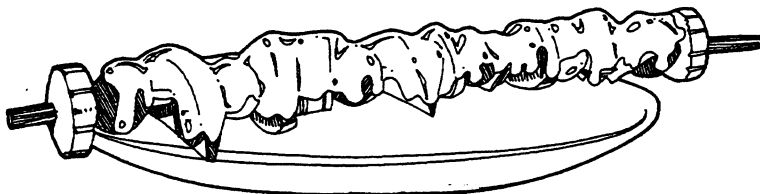


The table lists different aspects of food products that are on a stick. The first line describes the *attributes* of a fruit kebab produced by a supermarket for part of its summer eating range of food products.



Material	Texture	Flavour/ sauce	Image	Cost
fruit pieces	soft	fruity and sweet	healthy	low
vegetable pieces	firm	spicy	novel	medium
meat pieces	hard	sweet and sour	fun	high
chicken pieces	dry	savoury (meaty)	outdoors	
Quorn pieces	moist	savoury (cheesy)	multicultural	
Tofu pieces	crumbly	savoury (salty)	young	
sausage/meat products	crisp	bitter	trendy	
cheese pieces	crunchy	herbal	quick	
fish/shellfish	brittle	fishy	light	
	thin	oily		
	creamy			
	sticky			
	tough			
	tender			
	chewy			
	rubbery			
	gritty			
	greasy			
	goeey			
	slimy			

L Learning

To extend your understanding of how to use attribute analysis to think up different ideas for a food product.



Student's book

Generating design ideas, Attribute analysis, pages 79–80



Timing

45 minutes



Equipment and materials

- workbook
- pen, pencil



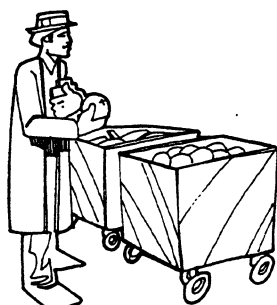
Type of task

Extension

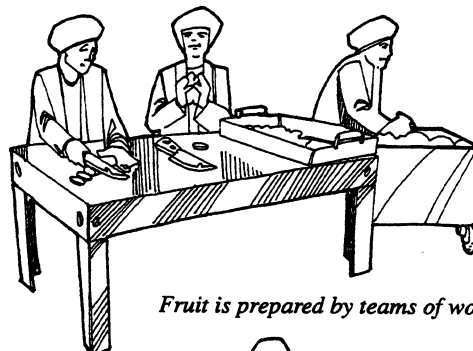
- 1 Look across the columns in the table. Mix the words in different combinations to give you ideas for new food on a stick. List as many ideas as you can in the time available to you. (There are almost 50,000 possible variations!)

Attribute analysis

- 2 Look at the suggestions on your list. Some of the ideas may seem impossible to achieve. If you are not sure:
 - discuss them with a partner
 - use the PIES approach for each suggestion to find out what physical, intellectual, emotional and social needs this suggestion meets that the original idea did not
 - ask yourself who might this idea appeal to that the original did not?
- 3 List those ideas that you think could actually be made.
- 4 Consider the manufacturing methods already used to produce fruit kebabs. The product development team produces a product specification for the fruit kebabs before manufacturing starts. This sets a standard for the product (quality assurance). Throughout the manufacturing process, the quality of the product is checked against the required standard for that point in the procedure. These are critical control points and form part of the quality control process. The workers work in a team, as shown on page 3.
- 5 Choose one or two of the products that you listed above. For each, try to work out the:
 - materials
 - processes
 - equipment
 - skills of workers
 - quality checks and controls
 - storage considerations prior to transport to the distribution centre that would be needed.
- 6 Which of your ideas would be suitable for development by the company making this product?



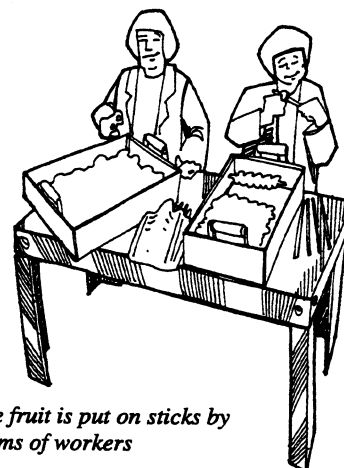
One person checks the quality of the raw ingredients



