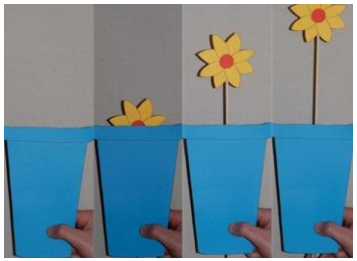
Lyppard Grange
DT Knowledge organiser

Year 1	Mechanical Systems- sliders and levers

Design, make and evaluate a _____ (product) for _____(user) for _____(purpose) – (to be completed by year group)

Examples of possible design and make tasks- class story book, poster, greetings card, class information book e.g. castles, storyboard.




Key Knowledge

- To understand that different mechanisms produce different types of movement.
- To understand the steps to make a moving picture.
- To make a design based on criteria e.g. the mechanism should work smoothly/ it should make the right type of movement.
- To know how to evaluate my product and suggest improvements.

Skills

- To cut materials using scissors
- To join paper and card using glue, paper fasteners and masking tape
- Explore how moving objects work
- Explore books that use simple sliders and levers
- Generate ideas using design criteria, explaining what they could make
- To plan by suggesting what to do next
- To develop ideas using drawings and mock-ups using card and paper
- To make a product that uses a lever or hinge to make a movement

Vocabulary

Slider, lever, pivot, slot, card, masking tape, paper fastener, join,

IEAs- Investigative and evaluative activities

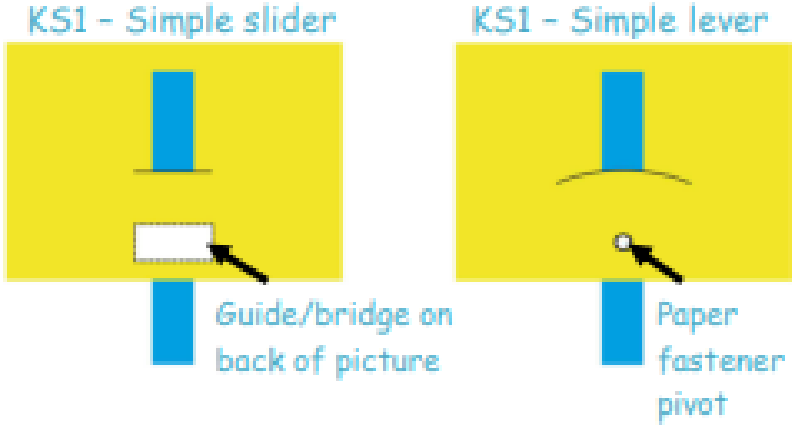
- Children explore and evaluate a collection of books and everyday products that have moving parts, including those with levers and sliders. e.g. What is it? Who is it for? What is it for?
- • Use questions to develop children's understanding e.g. What do you think will move? How will you make it move? What part of the product moved and how did it move? How do you think the mechanism works? What else could move in the product? How well does it work?
- • Introduce and develop vocabulary e.g. lever, pivot, slider, left, right, push, pull, up, down, forwards, backwards, in, out.

Focused Tasks (FTs) -

- Demonstrate simple levers and sliders to the children using prepared teaching aids. It is helpful if these are also used in context e.g. the slider is used to show a snail appearing from behind a stone, the lever is used to show a butterfly flying to a flower.
- Use questions to develop children's understanding e.g. How does the slider move? How does the lever move? Which part of the mechanism is the pivot? What does the movement of the slider and lever remind you of?
- Following teacher demonstration of the correct use of tools and materials, children should develop their knowledge and skills by replicating the slider and lever teaching aids. Encourage children to add pictures to their mechanisms.

Design, Make and Evaluate Assignment (DMEA) –

- Discuss with the children what they will be designing, making and evaluating e.g. Who will your product be for? What will be its purpose? How do you want it to move? Will you use a lever or a slider?
- Generate simple design criteria with the children e.g. the mechanism should work smoothly, it should make the right type of movement.
- Encourage the children to develop their ideas through talking, drawing and making mock-ups of their ideas with paper and card.
- Discuss the finishing techniques the children might use e.g. using digital text and graphics, paint, felt tipped pens or collage.
- As a whole class, talk about the order in which the mechanisms will be made.
- Ask children to evaluate their developing ideas and final products against the original design criteria.



