

Unit 8B(i) Designing for clients

Focus: food

About the unit

The main aim of this unit is to develop pupils' designing skills and to teach them about designing for clients.

In this unit, pupils tackle a design and make assignment (DMA) on the theme 'Develop a food product range'. They redevelop an existing food product that is either local or famous, presenting a basic design that can be varied or personalised for particular clients.

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

- learn about batch production, including how to develop a basic design that can be varied or personalised for particular clients
- use manufacturing aids, *eg moulds and templates*, to help with volume production
- learn that making identical parts in a batch can be cost effective and ensures accuracy

There are also opportunities for pupils to:

- use ICT to help design and make single items and small batches, when appropriate, and use spreadsheets to help them with costing and scaling up
- justify their decisions about materials/ingredients and methods of making
- learn about the concepts of marketing, profit and loss
- find out about some of the tensions between production for profit and concerns about human development and welfare
- find out about the conflicting demands faced by designers and makers

Where the unit fits in

This is one of three food technology units that focus on designing: one in year 7 on designing for yourself; this 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 8 on designing for clients; there are equivalent units, with similar learning outcomes, on resistant materials and textiles. Together these units are expected to take 12–20 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 units on using ICT (units 7C, 8C).

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 8, 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 using sources not provided by the teacher, and use their findings about existing products when developing their own ideas; make effective use of a range of strategies to generate design ideas, including using preliminary models to explore and test their thinking, and using formal drawing methods to communicate their intentions; use a range of techniques skilfully during trialling and production; work from detailed plans that they have produced, and modify these when appropriate; devise 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

some pupils will not have made so much progress and will: carry out research on products that are produced commercially and use their findings when developing their own ideas; show some consideration of the needs or requirements of users; clarify their ideas through discussion and modelling, and give reasons for choosing between ideas; produce step-by-step plans and communicate alternative ideas; work safely and with some accuracy with a range of resources, avoiding risks, noting any hazards to themselves and others, and identifying ways of controlling risks; compare their product with the design specification and identify successful and weak parts of their work

some pupils will have progressed further and will: research users' views and the form and function of existing products, and use their findings about existing products when developing their own ideas; develop ideas that take into account the preferences and needs of users; show a good understanding of a range of making techniques, existing products, how their product could be produced to the required quantity and quality, and users' safety needs, when generating ideas; develop detailed criteria for their designs and use these to formulate design proposals; produce realistic and appropriate ideas to meet their specifications, noting sensible reasons for choosing between ideas; use a variety of media to communicate in some detail the planned making processes for the product; choose and use suitable criteria (including user opinion and practical testing) to evaluate the performance of their design ideas and their product in development, and implement suggested improvements

■ essential activities

○ optional activities

Prior learning

It is helpful if pupils have:

- used a variety of techniques to prepare and process foods
- considered safety and hygiene when handling food
- learnt the advantages and disadvantages of using ICT to develop and model designs
- used ICT when generating, developing, modelling and communicating design ideas
- accessed existing computer databases to look for information on materials/ingredients and processes, *eg to research effectively*
- used spreadsheets for modelling, *eg costing materials, components or ingredients*
- learnt how ICT can be used to plan making, inform the making process, or make products using CAM (computer-aided manufacture)

Pupils should have gained the above knowledge, skills and understanding in years 7 and 8, through unit 7B(i) ‘Designing and making for yourself (food)’, unit 7C ‘Using ICT to support researching and designing’ and unit 8C ‘Using ICT to support making’, or similar projects.

Language for learning

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

- designing, *eg variations, personalisation, marketing, profit, loss, conflict, users, opinion, generating ideas, models, trialling, proposals, specification, spreadsheet*
- making, *eg batch production, manufacturing aids, moulds, templates, quality, accuracy, identical, performance, production, scaling up*

Writing – through the activities pupils could:

- show relationships between ideas by links which show purpose, *eg in order to, so that*, and reservation, *eg although, unless, if*
- use punctuation correctly, *eg full stops, commas, dashes, brackets, bullet points, colons*, to extend and clarify sentences

Resources

Resources include:

- examples or photographs/pictures of food product ranges on a theme for product evaluation activities, *eg brands of chocolate bars that are available as drinks and ice-creams, such as Mars, Aero; muesli that is available as breakfast cereal, a bar, yoghurt and bread*
- useful websites, *eg*
 - www.design-council.org.uk
 - www.howstuffworks.com
 - www.technologyindex.com/education

Future learning

Pupils could go on to further units on designing, in particular unit 9B(i) ‘Designing for markets (food)’.