Fruit is prepared by teams of workers



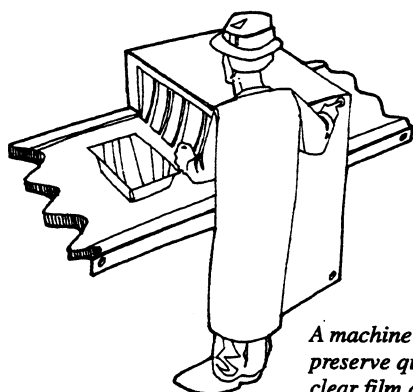
Another team dip the fruit to destroy spoilage and food poisoning micro-organisms and to prevent the fruit browning



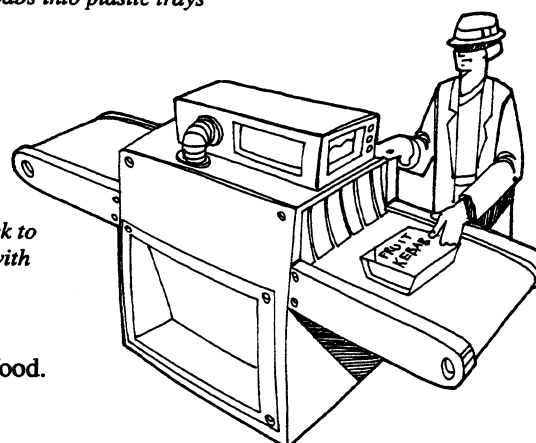
The fruit is put on sticks by teams of workers



A further team packs the kebabs into plastic trays



A machine injects gas into the pack to preserve quality before covering with clear film and sealing



A sachet of syrup/sauce is attached to the top of the pack before a cardboard sleeve is put on

Further/homework

- 1 Draw up an attribute analysis table for a party finger food.
- 2 What headings would you need?
- 3 Fill in some different attributes in each column.
- 4 Sketch one example of a food product suggested by your table.

Part 1: Basic bread recipe**Ingredients**

200 g flour (strong plain wheat and/or cassava – see introduction to Method, below)
 1 teaspoon salt
 125 ml (approximately) warm water
 15 g fresh yeast
 1 teaspoon sugar
 Half a 25 mg vitamin C tablet, crushed
 1 tablespoon vegetable oil

Method

You will make the bread as given below, adding different levels of cassava flour to the basic bread recipe (you should be able to buy cassava flour from West Indian or Asian shops – it is also called manioc or yucca flour). In a group of five people, bake five different loaves – one loaf each – using the quantities of cassava and wheat flours set out below. Bake the loaves in tins of the same size.

<i>Flour</i>	<i>Loaf 1</i>	<i>Loaf 2</i>	<i>Loaf 3</i>	<i>Loaf 4</i>	<i>Loaf 5</i>
<i>Wheat</i>	200 g	150 g	100 g	50 g	0 g
<i>Cassava</i>	0 g	50 g	100 g	150 g	200 g

L Learning

To extend your understanding of using sensory testing to evaluate the acceptability of modified recipes and to use this information to analyse and modify prototype food products.

Student's book

Evaluating, pages 92–4

Timing

Part 1: 1 hour
 Part 2: 20 minutes

Equipment and materials

- ingredients for bread (given below)

