

**1. Year Groups**  
**Years 3**

**2. Aspect of D&T**  
**Mechanical systems**

**Focus**  
**Levers and linkages**

**4. What could children design, make and evaluate?**  
story book poster class display  
greetings card information book  
storyboard other – specify

**5. Intended users**  
themselves younger children older children  
teenagers parents grandparents  
visitor to school friends other – specify

**6. Purpose of products**  
celebration event information  
pleasure interests hobbies campaign  
educational other – specify

**7. Links to topics/themes**  
Festivals and Celebrations Favourite Books  
history-based topic geography-based topic  
science-based topic  
other – specify

**8. Possible contexts**  
home school leisure culture  
enterprise environment local community  
other – specify

**9. Project title**  
Design, make and evaluate a \_\_\_\_\_ (product) for \_\_\_\_\_ (user) for \_\_\_\_\_ (purpose).  
To be completed by the teacher. Use the project title to set the scene for children's learning prior to activities in 10, 12 and 14.

**16. Possible resources**  
books and other products with lever and linkage mechanisms  
lever and linkage teaching aids  
card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue  
left/right handed scissors, cutting mats, card drill, finishing media and materials

**17. Key vocabulary**  
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

**3. Key learning in design and technology**

**Prior learning**

- Explored and used mechanisms such as flaps, sliders and levers.
- Gained experience of basic cutting, joining and finishing techniques with paper and card.

**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

**10. Investigative and Evaluative Activities (IEAs)**

- Children investigate, analyse and evaluate books and, where available, other products which have a range of lever and linkage mechanisms.
- Use questions to develop children's understanding e.g. *Who might it be for? What is its purpose? What do you think will move? How will you make it move? What part moved and how did it move? How do you think the mechanism works? What materials have been used? How effective do you think it is and why? What else could move?*

**11. Related learning in other subjects**

- **Spoken language** – participate in discussion and evaluation of books and, where available, other products with moving pictures. Ask relevant questions to extend knowledge and understanding. Build technical vocabulary.

**12. Focused Tasks (FTs)**

- Demonstrate a range of lever and linkage mechanisms to the children using prepared teaching aids.
- Use questions to develop children's understanding e.g. *Which card strip is the lever? Which card strip is acting as the linkage? Which part of the system is the input and which part the output? What does the type of movement remind you of? Which are the fixed pivots and which are the loose pivots?*
- Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques.
- Children should develop their knowledge and skills by replicating one or more of the teaching aids.

**13. Related learning in other subjects**

- **Mathematics** – use the vocabulary of position, direction and movement. Use a ruler to measure to the nearest cm, half cm or mm.
- **Spoken language** – ask relevant questions to extend knowledge and understanding. Build their technical vocabulary.
- **Art and design** – use colour, pattern, line, shape.

**18. Key competencies**  
problem-solving teamwork negotiation  
consumer awareness organisation motivation  
persuasion leadership perseverance  
other – specify

**19. 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.

**14. Design, Make and Evaluate Assignment (DMEA)**

- Develop a design brief with the children within a context which is authentic and meaningful.
- Discuss with children the purpose of the products they will be designing and making and who the products will be for. Ask the children to generate a range of ideas, encouraging creative responses.
- Agree on design criteria that can be used to guide the development and evaluation of the children's products.
- Using annotated sketches and prototypes, ask the children to develop, model and communicate their ideas.
- Ask the children to consider the main stages in making before assembling high quality products, drawing on the knowledge, understanding and skills learnt through IEAs and FTs.
- Evaluate the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.

**15. Related learning in other subjects**

- **Spoken language** – ask relevant questions to extend knowledge and understanding. Build technical vocabulary. Consider and evaluate different viewpoints.
- **Computing** – digital graphics and text could be incorporated into final products as the background or moving parts.
- **Art and design** – use and develop drawing techniques. Use colour, pattern, line, shape.

