

Unit 4B Storybooks

Focus – control: mechanisms

ABOUT THE UNIT

This unit develops the popular activity of making greetings cards and the moving picture made in key stage 1. Children research the content of the book and design and make a book that is finished to a high standard, with pages that incorporate moving parts, including linkages and levers.

Children gain an understanding of linkage-type mechanisms through investigating a range of products *eg books or greetings cards*. Through focused practical tasks, children develop further skills and understanding relating to the construction and assembly of a range of simple mechanisms that can be incorporated into a book with moving parts. The children develop their ability to work in groups as they make decisions about the book and share out tasks.

This unit can be adapted by using an alternative context for the children's designing and making assignment *eg a puppet, a display, a poster or a greetings card with moving parts*. It may not be appropriate to repeat the same context as Unit 1A 'Moving pictures'.

PRIOR LEARNING

It is helpful if the children have:

- learnt about hinges and sliders
- used different joining and cutting techniques with paper and card
- used basic cutting tools suitable for a variety of paper and card

This unit builds on Units 1A 'Moving pictures', 3A 'Packaging' and 3D 'Photograph frames'.

VOCABULARY

In this unit, children will use words and phrases relating to:

- designing *eg model, mock-up, plan, fit for the purpose*
- making *eg fold, adhesive, scoring, cutting, joining, temporary fixing, permanent fixing*
- knowledge and understanding *eg linkage, lever, pivot, flexible, shape, joint, hinge, area, surface, covers*
 - types of movement *eg rotary, linear*

RESOURCES

- a collection of books which have pop-up and moving parts
- other products which include linkages *eg toys, squeezey kitchen mops*
- examples of pop-up and moving mechanisms made beforehand
- squared paper, coloured paper and card, paper fasteners or binders, paper straws
- PVA glue, glue sticks, masking tape
- thick corrugated card and drawing pins for modelling ideas
- scissors, craft knives, cutting mats, safety rulers, hole punch, wavy line cutters, perforation cutters
- computer and printer with graphics or word processing program

EXPECTATIONS

at the end of this unit

most children will:

be able to use ideas gained from investigating a variety of products and will have increased their repertoire of skills and techniques; have used tools safely to design and make pages, incorporating levers and linkages, for a book finished to a high standard; have developed skills in making a range of simple mechanisms; have been able to work as part of a group; have been able to evaluate, in use, both their own and others' products

some children will not have made so much progress and will:

have suggested a way of working and produced a page of a book incorporating one type of movement

some children will have progressed further and will:

have produced step-by-step plans for the production of their chosen designs; have combined several types of mechanisms within their book pages; have evaluated their ideas systematically and made on-going modifications; have created a product that functions well and is visually effective

LEARNING OBJECTIVES

POSSIBLE TEACHING ACTIVITIES

LEARNING OUTCOMES

POINTS TO NOTE

CHILDREN SHOULD LEARN

CHILDREN

INVESTIGATIVE, DISASSEMBLY AND EVALUATIVE ACTIVITIES (IDEAs)

- to investigate and evaluate products with lever and linkages systems, in order to learn how they function
- to relate the way things work to their intended purpose
- to use appropriate technical vocabulary to describe materials and mechanisms

- Provide a collection of products *eg books and greetings cards with pop-up and moving parts* for children to investigate. Discuss the designs with the children. *Why do you like/dislike them? What is moving? In what way does it move? Why are moving parts used? How are the mechanisms made? How do they work? How many different parts does it have? What movement is produced? Why has that mechanism been used? How are the moving parts joined together?*
- Discuss the processes used to decorate the cover and pages of the books, identifying the simplicity or complexity of the designs.
- Discuss the wording, layout and style of the text used on the cover and throughout the books.