For sensory evaluation

- paper plates
- palette cleanser
- recording sheets
- pen, pencil

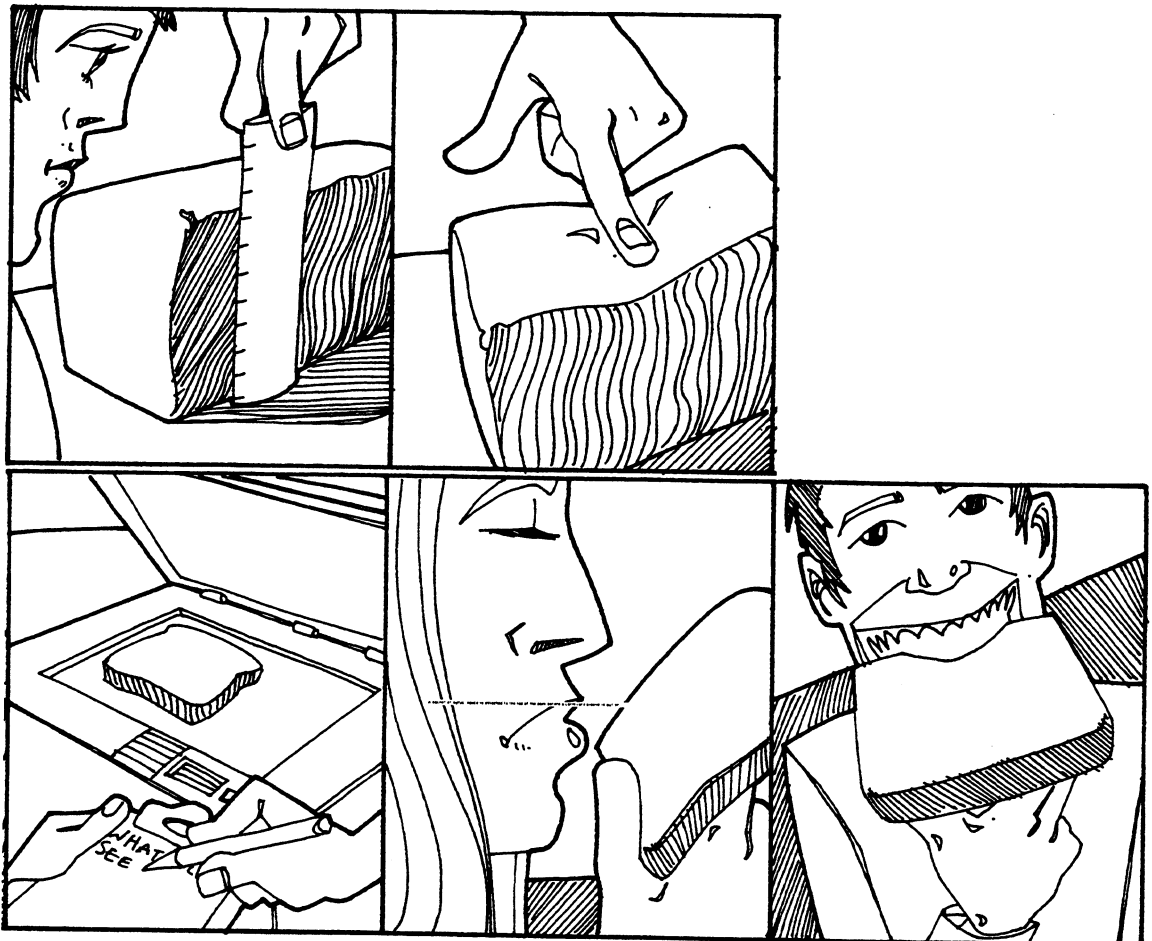
t Type of task

Extension



- 1 Preheat the oven to 220°C/425°F/gas 7 and oil a 900 g loaf tin.
- 2 Sift the flour or flours with the salt into a mixing bowl.
- 3 Pour some of the warm water into a jug and add the yeast, sugar and crushed vitamin C tablet. Stir well. Add the oil to the jug.
- 4 Using a metal spoon, mix the contents of the jug into those in the bowl. Add additional warm water to form a dough which should be soft and elastic.
- 5 Knead the dough on a floured surface for 10 minutes. Shape and place in the prepared loaf tin. Leave in a warm place until the top of the dough reaches the top of the tin (about 10 to 15 minutes).
- 6 Bake in the preheated oven for about 20 to 25 minutes, until the loaf sounds hollow when tapped on the bottom and it is golden on top. Turn out onto a cooling rack and leave to cool.

- 7 When the five loaves have cooled, check and record the following.
- Measure the height of the loaves at the edge and at the highest point.
 - Test the springiness of the loaves by pressing them with your finger and seeing whether or not they spring back or if you leave a mark.
 - Cut one slice from each loaf. Look at the texture, write down what you see. It may be possible to obtain photocopies of your slices – ask your teacher.
 - Smell the bread, write down your description of the aroma.
 - Taste the bread, detect the flavour and how it feels in your mouth. Write down descriptions of these attributes.



