# Stage 5 Food Technology

## Food innovations

### Student booklet



Images from [Pixabay](https://pixabay.com/photos/diet-calorie-counter-weight-loss-695723/) (CC BY 3.0)

Student name:

Teacher:

## Outcomes

A student:

* FT5-1 demonstrates hygienic handling of food to ensure a safe and appealing product
* FT5-2 identifies, assesses and manages the risks of injury and WHS issues associated with the handling of food
* FT5-5 applies appropriate methods of food processing, preparation and storage
* FT5-7 justifies food choices by analysing the factors that influence eating habits
* FT5-8 collects, evaluates and applies information from a variety of sources
* FT5-9 communicates ideas and information using a range of media and appropriate terminology
* FT5-10 selects and employs appropriate techniques and equipment for a variety of food-specific purposes
* FT5-11 plans, prepares, presents and evaluates food solutions for specific purposes
* FT5-12 examines the relationship between food, technology and society
* FT5-13 evaluates the impact of activities related to food on the individual, society and the environment

[Food Technology 7-10 Syllabus](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/technologies/food-technology-2019) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2019

## Lesson outline

|  |  |
| --- | --- |
| Weeks | Section |
| 1 | * Food product development- define
* Food product development- range of developments
* Food product development- categories
 |
| 2 | * Reasons for food product development
* Increasing demands for convenience foods and packaging
* Food products and their effect on society
* Role of technology in preparation
 |
| 3 – 4 | * Steps in food product development
* Packaging options and environmental considerations
 |
| 5 – 6 | * Food Production steps
* Impact on society
* Impact on the environment
* Impact on health
 |
| 7 – 9 | Options* Practical Task- Produce and package a convenience food
* Practical Simulation- McDonalds Video Game- Food production and the impact on society, the environment and health
 |
| 10 | * Practical Task- Refer to assessment task attached
* Practical simulation- Evaluate the outcomes achieved from playing the game above such as the impact of food production on society, the environment and health
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Activities for this unit can be completed using the information from the PowerPoint presentations ‘Food Product Development’ 1 – 3.

## What is food product development

Food product development is a series of stages that a business goes through, whether a home based company or corporate business, to bring a new food product or innovation to the consumer market.

In the space below, define food product development.

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| --- |

### Food product development descriptions

Describe a range of food product developments, including definition, advantages and disadvantages. Answer in the spaces provided.

**New to world**

Definition:

|  |
| --- |

|  |  |
| --- | --- |
| Advantages of new to world products | Disadvantages of new to world products |
| a |  |

**Line extension**

Definition:

|  |
| --- |

|  |  |
| --- | --- |
| Advantages of line extension products | Disadvantages of line extension products |
| a |  |

**Me too products**

Definition:

|  |
| --- |

|  |  |
| --- | --- |
| Advantages of me too products | Disadvantages of me too products |
| a |  |

### Food product development examples

For each of the categories listed in the table below, provide examples of each including a picture and explanation as to why the product in an example of the category identified. Answer in the table below.

|  |  |  |
| --- | --- | --- |
| Product | Example | Explanation |
| Line extensionFrosty fruits | Line extension which is a new food innovation of frosty fruit ice blocks which is now being made into confectionary | Line extension- as original product was Paul’s frosty fruits ice blocks and Allen’s have produced a sweet, flavoured and shaped like the frosty fruit ice block |
| Line extension |  |  |
| Line extension |  |  |
| New to world |  |  |
| New to world |  |  |
| Me too products |  |  |
| Me too products |  |  |

## Reasons for food product development

Explain and give examples of each reason for food product development. Complete the table below.

|  |  |  |
| --- | --- | --- |
| Reason | Explanation | Examples |
| Health and Environmental Issues |  |  |
| Company Profitability |  |  |
| Technological Developments |  |  |
| Increasing demands for convenience foods and packaging |  |  |
| Societal Changes |  |  |

## Technological developments and increasing demands for convenience foods

Answer the following questions in the space provided.