- recognise products that contain linkage-type mechanisms and can describe how they work and the movement produced
- explain why a particular mechanism has been used and the way it works for the intended purpose
- use technical vocabulary to describe the properties of materials and mechanisms *eg lever, linkage, pivot*

Links to this unit

Design and technology: Unit 5C 'Moving toys'

Science: Units 4E 'Friction', 6E 'Balanced and unbalanced forces'

Information technology: Units 3A 'Combining text and graphics', 4B 'Developing images using repeating patterns', 5E 'Controlling devices'

Mathematics: Number (consecutive, alternate, sequence, predict, rule)

Literacy: Link this unit to work on texts where children identify an audience for a particular genre of writing or their own work, considering the effect this has on the use and organisation of language

Speaking and listening: Teach the children an approach to reviewing their progress orally *eg recalling the original idea, summarising what has been done, giving opinions on progress*

Art: Using visual elements *eg colour, shape, texture*

Content

- Other items which incorporate linkages could be investigated *eg toys, squeeze-type kitchen mops*.
- A chart may be useful for children to record the results of their investigations.
- The different ways of making linkage-type mechanisms can be recorded on a worksheet.
- The children should save their paper models for reference and for display purposes as an important aspect of designing.
- Graphics and/or text from a computer program could be incorporated into the book designs.
- Ensure that children know that their books should have a good-quality finish – and allow enough time to achieve this standard.
- The books should be evaluated through use and therefore evaluation of the final product may be some time after the books have been finished.

Class management

- Introductions, IDEAs and FPTs can be carried out as whole class sessions or as group work.
- Planning of the books should be carried out as group work (between four and six children) as the children have to make decisions collectively. The making stage can be carried out individually. A 'storyboard' might be a useful planning tool. For slower workers, ready-made pictures cut from magazines can be used. Also the use of a photocopier to produce repeat backgrounds can save time.

Health and safety

When carrying out a risk assessment for this activity, teachers will need to consider the materials, tools and equipment being used.

In addition, the following point should be noted:

- ensure that children are closely supervised when using sharp tools *eg craft knives*

Out-of-school activities and homework

Children could be encouraged to develop their making skills through making other moving books, pictures or cards. They might use time at home to work on illustrations or write parts of the text. Children could develop their understanding of mechanisms through drawing products found at home. Encourage children to go and look in their local card shop or book shop.

FOCUSED PRACTICAL TASKS (FPTs)

- to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques
- to join and combine materials and components accurately in temporary and permanent ways
- how simple mechanisms can be used to produce different types of movement
- how to use simple graphical communication techniques

- Using prepared examples, explain to the children how different types of pop-up, moving and linkage-type mechanisms can be created.
- Demonstrate and allow the children to try out different fonts, some simple graphics and/or collage ideas which might be suitable for decorating the cover and pages of their books.
- Demonstrate skills *eg accurately measuring, marking out, cutting, folding, scoring, using a hole punch, using paper clips, using glue and tape*.
- Children could model different types of pop-up mechanisms using paper, masking tape and glue.
- Children could model different types of moving and linkage-type mechanisms using strips of card, pieces of corrugated card, paper fasteners and drawing pins or map pins.

- cut and shape materials and components with some precision, to enable their mechanism examples to work
- produce a range of different mechanisms and develop an understanding of how they work
- have knowledge of a range of fonts and graphic techniques, which are suitable for different purposes

DESIGN AND MAKE ASSIGNMENT (DMA)

Design and make a storybook that has moving parts for a particular purpose

- to explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways
- to develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail
- to evaluate their design ideas as these develop, indicating ways of improving their ideas and to evaluate the book against the original design criteria

- ★ Explain to the children that their task is to design and make a storybook with moving parts. The pages of the book are to incorporate mechanisms *eg pop-up, sliding parts and linkages*.
- ★ Ask the children to think carefully about the type of book they might make. *Who will use it? What will be the storyline? Why will moving parts be useful in the story? What type of mechanisms may be included?*
- ★ The children will need to decide how many pages their book will have, and how the pages and cover are to be assembled.
- ★ The children should make an outline plan with drawing or writing to show who will do each task and the order in which they intend to make the book.
- ★ Encourage the children to keep their designs as simple as possible but encourage a high-quality finish.
- ★ Encourage them to model their ideas *eg making paper models of pop-up designs and card strips attached to corrugated card for linkage-type mechanisms*.
- ★ Evaluate the books in use, highlighting strengths and discussing improvements that could be made. Ask them to compare their products with commercially made ones.

- apply what they have learnt through IDEAs/FPTs in their designing and making
- identify the audience and purpose for their books
- illustrate alternative ideas for their books using drawings and models, and make choices between them
- produce an outline plan that identifies the main stages in making their books, and list the tools, materials and processes needed
- identify what is and what is not working well in their books and what makes a quality finish

- essential activities
- ★ assignment stages (all are essential)
- optional activities