Part 2: Evaluation

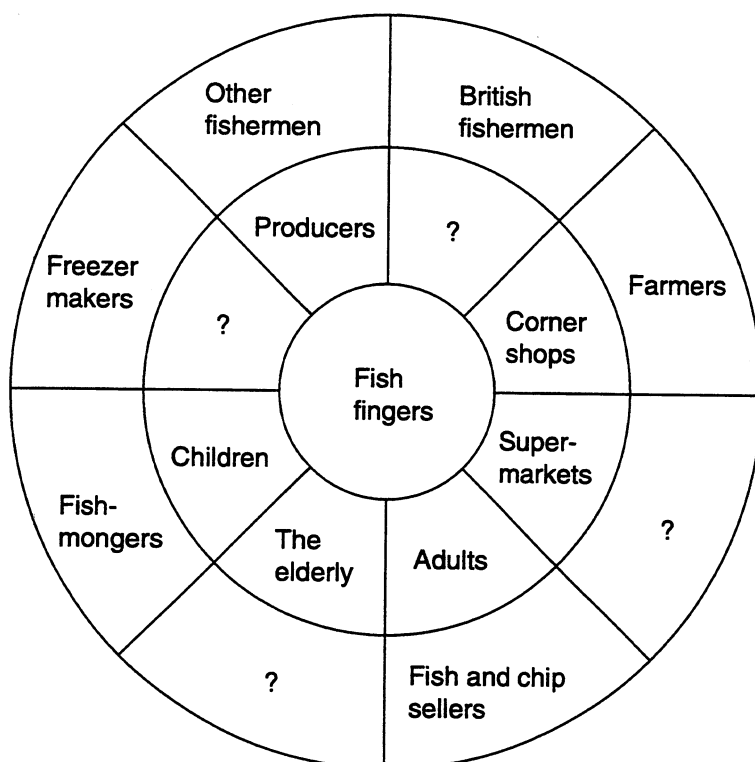
- 1 Carry out sensory evaluation tests as a group on small pieces of your breads, using your classmates as testers. Consider which would be the best attributes of the breads to test, then set up three tests:
 - a ranking test
 - a preference test
 - a difference test.
- 2 Carry out your tests and collect your results. Consider the best way of presenting your results as a group. You could use charts, graphs or other methods of presentation. Could you use computer software to help you?

Further/homework

Write up your activity as an investigational report.

Part 1: Winners and losers

1 Here is a winners and losers chart for fish fingers.



L Learning

To extend your understanding of how to evaluate a product by thinking how it affects people and whether it is appropriate.

Student's book

Evaluating, page 92–7

Timing

Part 1: 40 minutes
Part 2: 40 minutes

Equipment and materials

- workbook
- pencil
- two blank winners and losers charts

Type of task

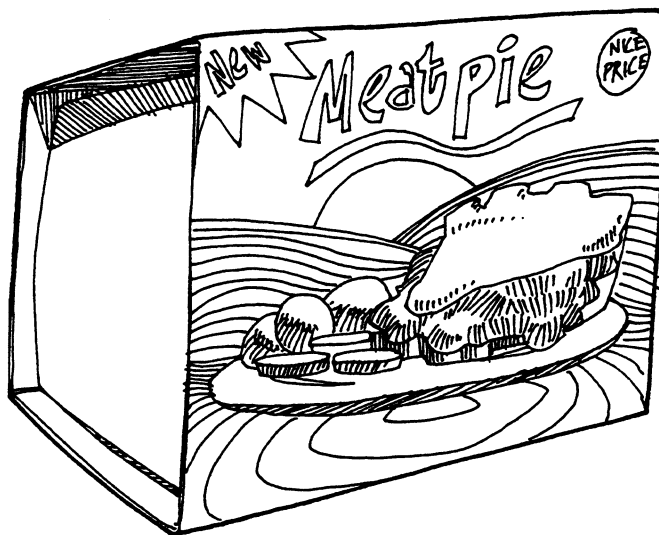
Extension

It has been filled in. Those who are directly affected by fish fingers – those who use them and make them – are entered in the inner ring. Those who are indirectly affected are entered in the outer ring. There are some blanks. You can add names here for any people you think have been missed out.

- Look at the inner ring and decide who are winners and who are losers. Write down the names of the winners, giving a reason for your answers. Write down the names of the losers, also giving a reason for your answer. If you can't decide, write a sentence explaining your difficulty.
- Look at the outer ring and decide who are winners and who are losers. Write down the names of the winners, explaining why you think they are winners. Write down the names of the losers, explaining why you think they are losers. If you can't decide, write a sentence explaining your difficulty.
- Here are two more examples for you to try from scratch:
 - a chocolate bar, for example a Mars Bar
 - a breakfast cereal, such as Coco Pops.
- Write down those people directly affected by the product in the spaces in the first ring.
- Write down those indirectly affected by the product in the spaces in the outer ring.
- Highlight the winners in one colour and the losers in another colour.
- Explain your decisions.

