

## Unit 7B(i) Designing and making for yourself

### Focus: food

#### About the unit

The main aim of this unit is to develop pupils' understanding of designing for manufacturing, and of manufacturing itself.

In this unit, pupils tackle a design and make assignment (DMA) on the theme 'Snacks', in which they design and make a new and appetising pasty filling for a target group of customers. To help them develop their design ideas they make prototypes and models, which they evaluate and modify before starting to make their final product.

Pupils gain the knowledge, skills and understanding they need to carry out the DMA successfully through product evaluation activities and focused practical tasks. They:

- use simple prototypes and modelling to evaluate design ideas
- use a range of cutting, shaping and mixing processes
- use a variety of techniques to prepare and process foods
- consider safety and hygiene when handling food

There are also opportunities for pupils to:

- use and understand a one-off production technique
- use prototypes and models in the manufacturing process
- learn that designers evaluate and modify their prototypes before starting a production run
- learn that marketing is an important part of designing and making a product

#### Where the unit fits in

This is one of three food technology units that focus on designing: this one in year 7 on designing for yourself; one in year 8 on designing for clients; and one in year 9 on designing for markets. These units ensure progression in understanding about designing.

This is part of a series of three units in year 7 on designing and making for yourself; there are equivalent units, with similar learning outcomes, on resistant materials and textiles. Together these units are expected to take 15–24 hours. It is important that the department plans as a team so that pupils are able to draw on knowledge, skills and understanding from across the units to reinforce their learning and avoid unnecessary repetition.

This unit could be linked to the product evaluation activities and focused practical tasks from unit 7C 'Using ICT to support researching and designing', *eg by using ICT to search for information about snacks, or using a spreadsheet to model different versions of a design and to compare nutritional value or costs.*

If you choose not to teach this unit, then plan to include the essential activities identified by the symbol ■ as part of another unit.

If this unit is used later in year 7, then pupils should be able to complete more of the optional activities.

#### Expectations

##### At the end of this unit

**most pupils will:** carry out their own research by collecting information and use what they learn about products that are produced commercially when developing their own ideas; consider the needs or requirements of users; clarify their ideas through discussion, labelled sketches and modelling (using ICT where appropriate) and give reasons for choosing between ideas; work safely and with some accuracy when using a range of resources, addressing risk, noting any hazards to themselves and others, and identifying ways of controlling risks; compare their product with the design specification and identify what is working well and what could be improved

**some pupils will not have made so much progress and will:** carry out research and use their findings when developing ideas; illustrate alternatives using sketches or models and choose between them; measure, cut and mix given materials/ingredients with some accuracy during modelling and production; note safety equipment used, *eg oven gloves*, and identify its purpose; identify some successful, weak or problematic parts of their work

**some pupils will have progressed further and will:** carry out their own research using sources other than those provided by the teacher, and use their findings about existing products when developing their own ideas; make effective use of prototypes to explore and test their thinking; use formal drawing methods to communicate their intentions; use a wide range of techniques during trialling and production, *eg measuring, cutting, mixing, finishing*; devise simple tests to evaluate the effectiveness of their product in use; evaluate how they have achieved their original design proposals and make recommendations for further development of the product

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## Prior learning

It is helpful if pupils have:

- compared the processes involved in making commercial and domestic bread products
- followed instructions, *eg to carry out fair tests*
- used equipment accurately and effectively, following safe and hygienic working practices, *eg when using an oven*
- planned an order of work with a list of ingredients and equipment

Pupils should have gained the above knowledge, skills and understanding in year 5, through unit 5B 'Bread' and unit 5D 'Biscuits' in the key stage 2 scheme of work, or similar projects.

