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| **Researching, developing and designing a playground ride for disabled children – How can mechanical systems ie. Gears, pulleys, cams levers, linkages help us? Focus on cross sectional and exploded diagrams and use of prototypes** | |
| **Prior Knowledge:**  • Experience of axles, axle holders and wheels that are fixed or free moving.  • Basic understanding of electrical circuits, simple switches and components.  • Experience of cutting and joining techniques with a range of materials including card, plastic and wood.  • An understanding of how to strengthen and stiffen structures. | **Prior Skills:**  • A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and  everyday uses of materials in science. |
| Planned outcome: Researching, developing and designing a playground ride for disabled children – How can mechanical systems ie. Gears, pulleys, cams levers, linkages help us? Focus on cross sectional and exploded diagrams and use of prototypes | |
| Learning Journey – small steps in learning to meet the planned outcome   1. **Explore**   Investigate, analyse and evaluate existing everyday products and existing or pre-made toys that incorporate gear or pulley systems. Use videos and photographs of products that cannot be explored through first-hand experience at the Caversham Sandy Park.   1. **Design.**   Create mock ups of pulleys- foxed pully, movable pulley, compound system pulley, complex system pulley  Mock up of gears  Pupils design their playground using annotated sketches and prototypes to develop, model and communicate ideas.   1. **Make**   Look at chn’s designs & discuss how we will make them. What do they need & how can they attach parts.  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.   1. **Evaluate**   Evaluate their own products and ideas against criteria and user needs, as they design and make. | Tiered Vocabulary   prototype  **3**  **2**  **1**  pulley, rotation , spindle, 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, design specification,  design brief    user, purpose, drive belt, gear, driver, |
| Scaffolds | Oracy Activities |
| Word Banks  Sentence stems | Know and use technical vocabulary relevant to the project. |

NB: Useful website: https://nustem.uk/activity/levers-pulleys-and-gears-key-stages-1-2/