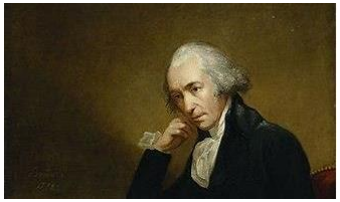
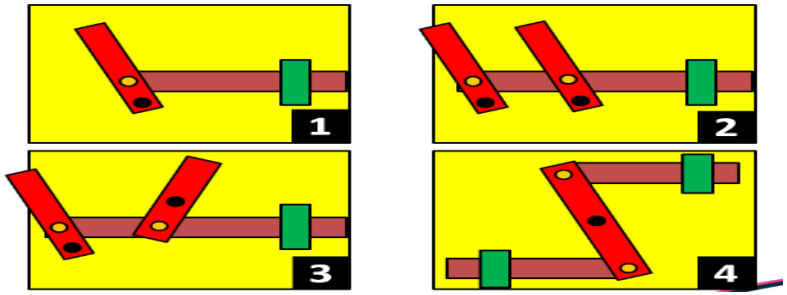
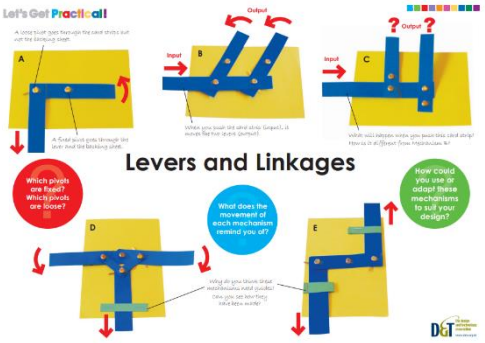
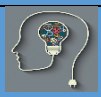
Springdale First School

Imagine, Believe, Achieve

Year 3 Design and Technology
Mechanisms – linkages and levers

Children's prior learning in this area	Cultural Capital Opportunities	Key vocabulary and glossary
Year 1 – levers and sliders. Pop up books/moving pictures	 James Watt – improved the steam engine and made it more efficient. Is on the £50 and his name is used to measure energy output (Watt). Newcomen – inventor of steam engine. Links with History and the Victorians (increase use of steam engines and the industrial revolution).	• **Mechanism** – a device used to create movement in a product. • **Lever** – a rigid bar which moves around a pivot. Levers are used in many everyday products. In this project children will use card strips for levers and paper fasteners for pivots. • **Linkage** – the card strips joining one or more levers to produce the type of movement required. The term 'linkage' is also used to describe the lever and linkage mechanism as a whole. • **Slot** – the hole through which a lever is placed to enable part of a picture to move. • **Guide or bridge** – a short card strip used to keep lever and linkage mechanisms in place and control movement. • **Loose pivot** – a paper fastener that joins card strips together. • **Fixed pivot** – a paper fastener that joins card strips to the backing card. • **Backing card** – the card on which the lever and linkage is fixed to • **System** – a set of related parts or components used to create an outcome. Systems have an input, process and an output. In a lever and linkage mechanism, the 'input movement' is where the user pushes or pulls a card strip. The 'output movement' is where one or more parts of the picture move.

Enquiry Question – Who used linkages and levers?	Enquiry Question-	Enquiry Question- H
Concept – Design 	**Concept – Enquire** 	**Concept – Enquire/Design**  
 **Children will know who James Watt was and his impact on life today.** **R&R** Levers mechanism from yr 1.  **Practise** – Biography of JW – discussing what we would do today without his inventions. **James Watt** (Scottish born inventor) improved on a steam engine design and made it more efficient in 1769. Steam engines use steam to make levers and linkages move. James Watt's name is also used for measuring power, especially with relation to electricity. He can be found on the £50. Video: Science KS2: Discovering the work of James Watt - BBC Teach **Apply** - What impact did JW have on our lives today?	 **Children will know how a linkage mechanism works.** **R&R** • **Mechanism** – a device used to create movement in a product. • **Lever** – a rigid bar which moves around a pivot. Levers are used in many everyday products. In this project children will use card strip for levers and paper fasteners for pivots. **Slot** – the hole through which a lever is placed to enable part of a picture to move. New learning. **Practise** - Explore the linkage mechanism in different contexts. Using DT association resources look at linkages in different contexts (PP in folder) – create a class mind map. Chn will know that systems have an **input** process and an **output**. In a lever and linkage mechanism, the 'input movement' is where the user pushes or pulls a card strip. The 'output movement' is where one or more parts of the picture move. Children will also know that systems have an input (the push or pull of a lever), and the output (where one of more parts move due to the input). **Apply** – chn to label images of different linkages using technical vocabulary. **Deepen** – chn to annoatate and explain the parts of linkages – uses. 	 **Children will know the componenets needed to create the linkage mechanism.** **R&R –** Explain what systems need to have in order to work. **Practise –** chn to investigate the linkage mechanism through making prototypes (follow DT association models in folder). **Apply** - All chn make prototype. **Deepen** - Explain the different parts (lever, linkage, bridge, slot, loose pivot, fixed pivot etc). They will also be able to talk about the positive of each design and the negative of each design. 

Enquiry Question- How can I make this picturure move?	Let's make!	Enquiry Question – is your product fit for purpose?
Concept – Design 	**Concept – Make.** 	**Concept – Evaluate.** 
Children will know that inventors use drawings to design their invention. **R&R –** components in a linkage mechanism. Task will need to be differentiated with drawings/part designs where needed. **Practise –** look at a prototype of a moving picture focussing on the linkage mechanism. **Apply –** chn to design their moving picture. **Deepen –** chn to annotate their design with reasons for choices using accurate technical vocabulary and explanations. (Chn will draw a design (in different stages if need be) and label the different parts including: lever, linkage, slot, guide/ bridge/ loose pivot, fixed pivot, backing card). Refer to FLUMPS 	**Chn will know how to follow their design to make their product and use finishing techniques.** **Apply** - Following design & stages of making – chn to make their product using considered choices. **Deepen** - Evalute techniques/tools/materials along the way – record findings were approriate.	**Using design criteria – chn will evaluate their product giving informed reasons.** **Practise** – model evaluating product using design criteria and notes form making process. **Apply** – chn to evaluate thir own product using design criteria – fit for purpose – compare with peers and dicuss. **Deepen** – evaluate peer products.