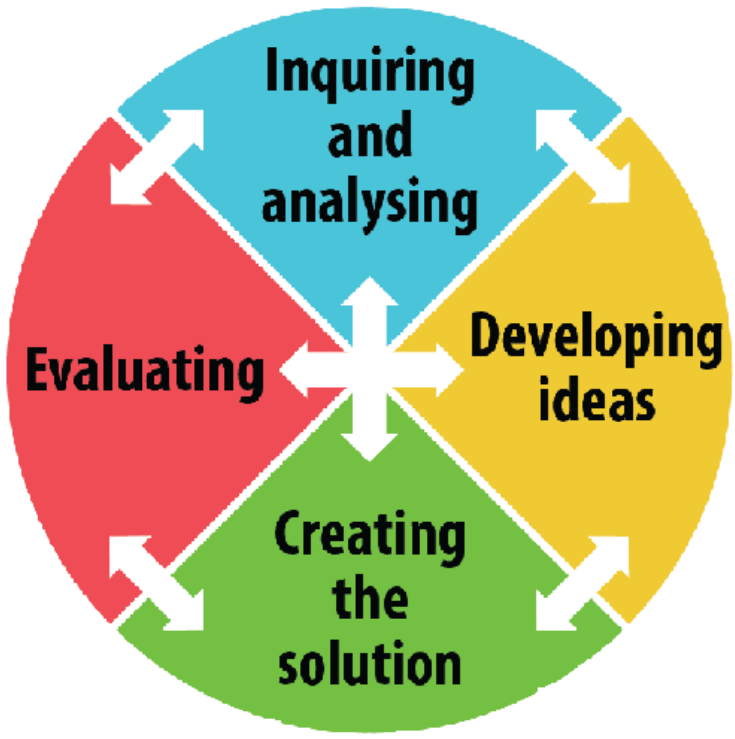
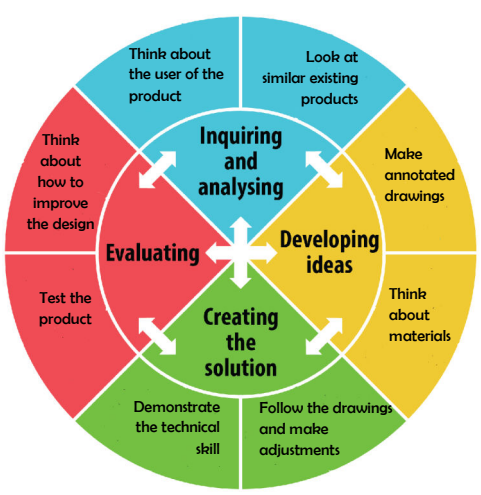
# Levers: EYFS and Years 1,2 ,4 and 6

| Design and Technology field: Engineering | | | |
|---|---|---|---|
| Year groups the field is covered: EYFS, years 1,2,4 and 6 | | | |
| Word colour key | Already covered in a previous year group in DT. | Cross- curricular links with science. | Cross- curricular links with maths. |

## EYFS/KS1




## LKS2




## UKS2

# levers: EYFS and Years 1,2 ,4 and 6

## EYFS

**Designing**
- Talk about when they may have seen a greetings card before.
- Tell an adult what they are going to make.
- Understand that the fold in the card or paper helps to make it stand up

**Making**
- Cut, stick, draw, print or paint a design on the front
- Explain who their greeting is for and why
- With help where necessary, fold the card enabling it to stand.

**Evaluating**
- Say if the receiver of the greeting like it.
- Say what they like about the design.

**Technical Knowledge, vocabulary and understanding**

Card, paper, glue, make, fold, draw, print, paint, stick.

Acquired skills:
- Folding card or paper in order to make it stand up.
- Understand that the main design goes on the front.
- Understand that they need to design a card that will appeal to the recipient.

## Yr1

**Prior knowledge**
- Early paper/ card experiences
- Simple folds to make flaps
- Simple cutting
- Simple attaching using: glue and tape

**Designing**
- Draw on their own ideas and experiences to help to generate ideas.
- Suggest ideas and explain what they are going to do.
- Make simple models of their ideas in paper.
- Make changes to their idea if they need to.

**Making**
- Choose the tools that they need to cut, shape and join paper and card.
- Explain their choice of tool when asked.
- With help, measure and mark out
- Where necessary, with help cut and shape materials
- Assemble and join materials using glues, tapes and /or paper fasteners.

