

Unit 3A Packaging

Focus – structures

ABOUT THE UNIT

Through this unit children learn about strengthening sheet material to make a strong shell structure, which can be used for a variety of packaging. They gain knowledge about nets and about how complex 3D shapes can be made by using a net. They develop their designing skills through the knowledge gained from investigating, disassembling and evaluating a range of familiar commercial packaging. They develop their making skills through focused tasks in which they use a range of measuring, marking-out, cutting and assembling techniques. They also learn simple graphical communication techniques.

The unit could be adapted to use alternative contexts *eg containers or gift boxes*. This unit could be linked to Unit 3B 'Sandwich snacks' (to develop a package for their product).

Unit 3D 'Photograph frames' is an appropriate alternative to this unit.

PRIOR LEARNING

It is helpful if the children have:

- used different joining and cutting methods relating to paper and card
- learnt the differences between 2D and 3D shapes

This unit builds on Units 1A 'Moving pictures', 1B 'Playgrounds', 1D 'Homes' and 2C 'Winding Up'.

It also builds on IT Unit 1D 'Labelling and classifying' and on Science Units 1C 'Sorting and using materials', 2D 'Grouping and changing materials' and 2E 'Forces and movement'.

VOCABULARY

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

- designing *eg font, graphic, decision, evaluating, criteria, fit for purpose, holds*
- making *eg scoring, tabs, adhesives, join, assemble, accuracy*
- knowledge and understanding *eg three-dimensional (3D) shape, cube, cuboid, prism, net, vertex, edge, face, packaging, shell structure, breadth, capacity*

RESOURCES

- a collection of packaging for different purposes *eg from confectionery, biscuits, toys or breakfast cereal*
- paper, squared paper, coloured card, tissue paper, clear adhesive tape, masking tape, PVA glue, clear and tinted acetate film or sheet
- range of tools for marking out, cutting and joining paper and card *eg pencils, rulers, scissors, glue spreaders, coloured pencils and/or felt-tip pens*
- computer and printer with a word processing/graphics program

EXPECTATIONS

at the end of this unit

most children will:

have investigated a range of commercially made packaging and recognised that many examples are constructed from nets; have made paper models (mock-ups) of their ideas before measuring, marking out, cutting and assembling with accuracy; have evaluated their packaging against their original design criteria; have produced packaging that is visually lively, accurately made and appropriate for its purpose

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

have required support to design their package for the given purpose; have used pre-drawn nets as the basis for their packaging; have used a more restricted range of materials and tools

some children will have progressed further and will:

have produced labelled drawings showing alternative packaging ideas; have suggested a step-by-step approach to how their packaging will be made and matched materials, tools and techniques to the task; have identified what is and what is not working well with their chosen designs and suggested at least one modification

LEARNING OBJECTIVES

CHILDREN SHOULD LEARN

POSSIBLE TEACHING ACTIVITIES

LEARNING OUTCOMES

CHILDREN

POINTS TO NOTE

INVESTIGATIVE, DISASSEMBLY AND EVALUATIVE ACTIVITIES (IDEAs)

- to relate the way things work to their intended purpose
 - to find out what other users say about a specific product
 - how materials and components have been used
 - how the working characteristics of materials relate to the ways materials are used
- Ask the children to choose one small packet to investigate. *What was the original purpose of the packet? Protecting? Containing? Presenting? What material is it made from? How has it been stiffened (folded, double layers)? Will it protect its contents? What size is it? What information does it show?*
 - Ask the children to look at a collection of different packages. *Is all of the packaging necessary? How might minimal packaging be developed to serve the needs of the product? Are the materials recyclable or reusable?*
 - Collect and discuss graphics on packaging – colours chosen, impact of style, and size of font. *Does the type and lettering match the overall style of the package?*
 - Ask the children to predict how many separate pieces of card have been used. Discuss their answers, asking for reasons.
 - Give the children the task of carefully taking a small package apart. Discuss the results and ask the children to identify the parts of the net including the tabs. *How are the different faces of the package arranged? How are the tabs used to join the 'free' edges of the net? Does the net need glue to hold it together or do pieces interlock? Does the package have a window cut in it?*

- understand how card is stiffened when a packet is made
- understand that boxes are a type of packaging, and that packaging serves a variety of purposes
- identify parts of a net and can explain how it was assembled
- understand the need to extend the net to incorporate tabs for joining