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## Language for learning

Through the activities in this unit, pupils will be able to understand, use and spell correctly words relating to:

- processes, *eg unit operations, bake, fry, boil, simmer, sieve, mix, knead, roll out, clean, sort, peel, shred, cook, fill, shape, drain, cool, seal, glaze, season, coat, control, probe, produce, risk analysis, hazard identification*
- tools and equipment, *eg oven, hob*

Speaking and listening – through the activities pupils could:

- ask questions to gain clarification and further information, *eg Why...? How...? What...? What then...?*
- answer questions using relevant evidence or reasons

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## Resources

Resources include:

- a collection of marketing techniques, *eg posters, TV and radio adverts, brochures and leaflets, advertorials, packaging, photographs of point-of-sale displays*, used for particular products, *eg breakfast cereals, drinks, margarines, convenience foods, ready-prepared meals*
- case studies, *eg videos, photographs, books*, explaining the product development process for a range of well-known products
- case studies or examples of user research
- case studies showing a variety of different prototypes being used in the product development process
- materials/ingredients, tools and equipment for prototyping and modelling

- materials, tools and equipment for cutting, shaping and mixing
- useful websites, *eg*
  - *sites relating to ingredients, such as [www.fabflour.co.uk](http://www.fabflour.co.uk); [www.dotfood.com](http://www.dotfood.com); [www.bakersfederation.org.uk](http://www.bakersfederation.org.uk)*
  - *sites of leading supermarkets, such as [www.u-net.com/asda](http://www.u-net.com/asda); [www.sainsburys.co.uk](http://www.sainsburys.co.uk); [www.tesco.co.uk](http://www.tesco.co.uk)*

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## Future learning

Pupils could go on to further units on designing and manufacturing in a variety of materials, *eg unit 8B 'Designing for clients', unit 8E 'Producing batches'*.

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## Out-of-school activities and homework

Pupils could:

- present an illustrated story of the design, production, promotion, use and disposal of one product
- collect advertisements that show the ways in which one product has been marketed
- find examples of new products that have been designed to meet recent consumer needs and explore questions about them, *eg What has caused the demand for these products, such as changing lifestyles? What demand might there be in the future for new products? Which different groups of people might want or need them?*
- practise techniques for finding out about users that they know nothing about, *eg looking at the situation in which a product is used, talking to users*, to establish what people like and dislike and the range of different people who will use the product
- collect pictures of different products under two headings: 'high-volume production' and 'one-off production'
- find examples of how prototypes and models (in a variety of materials) are used

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## Links with other subjects

- English: developing effective questioning techniques when carrying out market research.
- PSHE: discussing lifestyles, priorities and values as part of setting the scene for the DMA.

**Learning objectives**

Pupils should learn:

**Possible teaching activities****Learning outcomes**

Pupils:

**Points to note****DESIGN AND MAKE ASSIGNMENT (DMA)**

- to design, make and evaluate a prototype before starting a production run, by applying the knowledge, skills and understanding they developed during the product evaluation activities and focused practical tasks

Set the pupils a DMA in which they:

- use prototypes and models in the manufacturing process
- evaluate and modify their prototypes before starting a production run
- use a range of manufacturing techniques

This might involve 'setting a scene' in a way that includes discussion of lifestyles and pupils' priorities and values.

**Example**

This example DMA has been written so it can be copied and given directly to pupils. Further details and contexts can be added, as appropriate.

**Snacks**

Design a new and appetising filling for a pasty which a target group of customers will want to buy. Develop your ideas by tasting other pasties and finding out what customers want. Experiment with different ingredients for the fillings, and test them to help you design something new and tasty for the customers.

- identify the particular requirements of the task and the design criteria to be met, and take these into account when putting together a design brief
- draw upon their understanding of familiar products
- discuss design ideas with potential users
- develop a prototype and use it as the basis for drawing up a manufacturing specification
- present ideas as plans
- suggest alternative approaches if first attempts fail
- are aware of the types of things they can do to control risk
- evaluate their products against the criteria and suggest design improvements



**Health and safety** – during the making process, pupils should learn to recognise hazards, assess risks and take steps to control the risks to themselves and others

**PRODUCT EVALUATION**

Organise a range of activities that give pupils an opportunity to:

- understand the need for a product and judge how well it meets that need
- understand how marketing techniques, changing fashions and social conformity help to create 'need'
- suggest what criteria might have been when designing and making a particular product
- consider how users interact with the product

■ essential activities

○ optional activities

**Learning objectives**

Pupils should learn:

