



Celebration Cards



Design Technology Learning Strands: Materials and Mechanisms

Suggested Year Group: Key Stage 1

Design Brief: Design and make a Celebration Card that uses a simple mechanism.

Overview: In this unit of work children are introduced to mechanical movement and how such mechanisms can be used to create a pop-up / mechanical card.

Sessions:

1. IDEA Task – Investigating Pop-Up cards & Focused Practical Task 1 – Movement using a slider mechanism (Tortoise Trek)
2. IDEA Task 2 – Movement Around the School & Focused Practical Task 2 – Movement using a slider mechanism. (Puppet Show)
3. Focused Practical Task 3 – Parallel Fold
4. Focused Practical Task 4 – V Fold
5. Design & Make a Celebration Card
6. Evaluation Session

Some activities / sessions can be re-arranged or delivered in different ways in the learning sequence to allow for whole-class teaching and/or small adult-led sessions to take place at the same time.

Prior Learning:

Children may have experienced using different sheet materials to make things and to create products. They will have used simple tools such as a ruler and scissors to measure and cut sheet materials. They are unlikely to have knowledge of simple mechanisms but may know about pop-up and movable cards that are used to celebrate special events.

Core Knowledge (Curriculum Pathway)

Substantive & Technical Knowledge

Pupils should know:

- A product is something that is made to do a job or fulfil a need.
- A product is made for a person known as the client
- Drawing out design ideas is useful to see how the product will look.
- To keep themselves safe when making things.
- Evaluating existing products can help them to design and make their own product ideas.

Materials

- Sheet materials refers to materials that are flat.
- Sheet materials can be folded to create three-dimensional shapes.

Mechanical Systems

- Know that mechanisms cause things to move.
- Linear movement is movement in a straight line.
- Rotational movement is circular movement.
- A lever is something that turns on a pivot.

Practical Knowledge (Skills)

Pupils should know how to:

- Research similar existing products, including online research.
- Use knowledge of existing products to help with generating their own ideas.
- Explain what their product is and how it will work.
- Select and use tools most appropriate for a practical task.
- Cut and shape a range of materials using different tools and techniques.
- Assemble, join, and combine a range of materials using different methods and techniques.
- Reflect on a finished product explaining their likes, dislikes and suggesting improvements.

Materials

- Measure and mark out to the nearest centimetre.
- Cut sheet materials safely using tools provided.
- Shape sheet materials through folding, creasing, and curling.
- Join materials through gluing and by making slots.

Mechanical Systems

- Use sliders to create linear motion in mechanical products.
- Use levers and a pivot to create rotational movement in products.
- Create simple folding mechanisms in pop up books.

Resources:**Presentation Slides**

Lesson presentation slides

PDF Worksheets

- PDF Tortoise Trek
- PDF Puppet Theatre 1 & 2
- PDF Fantasy Houses
- PDF Rocket Round the Moon 1 & 2

Provide a range of simple pop-up cards/movable cards that children can investigate to understanding the mechanisms involved.

Practical Resources

- Coloured paper and card
- Photocopiable card
- Scissors
- PVA glue
- Lolly sticks
- Single Hole Puncher

Background Information & Technical Knowledge**Pop-Up and Mechanical Cards**

Pop-up and mechanical cards are cards that incorporate a simple mechanism that causes a movement to happen. In this unit of work children learn about the slider mechanism that causes linear movement and the two basic pop-up mechanisms – the V-fold and the Parallel fold. This unit of work also provides opportunities for children to develop and consolidate key skills and techniques in working with sheet materials, including:

- The different properties of sheet materials.
- Measuring and cutting accurately.
- Folding and scoring paper & card.
- Permanent joins using glue.

Children may have experienced working with a range of paper and card materials, cutting with scissors and shaping and bending them using a range of different techniques.