Out-of-school activities and homework

Pupils could:

- identify a product that is either made locally or is famous, and imagine that they have been asked to develop a new version. They could record the key characteristics that they should keep in the new product and then record some ideas for a new version
- collect examples or pictures/photographs of limited edition varieties, new pack sizes and new and improved varieties that have been created to prevent a drop in sales of a familiar product
- stop and think, when next using a tool or a piece of equipment, cleaning their teeth or carrying out any other everyday activity and record
 - *What are they doing?*
 - *What tools and equipment are they using?*
 - *How are they using the tools and equipment?*
 - *Could the tools and equipment be made to do this job better?*
 - *How could the tools and equipment be improved?*
 - *Would these improvements benefit only them or other people as well?*
- discuss with older members of their family how a product has changed since they were young, *eg bread products, cakes, biscuits, soft drinks*

Links with other subjects

- Mathematics: finding and evaluating data.
- PSHE: looking at real-life situations, personal preferences and priorities.

Learning objectives

Pupils should learn:

Possible teaching activities**Learning outcomes**

Pupils:

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

- to design a product suitable for manufacturing and explore how it could be produced as a batch or single item, using CAD/CAM (computer-aided design and manufacture) when appropriate, 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 design a product that can be manufactured in batch or as a single item. The emphasis of the assignment should be on designing skills. Pupils should develop a basic design that can be varied or personalised for particular clients on the same production line, working through conflicting demands they face as a designer and maker. The assignment should require them to justify their decisions about materials/ingredients and methods of making.

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.

Develop a food product range

Food manufacturers are always looking for ways to maintain sales of their products, through developing new or improved versions of familiar products, *eg chocolate bars, such as Mars and Aero, have been developed into milk drinks or ice-cream; cereal, such as muesli, has been developed into snack bars, yoghurts and bread.* Identify a local or famous food product and redevelop it as a different product to extend the product range. It must be obvious what the 'new' product has been developed from, so that everyone will recognise it.

- formulate a design specification, bearing in mind the social, cultural and environmental contexts and having talked to users
- identify the critical factors that should be used as design criteria, including those relating to social and environmental issues
- decide which design criteria clash and which should take priority
- find out which materials/ingredients are available and use technical data to decide on their suitability for the task
- develop systems for ensuring quality when planning batch production
- take steps needed to control identified risks
- discuss with users the extent to which the product meets the design criteria



Health and safety – the Food Safety Act 1995 applies to all suppliers of food and includes the storage of ingredients for classroom use. The Act provides guidance on storage, handling and preparation when developing a new product. Actual legislation does not apply in the teaching situation

Use of ICT

- Pupils could:
 - use software to investigate the hazards in food production, including modelling the effect of temperature on bacterial growth during production, to help plan the making process
 - use a digital camera to record design ideas to present to others
 These link to activities/tasks in unit 7C 'Using ICT to support researching and designing'.

PRODUCT EVALUATION

- Organise a range of activities that give pupils an opportunity to:
- learn how products are made in different historical and cultural contexts
 - understand how and why products have changed over time
 - distinguish between the quality of the design and the quality of manufacture
 - learn to record thoughts, design ideas and explorations

■ essential activities

○ optional activities

Learning objectives

Pupils should learn:

- the main techniques that designers use to generate ideas

- how designers use sketchbooks and folios to record thoughts and design explorations

- how existing products are adapted to extend a product life cycle, and to appreciate the conflicting demands on designers and makers

Possible teaching activities

- Organise a class debate on the subject 'Where do new design ideas come from?' If possible, use information from designers and older pupils on how their ideas emerged.

Discuss, and allow the pupils to try out, strategies for generating new ideas, eg

- brainstorming
- word extension
- analysing products
- using part of a visual image (window search)
- taking everyday objects and thinking up new uses for them (including outrageous ideas)
- visiting places
- talking to people
- using the work of a design movement or work from other times and cultures
- instant modelling with a variety of materials/ingredients
- experimenting with materials/ingredients and processes
- observing changes as a result of fashion trends and lifestyle shifts
- collecting images that inspire
- reviewing films
- going to exhibitions and galleries

- Present the pupils with the quotation '*... good design is a hit or miss process, with many false starts, abandoned ideas and failed explorations. In many ways, the journey is as significant as the destination*' (Nick Butcher, design director, Rodney Fitch and Co). Describe to the pupils how designers record their thoughts, design ideas and explorations, eg *how they use sketchbooks, moodboards, collages, drawings, collections of inspiring photographs and postcards*. Show the pupils good and poor examples of recording and explain that they will need to choose the best methods for their own design work.