Part 2: Appropriateness

- 1 Consider this situation. A food factory produces frozen, ready-cooked meat pies and pasties. The factory is based in a rural area and the ingredients are largely supplied by local farms, but some is bought in from elsewhere in the country and some is imported. The workers in the factory live in the local market town and surrounding villages. The food products are sold mainly to a supermarket chain that operates throughout the region.



- 2 Think about whether or not this situation is appropriate as it is. Draw up a simple three column chart:
 - in column 1, list some questions that you can ask yourself about the product
 - in column 2, award marks for each question by using an evaluation scale – for example:
 - 1 = poor
 - 2 = only adequate
 - 3 = average
 - 4 = good
 - 5 = excellent
 - in column 3, say why you have awarded each mark.

Look at your overall scores and reasons.

- 3 Write a clear statement explaining whether or not you think this food factory making convenience food is appropriate technology.

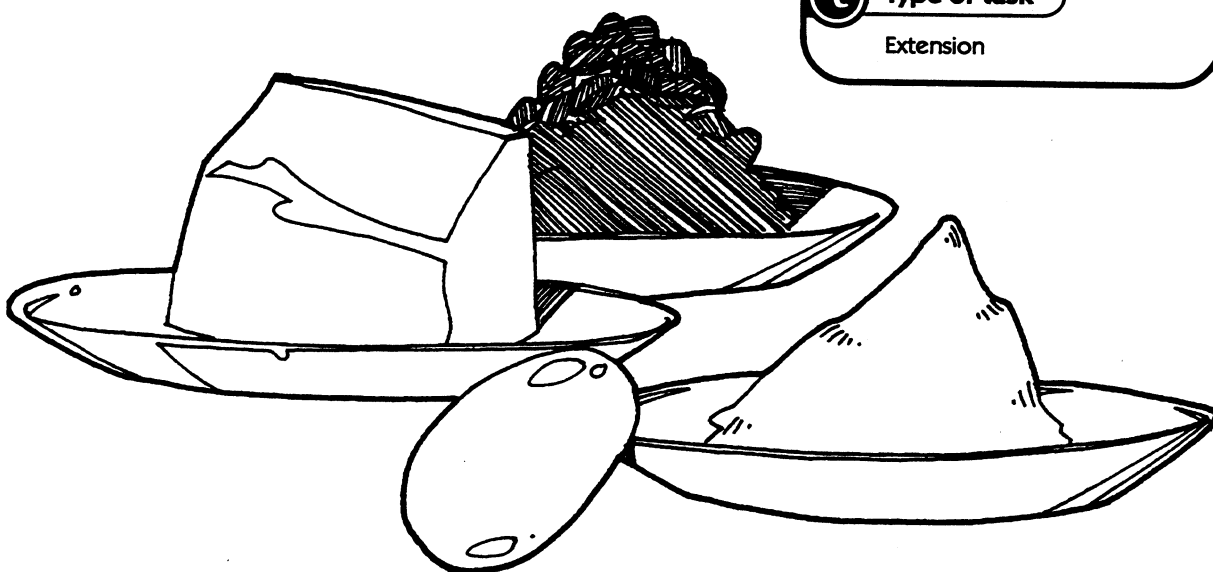
Part 1: User trips

- 1 Work in groups of four, each member being in charge of one of the food products, with the other three students carrying out the user trips on that product.
- 2 Use the following questions to help each group of students carry out their user trips.
 - 'Do you like the taste?'
 - 'Can you tell me why?'
 - 'Can you tell me why not?'
 - 'Is it easy to eat?'
 - 'If not, what could be done to improve it?'
 - 'Would you buy it?'
 - 'If so, how much would you expect to pay for it?'
 - 'Where would you expect to see it on sale?'

Part 2: Performance specification

Here are the ingredients for chocolate chip buns.

- 1 egg (size 2)
- 50 g self-raising flour
- 50 g soft margarine
- 25 g chocolate chips

**L Learning**

More about user trips and performance specifications for evaluation.

**Student's book**

Evaluating, User trip, page 92
Specifying the product, pages 75–6

**Timing**

Part 1: 30 minutes
Part 2: 30 minutes

**Equipment and materials**

- samples of four food products per group, such as potato snacks, chocolate mousse-type dessert, breakfast cereal (with milk), plain biscuits
- plates and labels
- tasting spoons
- workbook
- pen, pencil

**Type of task**

Extension

Here is the performance specification for chocolate chip buns made with these ingredients.