Key Vocabulary for this unit of work

Assemble	To fit parts of a product together.
Client	The client is the person who is going to buy or use the product.
Decorate	To make more attractive by adding a pattern or a design.
Designer	A person who creates plans for making useful products.
Idea	A thought, picture or image that is formed in your brain.
Label	Simple information that is written on a picture or drawing.
Linear Motion	Movement in a straight line.
Make	To create or produce something.
Mechanism	A set of mechanical components assembled to perform a particular task.
Pivot	A rod or pin upon which another part rotates, swings, or moves back and forth.
Product	A product is something that is made to do a job or fulfil and need.
Rotary	Movement involving revolving around a centre or axis.
Slider	A lever that moves horizontally or vertically.
Sketch	A quick design or drawing of an idea for a product.
Slot	A long, narrow opening in a material for something to be inserted.
Tools	Tools help to make products by cutting, shaping, measuring, joining and mixing materials.

	Teaching & Learning	Outcome
IDEA Task	<p>IDEA Task 1 – Investigating Celebration Cards Provide the children with a range of celebration cards with moving parts to investigate and discuss. Lead the discussion so that the children understand that each of the cards includes some kind of movement. Explain that there are several types of movement and demonstrate linear and rotational movement.</p> <p>IDEA Task 2 – Movement Around the School This session begins with a guided walk around the school and asking the children to identify examples of both linear and rotational movement around the school. Explain to the children that movement is created by different mechanisms. For example, drawers or children’s trays use a slider mechanism to produce linear movement and a wheel and axle mechanism produces rotational movement.</p>	<p>IDEA Task 1 – Investigating Celebration Cards</p> <ul style="list-style-type: none"> • Children will know that a card can help someone celebrate a special occasion. • Children will know that mechanisms produce movement, and they will be able to identify the mechanism in a celebration card that causes movement. <p>IDEA Task 2 – Movement Around the School</p> <ul style="list-style-type: none"> • Children will consolidate their understanding that mechanisms produce movement. • Children will be able to identify mechanisms around the school that produce movement. • Children will be able to name linear and rotational movement that they observe around the school.

Focused Practical Task 1 – Movement using a slider mechanism (Tortoise Trek)

This activity begins with showing the presentation slide of the tortoise trek, clicking on the slide will cause the tortoise to move – ask the children to identify the type of movement (linear)
 This focused task allows children to create simple linear movement by cutting a slot to allow a slider to move from side to side. Teacher models the task and then children are provided with a template for a garden scene, and they create a simple tortoise slider using a lolly stick and a cut out card tortoise. Children cut a slot following the lines on the template (adult support can be provided to punch holes as indicated on the card template)
 This activity consolidates their understanding of linear movement (movement in one direction) and how the slot guides the linear movement.

Focused Practical Task 2 – Movement using a slider mechanism. (Puppet Show)

This activity begins with showing the presentation slide of the puppet show, clicking on the slide will cause the puppet to appear – ask the children to identify the type of movement (linear). Explain that in the puppet show the linear movement is upwards, whereas in the previous task (Tortoise trek) the linear movement was sideways. Show a made-up example of the puppet theatre and demonstrate how the slider works and the role of the support bridge to keep the slider mechanism vertical. Children create their own puppet theatre model and are then challenged to create a sketch of the model and use labels and arrows to show and explain how it works.

Focused Practical Task 3 – Pop Up Mechanism – The Parallel Fold (Pop-Up Village)

This activity introduces the children to pop-up mechanisms used in mechanical cards. Show children examples of pop-up cards that use the parallel fold mechanism. Ask the children to identify the part of the card that causes the pop-up movement – explain that this is called the mechanism.
 Demonstrate how to create a parallel fold mechanism by folding a piece of card in half and then cutting two identical lines away from the crease fold. (Show on presentation slide). Unfold the card and show how a box mechanism pops up.

Focused Practical Task 4 – Rotational Movement – Rocket Round the Moon

This activity introduces the children to rotational movement created by using a lever and a pivot. Children are reminded of the two different types of movement – linear and rotational – refer to and show cards from previous lessons that use linear motion. On screen animation of a rocket and a UFO rotating around the moon – ask children what kind of movement this is. (rotational).
 Teacher demonstrates how to make the Rocket Round the Moon card using the templates provided. (The strip of card centred on the split pin pivot can be replaced by a wooden lolly stick). Children are then guided through making their own Rocket Round the Moon card. If time allows, children could design and make their own space background.