- Look at familiar products with the pupils, eg *soft drinks such as Lucozade and Tango, chocolate bars such as Mars bars, Kit Kat*. Discuss the idea of a product life cycle and consider how manufacturers often produce limited-edition varieties, new pack sizes and new and improved varieties to prevent a drop in sales and extend product life. As part of this discussion, pupils could be asked
 - *What are the special features?*
 - *What makes a product unique or new?*
 - *Who is the new product aimed at?*
 Ask the pupils to collect as many examples or pictures of these as they can.

Learning outcomes

Pupils:

- use at least two strategies to generate design ideas, eg *brainstorming, analysing products, visiting places*, and explain why they use them

- produce their own sketchbook and folio of source material, and show that they understand conventions for selecting and recording sources of ideas and inspiration. They should recognise that this is an important part of developing their own ideas

- explain what is meant by product life cycle, marketing, and profit and loss
- describe the main stages of the product life cycle and how to extend the life of a familiar product

Points to note**Use of ICT**

- Pupils could use ICT to search for information about a food product. This links to activities/tasks in unit 7C 'Using ICT to support researching and designing'.

■ 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 to help pupils understand designing for batch production*.

<ul style="list-style-type: none"> ■ that batch production is a method of making a small quantity of identical products, and can be used to produce variations on a theme 	<ul style="list-style-type: none"> ■ Explain to the pupils the batch-production method in commercial production, including how to develop a basic design that can be varied or personalised for particular clients. Ask the pupils to develop their own basic design for a product with variations, <i>eg decorations and finishing</i>, for different users. Ask the pupils to produce a flow chart for their product and the variations. 	<ul style="list-style-type: none"> ■ explain what is meant by 'batch production' and produce a flow chart to show how to batch-produce a basic design that can be varied 	<p>Use of ICT</p> <ul style="list-style-type: none"> • Pupils could: <ul style="list-style-type: none"> – use ICT to plan making, including generating flow charts or production planners – discuss how ICT can be used in batch and mass production <p>These link to activities/tasks in unit 8C 'Using ICT to support making'.</p>
<ul style="list-style-type: none"> ■ that manufacturing aids, <i>eg templates and moulds</i>, ensure accuracy and help with volume production, and that designers use standard components and sizes to make production easier 	<ul style="list-style-type: none"> ■ Show the pupils examples of how manufacturing aids, <i>eg moulds and templates</i>, can be made or used to help with volume production. Discuss with the pupils how they should take into account the use of manufacturing aids when designing. Discuss how designing and making identical parts in a batch, using CAD/CAM or other manufacturing aids, can be cost effective and can ensure accuracy. 	<ul style="list-style-type: none"> ■ use appropriate manufacturing aids to ensure that all parts of products are identical when a number of the same item are designed and made 	
<ul style="list-style-type: none"> ○ that ICT can be used to design and make a batch of identical parts easily, and how to use ICT to scale up production plans and work out costs 	<ul style="list-style-type: none"> ○ Demonstrate to the pupils how ICT can help them to design and make single and batch-produced items, and discuss when it is appropriate to use ICT, <i>eg using spreadsheets to help with 'scaling up' or costing</i>. 	<ul style="list-style-type: none"> ○ describe how to use ICT to design and make a batch of identical parts, and to scale up and cost production 	<p>Use of ICT</p> <ul style="list-style-type: none"> • Pupils could use a spreadsheet to model different versions of a design. This links to activities/tasks in unit 7C 'Using ICT to support researching and designing'.
<ul style="list-style-type: none"> ○ how to use a variety of CAD software as part of their designing and making, to encourage them to become familiar with, and positive users of, ICT 	<ul style="list-style-type: none"> ○ Demonstrate to the pupils how they can use CAD software to design items, <i>eg</i> <ul style="list-style-type: none"> – <i>how to use ICT to draw ideas and model in 2-D and 3-D</i> – <i>how 3-D modelling software can create realistic representations of a finished product, such as a new food product or decoration</i> – <i>how to use 2-D draw/paint programs to produce a pattern or template that can be printed out to help ensure accurate making, such as a pattern or template for the accurate positioning of decorations on a food product</i> <p>Give the pupils an opportunity to practise these skills by designing simple items identified by the teacher.</p>	<ul style="list-style-type: none"> ○ use CAD software ○ explain why it might be appropriate to use CAD rather than hand-tools 	

■ essential activities

○ optional activities