- what a designer needs to think about (design criteria) when designing and making

- how marketing, changing fashions and social conformity play a part in creating and determining 'needs'

- that products are designed to meet particular needs and how to judge the extent to which they do so

- how the user interacts with the product and how to clarify people's needs and wants

**Possible teaching activities**

- Discuss with the pupils the design, production, promotion, use and disposal of one product, *eg a packaged snack*. As part of the discussion, pupils could consider the questions
  - *What or whose needs or wants might have been considered at each stage from design to disposal?*
  - *How might they have been identified? Who might have been consulted?*
 Extension: some pupils might also consider *How might the design have been developed? What alternatives might have been considered? Who or what influenced decisions?*

- Collect examples of ways in which products, *eg snacks*, have been marketed. Discuss with the pupils
  - *What assumptions have been made about the product's buyers and users?*
  - *How is it sold?*
  - *Where is it sold?*
  - *How much does it cost to buy?*
  - *How much do materials/ingredients and production cost?*
  - *How is it promoted and packaged?*
 Extension: some pupils might also consider *Does this product have an identity or image? How has this been achieved? Does the promotion target a particular age or group of people?*

- Product development should respond to the needs and demands of consumers in order to maintain sales, *eg meeting the demand for vegetarian food, ready-prepared meals*. Discuss with the pupils one product that has been designed recently to meet consumer needs. *What has caused the demand for this product, eg changing lifestyles?*
 Extension: some pupils might also consider *What demand might there be in the future for new products? What might different groups of people want or need?*

- Designers usually have to design for people and companies they know nothing about. Ask the pupils to consider how they can find out what users will want or need. Discuss with the pupils techniques for finding out, *eg looking at the situation in which the product will be used, talking to buyers and users to find out what people like and dislike, finding out the range of people who will use the product*.

**Learning outcomes**

Pupils:

- list the criteria that a designer might have thought about, *eg cost, size, safety, shelf life*, when designing and making a particular product

- know the role that marketing, fashion and social conformity, *eg peer pressure*, play in creating 'needs'

- describe the need for a product and judge how well it meets that need

- select and use appropriate techniques, *eg questionnaires, observation, interviews*, to investigate the situation in which a product is used and the needs and wants of users

**Points to note**

■ essential activities


○ optional activities

Pupils should learn:

Pupils:

### FOCUSED PRACTICAL TASKS (FPTs)

These practical tasks should focus on the knowledge, skills and understanding outlined in 'About the unit'. They should give pupils an opportunity to practise any new skills they will need during the DMA, *eg how to use a range of cutting, shaping and mixing processes.*