Links to this unit
Design and technology: Unit 4B 'Storybooks'
Science: Units 2A 'Health and growth', 3C 'Characteristics of materials'
Information technology: Text and graphics and Units 2B 'Creating pictures', 3A 'Combining text and graphics', 4E 'Modelling effects on screen'
Mathematics: Number (approximate, increase, decrease), shape (angle, greatest, least value)

Art: Experimenting with visual elements *eg pattern, shape, colour*

Content

- There is an opportunity to discuss environmental issues relating to packaging. The children could look at materials used and talk about what happens after the package has been used.
- Assemble an image board of commercial packaging so that children can see the variety of fonts used, the consistency with a brand and the similarity of font sizes. The packaging the children develop can also be compared with this board both for 'stand out' factor and appeal.
- Provide children with examples of the actual products that the package is to be designed to hold so that they work to size and shape.
- If available, flat pieces from mathematical construction sets can be used to construct different 3D shapes.
- Pre-drawn outlines, templates or squared paper could be made available if appropriate.
- There is often confusion between 'strength' and 'stiffness'. 'Stiffness' is to do with how easy it is to bend or stretch something; 'strength' is to do with how easy it is to break something.
- Making a package could be combined with working with food. The children could make a package/container for a food product which they have made. Careful consideration will need to be given to choosing material appropriate for direct contact with food.

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 points should be noted:

- ensure that examples of packaging are clean and have not been used for holding hazardous products
- ensure that children are closely supervised if sharp knives are used

Out-of-school activities and homework

Children could be encouraged to examine different packaging, explore nets and make 3D shapes for homework. Research could be linked to a visit to a supermarket.

FOCUSED PRACTICAL TASKS (FPTs)

- that 3D shapes can be constructed from nets and that the final 3D shape is dependent on the shape of the net
 - how to measure, mark out, cut, score and assemble the net of a 3D shape
 - how to create different styles of writing for a purpose
- Show the children how to construct a cube or cuboid using squares and/or rectangles of thin card. The sides can be joined using adhesive tape.
 - Show how the card net of a cube or cuboid can be cut, scored and assembled to make a simple box.
 - Ask the children to practise graphic techniques *eg print out the name of a product using different font sizes and styles*. Discuss reasons for using different ones for different purposes/effects.
 - Show the children ways of stiffening card structures, drawing on their experience of working with products.
 - Ask the children to carry out testing to find out where their structures might need to be stiffened.
 - As an extension activity, ask the children to construct prisms using other flat shapes combined with square/rectangular shapes.
 - As an extension activity, ask the children to make more complex 3D shapes from corresponding nets.

- understand that 3D structures can be constructed from nets
- have developed skills in marking out, cutting, scoring and assembling
- select an appropriate font style and size for a particular product

DESIGN AND MAKE ASSIGNMENT (DMA)

Design and make packaging for a specific purpose

- to generate ideas for an item of packaging, considering its purpose and user/s
 - to explore, develop and communicate design proposals by modelling ideas
 - to create a package for a given purpose
 - to evaluate design ideas as they develop, and indicate ways of improving their ideas
 - to evaluate against design criteria
- ★ Discuss with the children the task of designing and making a packet for a specific purpose *eg for sweets or a healthy snack bar*.
 - ★ Discuss with the children the uses and purposes of the packaging. *What does the package need to do? Who is it aimed at? What do you need to know? Who could you ask? How will the purpose and user affect the design decisions? eg the packaging for children's sweets might be different from the packaging for luxury chocolates.*
 - ★ Encourage the children to identify two or three criteria their packaging will have to meet. *It needs to hold six sweets. It needs to be attractive to children.*
 - ★ Ask the children to draw their initial designs first. These can then be discussed and any amendments made. *Will it do what you intend it to? How can you improve it? How will this meet the needs of the product and the user?*
 - ★ Encourage the children to make mock-ups from paper. The final shape when decided can be transferred onto card. Text or graphics can also be trialled on the mock-ups, and added to the net before final assembly.
 - ★ Ask the children to consider whether additional packaging is needed to stiffen the packet and protect the contents.
 - ★ Encourage the children to evaluate each other's work in a positive manner against their original design criteria, including its 'squashability' and graphic design. *How well does it meet the needs of the product and the user? Is it stiff enough? What could you do to make it better?*

- apply what they have learnt through IDEAs/FPTs in their designing and making
- consider design needs and show their design ideas using graphical representation
- begin to recognise the use and importance of modelling as part of the design and make process
- recognise the need for accuracy in construction for effective products to be developed

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

