Medium Term Plan: Supporting Implementation of LTP/Progression Grid

Subject: DT – Mechanisms (Sliders and levers) Unit 1/4 Year: A – Phase 1

NC/PoS:

- Design purposeful, functional, appealing products for themselves and other users based on design criteria
- Generate, develop, model and communicate their ideas through discussion, annotated sketches and prototypes.
- Select from tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.
- Select from and use a wide range of materials and components, including construction materials, according to their characteristics
- Explore and evaluate a range of existing products
- Evaluate their ideas and products against design criteria
- Explore and use mechanisms [for example levers, sliders, wheels and axles], in their products.

Prior Learning (what pupils already know and can do)

- Children use paper and card.
- Children demonstrate simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.
- Children know that tools can be used for a purpose.
- Children know how to manipulate materials to achieve a planned effect.
- Children know how to construct with a purpose in mind, using a variety of resources.
- Children know how to use simple tools and techniques competently and appropriately.
- Children know how to select appropriate resources and adapt work where necessary.
- Children know how to select tools and techniques needed to shape, assemble and join materials they are using.

End points (what pupils MUST know and remember)

- Children know how to design a product with a slider or lever and can explain the user and purpose: a Christmas card with a moving character
- Children know how to draw an annotated sketch of their slider or lever product and can label it with materials and key parts (slider/lever, slit, split pin)
- Children know how to make prototypes of both sliders and levers.
- Children select from PVA glue, glue sticks and scissors to cut and join materials (card and paper).
- Children know a variety of real-life items that use sliders and levers such as books, games (hungry hippos), seesaws at a park, brakes on a bike etc and can explain how the slider or lever creates movement.
- They understand the difference between sliders and levers.
- Children state if their card is suitable for the intended user and purpose. They offer a way to improve their card with some guidance.

Key Vocabulary

slider, lever, pivot, slot, bridge/guide, function, mechanism, evaluate, appeal

Recommended resources:

- Books with sliders and levers (e.g. *Peep Inside*, *Little World*)
- Toys with moving parts (e.g. Hungry Hippos, pop-up books)
- Child-safe scissors, split pins, PVA glue, masking tape
- Paper, card, templates for sliders and levers
- Annotated sketch templates (optional)
- Examples of handmade Christmas cards

Curriculum connections:

RE

- KS1 Year A Christianity Jesus - The children's learning of the Christmas story will be used to inform the design of the cards.

Science

- The children's prior knowledge of materials will be developed during this unit of work.
- KS1 Year B Seasonal changes – The children use their prior learning of the season of winter to inform the design of the cards.
- Forces (push, pull, lift, lower)

Art and Design

- Developing visual appeal and creativity in product design
- Drawing and annotating design sketches
- Letter shapes/fonts/block capitals
- Colour theory – using cold colours for the winter/Christmas scene (blue, white, purple)
- Perspective – items are smaller when further away
- Composition – where the different items should be

English

- Speaking and listening during evaluations and discussions when providing feedback for each other's product
- Writing labels, captions, or simple instructions
- Informal address for greeting inside the card (to/dear/love from)

PSHE

- Developing resilience, honesty, and self-reflection through evaluation
- Respect and tolerance for different celebrations and beliefs
- Safety (split pins, glue sticks)

Maths

- Measuring materials (non-standard measures)
- Understanding position, direction, and movement

Career opportunities:

- Product Designer
- Graphic Designer
- Toy Designer
- Illustrator
- Craftsperson

Session 1:

Evaluating existing products

- Evaluate a collection of books, toys, games and everyday products that have moving parts, including those with levers and sliders. (hungry hippos, bike brakes, seesaws) Explore how they move and the impact of the mechanism.
- Explore the mechanisms that they use in everyday products in the classroom or the school grounds.
- Share job opportunities – engineer, designer

Vocab: slider, lever, mechanism

Session 2:

Practise skills

- Make a slider and lever prototype using paper (discuss that card would be more suitable as it is stronger and stiffer and will be used for the final product). Discuss the difference

between the two mechanisms, consider how they move in different ways. Discuss the function of a split pin acting as a pivot point.
- Discuss why we need slot or a bridge/guide to support the slider or lever. Show the difference of having one/not having one.
- Explore: Why might we use a slider and not a lever? Or a lever and not a slider? How do they impact the movement and range of movement?
- Evaluate effectiveness of prototypes and assess any changes that need making when it comes to making their final product.

Vocab: slider, lever, pivot, slot, bridge/guide, function, mechanism

Session 3:
Designing
- Create a design criterion that considers the user, purpose and appeal.
- Generate ideas based on simple design criteria and their own experiences, explaining what they could make: a card
- Develop, model and communicate their ideas through talking and annotated sketches. Children to label, the slider/lever, slot/bridge/guide and the pivot if applicable.
- Respect and tolerance - Explore link with Christmas/sending greetings cards/Discuss respect and tolerance for those children who do not celebrate Christmas.
- Science link – Recap knowledge of the seasons and features that are specific to winter that can be included in the design – snow, snowmen, snowflakes.
- RE link – Recap Christianity knowledge of the nativity story, what characters could we include? - angels, stars, sheep, shepherds, kings.
- Create designs that suit the intended user and purpose by using drawings.
- Design: How do we design a winter card with a moving part?

Vocab: slider, lever, pivot, slot, bridge/guide, function, mechanism

Session 4:
Making
- Make final product, a winter card with a moving part using different materials: card, paper, glue, scissors and split pins. Children have prior knowledge of using these and will develop their skills of strengthening them.
- Plan by suggesting what to do next.
- Select and use tools, skills and techniques, explaining their choices.
- Use simple finishing techniques suitable for the card they are creating e.g. the use of colours to make it more appealing, using their cutting skills to create accurate representation of features included.
- Resilience – during the entire making process, discuss keeping on trying and never giving up even if the task gets tricky.

Vocab: slider, lever, pivot, slot, bridge/guide, function, mechanism

Session 5:
Evaluate
- Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.
- Consider if it is appealing.
- Evaluate: Does the slider/lever work effectively?
- Functionality: What impact does a slider or lever have on the project?

- Honesty – during the evaluation stages we discuss being honest with ourselves (self-reflection) and others to ensure we can improve ourselves and our work Vocab: slider, lever, evaluate, appeal
Future learning this content supports: Phase 2 – Mechanisms – levers and linkages. Phase 3 – Mechanisms – pulleys and gears.