

## Year Groups

Years  
3Aspect of D&T  
Mechanical  
systems

## Focus

Levers and  
linkagesWhat could children design,  
make and evaluate?

story book poster class display  
greetings card information book  
storyboard other – specify

## Project title

Design,  
make and evaluate a \_\_\_\_\_ (product) for  
\_\_\_\_\_ (user) for \_\_\_\_\_ (purpose).

## Intended users

themselves younger children older children  
teenagers parents grandparents  
visitor to school friends other – specify

## Purpose of products

celebration event information  
pleasure interests hobbies campaign  
educational other – specify

## 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

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

## 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

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 criteria and user needs, as they design and make.

## Technical knowledge and understanding

- Understand and use lever and linkage mechanisms.
- Distinguish between fixed and loose pivots.
- Know and use technical vocabulary relevant to the project.

## 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?*

## 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.

## 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.

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.

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.

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.

## Cultural Capital

Visits and visitors  
Mrs Hathaway

Experiences and events.  
Class trip linked to project  
Shadow puppet show  
– project outcome

## Key Texts

Links  
<https://www.data.org.uk/resource-shop/primary/7-to-9-years/levers-and-linkages-poster-and-support-pack-yr3456/>  
<https://www.data.org.uk/resource-shop/primary/7-to-9-years/moving-history-book-levers-and-linkages/>

Community events and  
links

Global issues

Famous People  
Annie Katsura Rollins  
Prahlad Acharya

Life Skills  
Problem solving  
Perseverance  
Creativity