1. How has technology influenced the future of food?

|  |
| --- |

1. How has technology influenced the future of housing?

|  |
| --- |

1. Outline SIX innovations that could build the food of the future?

|  |
| --- |

1. Outline the reasons for new food products?

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| --- |

1. Explain why new food products are being developed?

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| --- |

1. What do you think would happen if people stopped preparing their own meals and only ate convenience foods?

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## Food products and their effect on society

Describe how food products have impacted on the environment, emerging technologies, nutrition and dietary needs. Answer the questions in the space provided.

1. Name a new food product and outline its effect on the environment.

|  |
| --- |

1. Name a new food product and explain the effect of emerging technologies on its production.

|  |
| --- |

1. Name a new food product and explain its effect on nutrition

|  |
| --- |

1. Name a new food product and describe its effect on special dietary needs such as vegan, gluten or dairy free.

|  |
| --- |

## The role of food additives in food processing

In the space below, define food additives.

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Complete the table below. For each role of food additives, list the types of food additives on the market and give an example of each type.

|  |  |  |
| --- | --- | --- |
| The role of food additives | Types of food additives | examples |
| Maintain product consistency |  |  |
| Improve or preserve the nutrient value |  |  |
| Maintain the wholesomeness and the palatability of foods |  |  |
| Control the acidity and alkalinity, and to provide leavening |  |  |
| Provide colour and improve flavour |  |  |
| Colourings add or restore colour to foods |  |  |
| Artificial Colourings |  |  |
| Artificial flavourings |  |  |

## The role of technology in the preparation of food

Explain the role of technology domestically and industrially. Answer the questions in the table below.

Outline the roles technology has had in the preparation of food domestically.

|  |
| --- |

Outline the roles technology has had in the preparation of food commercially.

|  |
| --- |

## Steps in food product development

Give a detailed explanation of the importance of each step in food product development.

|  |  |
| --- | --- |
| Steps | explanation |
| Brief |  |
| Market research |  |
| Design specification |  |
| Shortlisting and testing |  |
| Manufacturing specification |  |
| Quality control |  |

## Functions of food packaging

Read the article [6 futuristic food packaging technologies](https://www.fooddive.com/news/6-futuristic-food-packaging-technologies-that-could-change-everything/94763/) and answer the flowing question in the space provided.

Summarise the SIX examples of food packaging and analyse what it is made from, why it is used and the technology used in its production.

Example 1

|  |
| --- |

Example 2

|  |
| --- |

Example 3

|  |
| --- |

Example 4

|  |
| --- |

Example 5

|  |
| --- |

Example 6

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| --- |

## Suitable packaging options

Read the article [10 product packaging design mistakes to avoid](https://medium.com/%40grandprints/10-product-packaging-design-mistakes-to-avoid-right-now-402d4c390fa1) and watch [Packaging and the environment](https://www.youtube.com/watch?v=0siDq8TqOgM) (duration 4:01).

In the table below, for each package listed, identify the possible environmental issues, possible solution and package examples currently on the market.

|  |  |  |  |
| --- | --- | --- | --- |
| The product | The problem – environmental issues | The solution – environmental solution | examples |
| The clip packet |  |  |  |
| Single serving foods |  |  |  |
| Plastic drink bottles- non PBA |  |  |  |
| Pizza box |  |  |  |
| Other- choice 1 |  |  |  |
| Other- choice 2 |  |  |  |

## Legislative food labelling requirements in NSW

Upload or draw an image of food packaging. Annotate (label) the food package using the following labels:

* product name
* used by date
* health star rating
* health and nutrition information
* country of origin
* Instructions of use

Front View

|  |
| --- |

Back and side panel

|  |
| --- |

## Practical task – create a convenience food

Option 1: Food Product development PowerPoint 3, slides 15 to 18.

Note – this task can be modified for students not completing practical lessons or those who are working from home as a virtual video game has been included as an alternative the practical element of this task.

**Task description**

You are to design, produce, package, and write the method/instructions for a new ‘packet mix’ convenience food product. It may be a chilled, frozen or shelf based product.

Your packet mix will then be prepared and evaluated by one of your peers.

**Limitations**

* The school will supply flour, powdered milk, margarine, sugar, 1 egg, spices, cocoa, dry herbs and rice/pasta.
* Your packet mix should already contain the majority of the ingredients needed to make your product.
* Your product should be completed within a 50 minute time frame.
* No nuts or nut products may be used in the product.
* It must be a line extension.