**Evaluating**
- Say if the product fits the purpose.
- Say what works well.
- Say what they might change

**Technical Knowledge, vocabulary and understanding**

Card, paper, fastener, glue, tape, join, pull, push, up, down, forwards, backwards, design, make, evaluate, ideas, materials, slider, lever, curved, straight, pivot, slot, mechanism.

Acquired skills:
- Knowledge of how simple sliders and levers work.
- Understand how a pivot works
- Make holes using a sharp pencil over some blue tac…
- Make simple bridges and guides.

## Yr2

**Prior knowledge**
- Use of card and paper
- Making holes, levers and sliders
- Measuring and marking with help.
- Cutting
- Attaching using: glue, a variety of tape and fasteners

**Designing**
- Explore a range of products with axils and wheels to base their ideas upon.
- Draw upon their own ideas and other people's experiences to help to generate ideas.
- Discuss what they intend to do.
- Use labelled drawings to demonstrate what they intend to make.
- Make changes to their idea if they need to.
- Choose their materials from: paper, card, plastic and wood in accordance to their properties

**Making**
- Select the tools that they need and name them.
- Measure and mark with some accuracy.
- Use hand tools appropriately with knowledge of safety.
- Assemble and join materials to make a product.
- Choose ways to finish their product.

**Evaluating**
- Evaluate their idea in comparison to the products with wheels and axils that they explored initially.
- Evaluate their product against what they intended to make.
- Discuss the strengths and weaknesses of their product.
- Say how they might change their product next time.

**Technical Knowledge, vocabulary and understanding**

glue, design, make, evaluate, ideas, materials, vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free moving, mechanism, purpose, user, criteria, functional, dowel, tubes, straws, wood, mdf, axil holder, friction, dowel

Acquired skills:
- Distinguish between fixed and freely moving axles.
- Explore and use wheels, axles and axle holders.
- Could: add a trailer thinking of how to join the two- pipe cleaners/ magnets…

## Yr4

**Prior knowledge**
- Used flaps, sliders and levers
- Experienced 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.
- Evaluate products and identify criteria that can be used in their own design.
- Discuss what they intend to do.
- Use annotated sketches and prototypes to develop, model and communicate ideas.
- Suggest alternative materials and methods if the 1st attempt fails.

**Making**
- Select appropriate tools and techniques for making their product.
- Order the main stages of making
- Measure, mark out, cut and shape a range of materials using appropriate tools, equipment and techniques safely.
- Join/ combine materials in temporary and permanent ways.
- Select from and use finishing techniques suitable for the product they are creating.

**Evaluating**
- Compare their design to that in books and, where available, other products with lever and linkage mechanisms.
- Understanding where their product succeeds and understanding its weaknesses.
- Evaluate their own products and ideas against criteria and user needs, as they design and make.
- Evaluate their products using appropriate tests

**Technical Knowledge, vocabulary and understanding**

design, make, evaluate, ideas, materials, lever, assembling, fixed, free, moving, mechanism, purpose, user, criteria, pivot, fixed, loose, pop up, linear, linkage, slot, guide, bridge, systems, forwards, backwards, reciprocating, arc, oscillating,

Acquired skills:
- Understand and use lever and linkage mechanisms.
- Distinguish between fixed and loose pivots.

## Yr6

**Prior knowledge**
- Experience of axles, axle holders and wheels that are fixed or free moving.
- 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.

**Designing**
- Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.
- Develop a simple design specification to guide their thinking
- Discuss what they intend to do.
- Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.

**Making**
- Produce detailed lists of tools, equipment and materials.
- Formulate step-by-step plans
- If appropriate, allocate tasks within a team.
- Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished.
- Work safely and within the constraints of time, resources and cost.
- Make modifications as they go along.

**Evaluating**
- Compare the final product to the original design specification and suggest ways their product could be improved.
- Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose
- Consider the views of others to improve their work
- Investigate some manufacturing and engineering companies relevant to the project.
- Record their evaluation using drawings with labels.

**Technical Knowledge, vocabulary and understanding**

Motor, circuit, switch, circuit diagram annotated drawings, exploded diagrams mechanical system, electrical system, input, process, output decisions, functionality, innovation, driver, follower, authentic, user, purpose, design specification, design brief, gear, drive belt, mesh

Acquired skills:
- Understand that mechanical and electrical systems have an input, process and an output.
- Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.