Focused Practical Task 1 – Movement using a slider mechanism

- Children will know how a slider mechanism is produces linear movement.
- Children will be able to identify linear movement in pop up and mechanical cards

Focused Practical Task 2 – Movement using a slider mechanism.

- Children will consolidate their knowledge of how a slider mechanism produces linear movement.
- Children will be able to identify linear movement in pop up and mechanical cards

Focused Practical Task 3 – Pop Up Mechanism – The Parallel Fold

- Children will learn about the parallel fold mechanism to produce movement in a pop-up card.

Focused Practical Task 4 – Rotational Movement – Rocket Round the Moon

- Children will know that rotational movement is circular movement created by a rod or lever moving around a central pivot.

Design, Make & Evaluate Task

Pre-Requisite Knowledge

- Children will know two types of movement, linear and rotational, and will know the different mechanisms that can be used to create this movement.
- Children will know the parallel fold mechanism for making a pop-up card.

Design, Make and Evaluate

The Design, Make and Evaluate task can be adapted for a particular celebration, festival or linked to the life of a famous person. Having learnt several different mechanisms that are used in mechanical celebration cards, children now design and make a card with a movable mechanism for a specific celebration.

Designing the Card

The design session begins with introducing the children to the relationship between designer, product and client which is a key concept in design technology. Discuss with the children the role of a designer in having ideas, thoughts and plans for a product that people need and is useful to them. Discuss with the children the term client that refers to someone who buys a product and that a successful designer will produce ideas and a product that the client will buy. This concept is then applied to designing a celebration card.

Discuss with the children what they think makes a good celebration card (colourful, bright, slogan, pictures etc.) and how these features might persuade a client to buy the card. Explain that having some kind of moving mechanism will make the card even more attractive to a client.

Introduce the design brief and then discuss with the children the type of celebration that the card is being designed for. Following on from the design brief are slides to support children in making some design decisions and creating a design for their celebration card. To secure children's learning and understanding more effectively, the teacher should model the designing phase.

Making the Card

Introduce/remind the children of the need to prepare before making the product:

1. List all the equipment and tools you will need and then gather them together.
2. Collect the materials that you will need.
3. Make sure that you have your design to help you.

Children then start making their celebration card. Emphasise to them that it is important to use their design as a guide whilst making the card but also, they can make improvements to their celebration card whilst they are making it – that is an important part of designing and making.

When the celebration card is complete, the children evaluate their card using the evaluation slide as a guide.

- What do you like about your celebration card?
- What do you not like about your celebration card?
- How would you improve your celebration card?

Also, refer children back to the previous session and the discussion about 'What makes a good celebration card' – how many of those features are included in the celebration card they have made?

- Bright colours
- Pictures or photograph
- Slogan
- Decorations
- Mechanism

Explain how evaluation is an important part of design technology as it allows us to improve how we design and make different products.

Challenge & Support

Challenge for More Able

- Challenge pupils during the DME sessions to adapt and refine their design when making the product.

Support Strategies

- Ensure that pupils fully understand the technical vocabulary for each session.
- Pupils with SEND often find designing activities problematic, provide adult support with any labelling or annotating activities.
- On-going assessment during the focused practical tasks will identify those children who may need additional adult support during the making phase in terms of using a range of materials and tools properly and with increasing accuracy.
- Consider 1:1 or small group with adult-support when undertaken focused making activities.
- When evaluating products, children could work as part of a guided group, or have guidance to follow or answer a set of questions to enable them to evaluate effectively.

Indicators that children are keeping up with the curriculum

1	Children will know that a product is something that is made for a client to do a job or fulfil a need.
2	Children will know that movement in a straight line in one direction is called linear movement and that circular movement around a pivot is called rotational movement.
3	Children will know how to produce a labelled drawing called a design that will help the in the making process.
4	Children will know how to create a mechanical card using a range of materials, tools and techniques.
5	Children will know how to identify likes and dislikes in a product they have made and be able to explain how they might improve that product.