What it should do

It should meet the following sensory criteria:

- texture:
 - crisper, drier outer surface
 - moist sponge inside
 - chips firm at first, becoming smooth and creamy
- flavour:
 - sweet
 - buttery
 - chocolaty in places
 - a hint of egg
- aroma:
 - buttery
 - chocolaty
 - eggy.

What it should look like

It should have the following physical characteristics:

- shape:
 - slightly domed
- colour:
 - rich yellow surface
 - lighter yellow interior
 - dark brown chocolate chips.

Other features:

- shelf-life:
 - four to five days if kept in a sealed container in a cool place
- cost:
 - approximately 5p per bun
- nutritional content per bun (approximately):
 - protein 2.5 g
 - fat 10.3 g
 - carbohydrate 20.2 g
 - vitamin A 95 µg
 - vitamin B 0.04 mg (thiamine)
 - vitamin C zero
 - vitamin D 0.7 mg
 - vitamin E 0.7 mg
 - sodium 79 mg
 - calcium 31 mg
 - iron 0.3 mg

- 1 With one bun per two people, carry out the following analysis.
- 2 Compare the appearance of the bun with its specification.
- 3 Compare the sensory characteristics of the bun with those in the specification.
- 4 Compare the shelf-life of the bun with that in the specification by *looking* at the following display samples:
 - sample A – fresh bun
 - sample B – four-week-old bun in a sealed glass jar
 - sample C – four-week-old bun kept for four weeks in a freezer in a sealed freezer bag
 - sample D – four-week-old bun left out in the air for four weeks in a sealed freezer bag.
- 5 Note any differences and decide whether or not it meets the shelf-life criteria given in the specification.

SAFETY NOTE

It is essential that you do not taste these samples. On no account repeat these investigations of shelf-life with high risk food products containing fish, meat, raw eggs or cream.

**Further/homework**

Calculate the nutritional contents of the bun using the ingredients list and food tables. Compare this with the nutritional contents given in the specification.

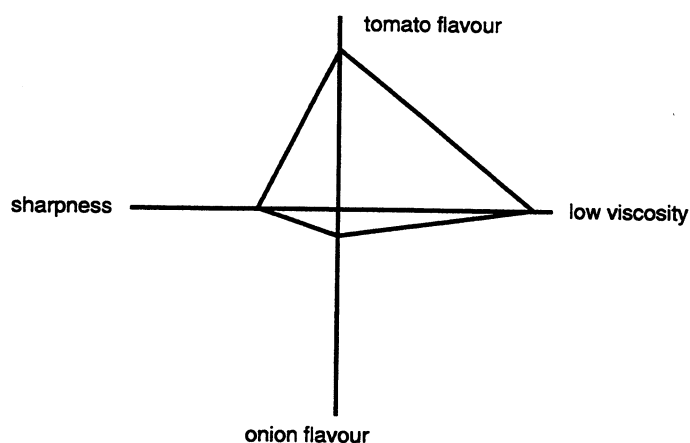
Evaluation by attribute profile

Part 1: Attribute analysis

You have a sample of a tomato sauce made to the following recipe:

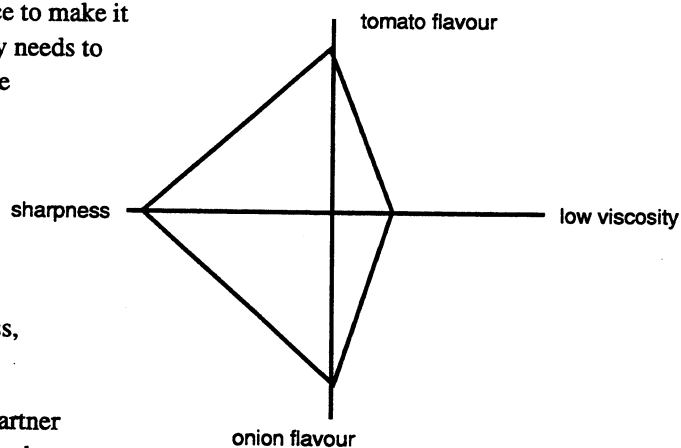
250 ml tomato juice or passata
1–2 cloves of garlic, crushed
25 g onion, finely chopped
1 tablespoon chopped mixed herbs
salt and pepper

- 1 Taste the sample and look carefully at the attribute profile below, which describes the sauce.



- 2 Discuss with your classmates what you think this sauce would be used for and why.