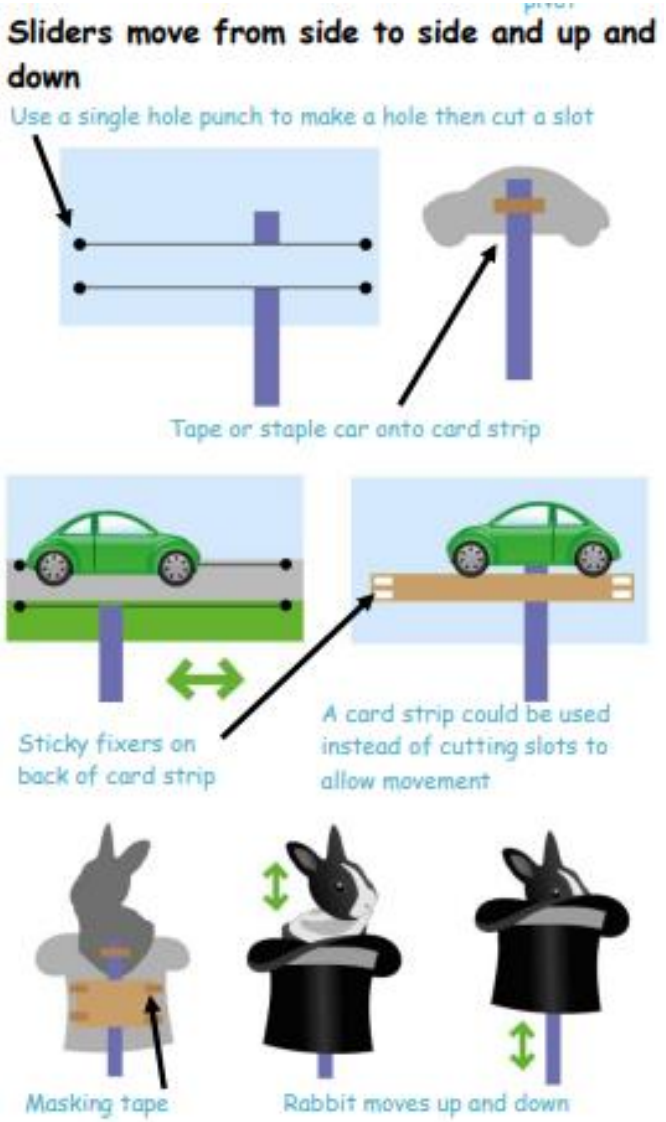
Top Tips-

- Using books and prepared examples of simple mechanisms, ask children to explain how the sliders and levers work.
- Prepare plenty of pre-cut strips of card for making the levers and sliders.
- To make a small hole for the pivot, a pencil can be used by placing the thin card over a piece of Plasticine or Blu Tack and pressing the pencil through.
- Guides/bridges can be made using strips of card fixed with masking tape.
- Display technical vocabulary and encourage the children to use it when discussing mechanisms and when designing and making.
- Make sure the existing books children investigate include moving pictures that are similar to the teaching aids.
- Children may need extra support when they are attaching paper fasteners to levers.

Health and safety-

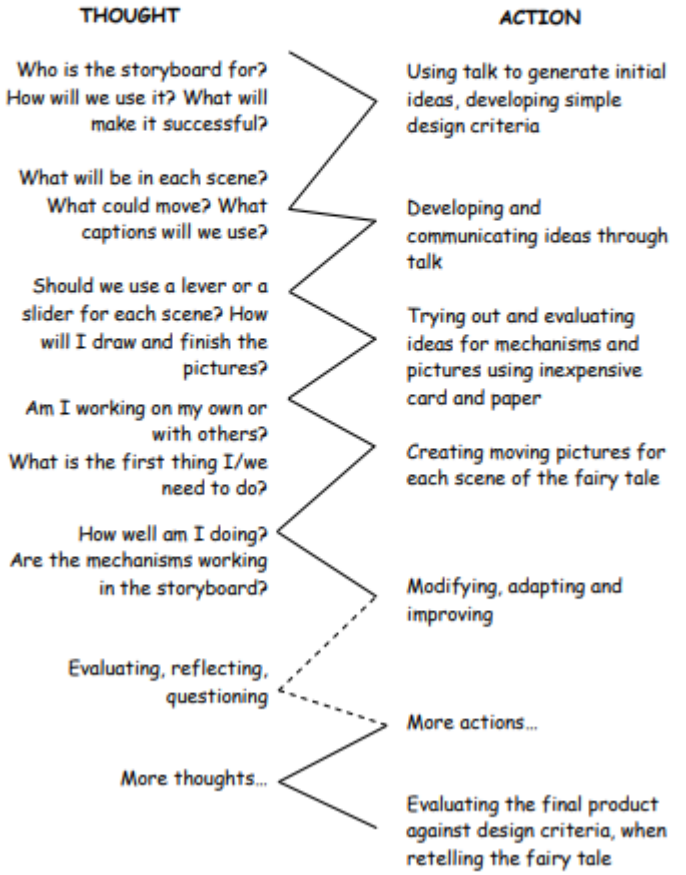
Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.

See risk assessments- saved in staff shard- Construction



Designing, making and evaluating a moving storyboard to retell a fairy tale to the class

An iterative process is the relationship between a pupil's ideas and how they are communicated and clarified through activity. This is an example of how the iterative design and make process *might* be experienced by an individual pupil during this project:

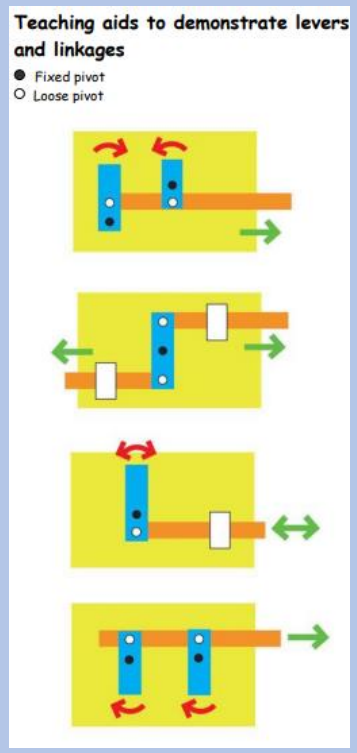


This leads onto-

Year 3- Mechanisms- levers and linkages

Key knowledge

- Levers and linkages are devices that are used to create movement in a product.
- Distinguish between fixed and loose pivots.
- A paper faster that joins card strips together is a loose pivot.
- A paper faster that joins card to the backing card is a fixed pivot.
- 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.



Key skills

- Investigate books with linkage and lever mechanisms.
- Generate ideas and design criteria through discussion.
- Use sketches and prototypes to develop ideas.
- Order the stages of making.
- Select appropriate tools to cut, shape and join paper and card.