  Explore and evaluate a range of products with  wheels and axles.  Evaluate their ideas throughout and their products against original criteria. | 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. | Compare the final product to the original design specification.  Test products with intended user and critically evaluate 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 understating** | • Explore and use sliders and levers.  • Explore and use wheels, axles and axle holders.  • Distinguish between fixed and freely moving axles.  • Understand that different mechanisms produce different types of movement.  • Know and use technical vocabulary relevant to the project. | Understand and use lever and linkage mechanisms.  Distinguish between fixed and loose pivots.  Know and use technical vocabulary relevant to the project. | Understand that mechanical and electrical systems have an input, process and an output.  Understand how gears and pulleys can be used to speed up, slow down or change the direction of  movement.  Know and use technical vocabulary relevant to the  project. |
| **Key Vocab** | slider, lever, pivot, slot,  bridge/guide  card, masking tape,  paper fastener, join  pull, push, up, down, vehicle, wheel, axle,  axle holder, chassis,  body, cab  assembling, cutting,  joining, shaping,  finishing, fixed, free,  moving, mechanism  straight, curve, forwards,  backwards  design, make, evaluate,  user, purpose, ideas,  design criteria, product,  function | mechanism, lever, linkage, pivot, slot, bridge, guide  system, input, process, output  linear, rotary, oscillating, reciprocating  user, purpose, function  prototype, design criteria, innovative, appealing, design brief | pulley, drive belt, gear,  rotation, spindle, driver,  follower, ratio, transmit,  axle, motor  circuit, switch,  circuit diagram  annotated drawings,  exploded diagrams  mechanical system,  electrical system, input,  process, output  design decisions,  functionality, innovation,  authentic, user, purpose,  design specification,  design brief |