A pasta company wants to develop a range of ready-to-cook pasta with sauces in accompanying sachets for sale in supermarkets. Some changes need to be made to this sauce to make it suitable to use with the pasta. The company needs to produce a sauce with the following attribute profile.



It will be necessary to increase the thickness, sharpness and onion flavour of the sauce.

- 3 Working in pairs, discuss with your partner how you are going to make changes to the original recipe to make the sauce fit the second attribute profile. Check with your teacher that your ideas will work.

L Learning

To apply attribute analysis.

Student's book

Generating design ideas,
Attribute analysis,
pages 79–80

Evaluating, Performance
testing, page 96

Timing

Part 1: 40 minutes

Part 2: 40 minutes

Equipment and materials

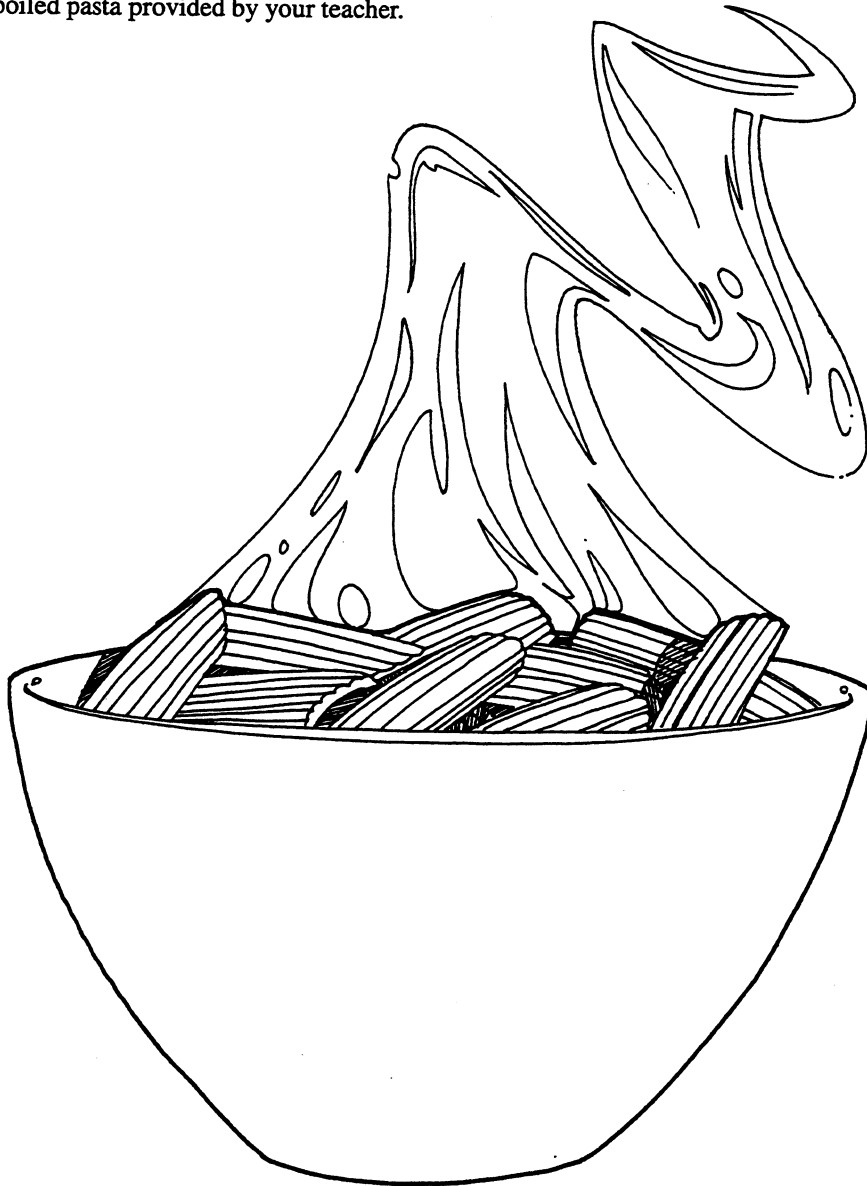
- ingredients for the tomato sauce as given
- ready-cooked pasta
- workbook
- pen, pencil

t Type of task

New

Part 2: Testing your product

- 1 Make up your amended recipe for the sauce and add it to the boiled pasta provided by your teacher.



- 2 Organize sensory tests for others in your class to complete so that you can evaluate the success of your ideas.