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|---|---|--|--|
| <ul style="list-style-type: none"> <li>■ how to use a variety of techniques to prepare and process foods</li> </ul> | <ul style="list-style-type: none"> <li>■ Demonstrate and ask the pupils to practise a range of techniques for preparing and processing foods.<br/><i>For example, pupils could:</i> <ul style="list-style-type: none"> <li>– change raw foods using a range of unit operations, <i>eg cleaning, sorting, peeling, shredding, cooking</i></li> <li>– group unit operations to make a process, <i>eg when making a vegetable samosa:</i> <ul style="list-style-type: none"> <li>• cleaning, sorting, peeling, shredding and cooking for the filling</li> <li>• sieving, mixing and kneading, and rolling for the dough</li> <li>• filling, shaping, frying, draining and cooking for the samosa</li> </ul> </li> <li>– learn how to make pastry and practise making a pasty or samosa from a set recipe</li> <li>– create a range of edible cases, <i>eg batter coating</i></li> <li>– combine materials to change their performance characteristics, <i>eg consistency</i></li> <li>– choose and use a range of cooking methods, <i>eg frying, baking, boiling, steaming</i></li> </ul> <p>Pupils could practise these skills by making simple items quickly, <i>eg salads, drinks, a pasty, a samosa, a spring roll, a baked potato with filling.</i></p> </li> </ul> | <ul style="list-style-type: none"> <li>■ know what is meant by 'unit operations' and know how to group unit operations into simple production plans, <i>eg as a flow chart</i></li> <li>■ select and use appropriate simple food processing techniques safely</li> <li>■ know that combining different materials/ingredients, <i>eg white flour and wholemeal flour</i>, can change their performance characteristics</li> </ul> |  |
| <ul style="list-style-type: none"> <li>■ to consider safety and hygiene when handling food</li> </ul>               | <ul style="list-style-type: none"> <li>■ Discuss with the pupils safety and hygiene when handling food, building on their existing understanding, <i>eg the risks and hazards involved in handling food; the need to keep food preparation and serving environments in the home and industrial settings clean and free of infestation and contamination; the need for food to be prepared, handled, stored, transported and sold in appropriate conditions and temperatures, eg fresh foods should be stored at 0–5°C to be safe to eat.</i></li> </ul>   | <ul style="list-style-type: none"> <li>■ identify the risks and hazards involved in preparing, handling, storing, transporting and selling food, and explain basic rules for safety</li> <li>■ work hygienically when preparing food in the classroom</li> </ul>   | <p> <b>Health and safety</b> – correct hygiene and safety procedures should be followed when handling food. Pupils should be asked to explain clearly the steps they take to control risks</p> |
| <ul style="list-style-type: none"> <li>■ to use prototypes and models when designing</li> </ul>                     | <ul style="list-style-type: none"> <li>■ Show the pupils how to produce prototypes and models in a variety of materials/ingredients, <i>eg make small amounts of different pasty fillings</i>, and ask the pupils to practise some of these techniques.</li> </ul>  | <ul style="list-style-type: none"> <li>■ know how to make their own prototypes and models and know when these will be most useful</li> </ul>   |  |

■ essential activities

○ optional activities

**Learning objectives**

Pupils should learn:

- about the use of prototypes and models in the manufacturing process
- that designers evaluate and modify prototypes before starting a production run
- what is meant by 'one-off production' techniques
- that marketing is an important part of designing and making a product

**Possible teaching activities**

- Show the pupils how prototypes and models are used in the manufacturing process. Use videos, case studies or real examples. Talk with the pupils about how a pasty could be batch or mass-produced, and what tools and equipment would be needed.
- Discuss with the pupils how designers evaluate and modify prototypes before starting a production run, and show them how they can use their own prototypes to evaluate and modify their ideas.
- Discuss with the pupils different volumes of production and talk about how their design ideas might be influenced by the number of products they are going to make. Talk about the differences between one-off production and prototypes, *eg for snacks*.
- Ask the pupils to discuss, in groups/pairs, how marketing techniques are an important part of designing and making a product. Ask them to collect data on their target market for a new product, *eg on the types of snacks that different 'clients', such as siblings, parents and grandparents, would eat*. This will give the pupils another opportunity to reflect on other people's value judgements when designing.

**Learning outcomes**

Pupils:

- give simple examples of how manufacturers have used prototypes and models during the process of designing and making, and give reasons why these are used
- use a prototype to test a design idea
- describe one-off production and give examples of products that have been made in this way
- describe the difference between a prototype and a one-off product, and know when it is appropriate to make each
- know that there is a marketing campaign when a new product is launched
- understand that designers identify target markets for new products
- use questions based on design criteria to practise basic market research techniques

**Points to note****Language for learning during discussion on health and safety**

- Present pupils with some materials on food safety and hygiene and ask them to discuss, in groups, the following questions
  - *What hazards are involved in handling food, and how are these overcome to reduce risk to an acceptable level?*
  - *How are food preparation areas best kept clean and free from contamination?*
  - *Why is temperature important when storing, transporting and selling food products?*

**Language for learning during market research**

- Give groups of pupils a product of interest to their age group and ask them to practise question techniques for market research. Ask them to devise questions based on their earlier product evaluation activities, to find out what people in their age group might want, *eg in terms of colour, design and special features*. Different question formats, *eg open, closed, rank order questions that allow for choice*, could be used. Pupils could then try to ask these questions of others in their class and write a brief report making recommendations.

■ essential activities

○ optional activities