**Assessment Criteria for the task**

In this task you will be assessed on your ability to:

* Justifying the suitability of the product to the target market
* Discuss a suitable marketing plan for the product
* Design and produce a package that is suitable to protect and contain your product and includes all mandatory labelling requirements.
* Create a successful line extension product
* Write a clear and detailed evaluation of the product you prepared, commenting on clarity of instructions, ease of use, success of the final product.

### Part 1: developing your product

In the space below, brainstorm ideas for your convenience food packet mix.

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In the space below, outline which idea have you chosen to continue with and why?

|  |
| --- |

Who is the target market for your product and what are their specific food needs? Answer in the space below.

|  |
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In the space below, outline how your product would benefit your target market.

|  |
| --- |

In the space below, describe in detail your product specifications. What are your raw ingredients? How will you package your product?

|  |
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### Part 2: marketing plan

In the spaces provided, describe a marketing plan for your product that includes information product planning, price, placement and distribution, and promotion.

**Product plan**

Give a brief overview and sketch if your product.

|  |
| --- |

**Price**

List the cost of each ingredient and packaging then outline your recommended retail price for your product.

|  |
| --- |

**Place and distribution**

Describe the target market the product is being developed for such as an adolescent, sporting athlete

Where will your product be distributed such as super markets or online.

|  |
| --- |

**Promotion**

Design an advertisement to promote the product you have developed, keeping in mind the target market and place of distribution.

|  |
| --- |

### Part 3: food and packaging manufacture

Make a suitable package to store your product. This will include any inner packaging to contain all your ingredients as well as the outer package, which will include a label, ingredients list, allergy advice and instructions. The label must contain all mandatory information. It must be accurate and original.

Complete the table below to plan for your product packaging.

|  |  |
| --- | --- |
| Part | Ideas |
| Brand name |  |
| Logo (sketch) |  |
| Product name |  |
| Ingredients list |  |
| Health rating |  |
| Allergy advice |  |
| Instructions (method) |  |

In the space below, sketch and label the outer packaging for your product.

| Front view | Back view |
| --- | --- |

In the space below, sketch and label the inner packaging for your product.

|  |
| --- |

### Part 4: practical lessons- option 1

**Practical lesson 1:** prepare your packet mix and package the ingredients in preparation for the next practical lesson.

You will be assessed on the:

* functions of your packaging including whether the ingredients are contained and preserved.
* labelling of your product, including all mandatory requirements and instructions to be followed to prepare your mix.

**Practical lesson 2**: another student in the class will complete the dish/food using your packet mix and following the instructions on your packet.

In class there will be milk, oil, butter and eggs available.

### Part 4: practical lessons- option 2 (online)

You are to manage a supply chain in a food-focused corporation like McDonald’s. It shows the negative impact on modern society, environment and health from the rising demand for products created by consumers.

Access the link [McDonalds video game- sustainability](https://games4sustainability.org/gamepedia/mcdonalds-video-game/).

 Have a few tries of the game to perfect the applications then complete the task.

In the space below, outline the steps involved in the production task undertaken in the McDonalds video game.

|  |
| --- |

#### The impact of food production on society, the environment and health

After playing the game a few times, to perfect its application, record the outcomes you achieved in the table below.

|  |  |  |
| --- | --- | --- |
| Impact | Advantages | Disadvantages |
| Society |  |  |
| Environment |  |  |
| Health |  |  |

### Part 5: evaluation

Write an evaluation on the product you have prepared from another student. Within the evaluation you need to discuss the package and labelling of the product, the clarity of the instructions provided to prepare the packet mix, and whether the product was successful.

Complete the evaluation below rating each question with 1 poor and excellent 5 and a reason for your rating.

|  |  |  |
| --- | --- | --- |
| Question | Rating 1 – poor5 – excellent | Reason |
| How well does the package attract the target market/ audience |  |  |
| How well does the package protect the product |  |  |
| How well does the label attract the target market/ audience |  |  |
| How well is the package labelled |  |  |
| How informative is the label, including instructions for use |  |  |
| How likely is the package to be recycled |  |  |
| How well is the product promoted |  |  |
| How edible is the product |  |  |
| How could the product, package and / or label be improved |  |  |