**NZQA**

**Approved**

Achievement standard: 91352 Version 3

Standard title: Demonstrate understanding of advanced concepts used in processing

Level: 2

Credits: 4

Resource title: Kapai te kai

Resource reference: Processing Technologies VP-2.61 v2

Vocational pathway: Services Industries

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| Quality assurance status | These materials have been quality assured by NZQA. NZQA Approved number A-A-02-2015-91352-02-8272 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

Achievement standard: 91352

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Vocational pathway: Services Industries

Learner instructions

# Introduction

This assessment activity requires you to demonstrate your understanding of advanced concepts used in processing to make traditional Māori and/or Samoan breads.

You are going to be assessed on how comprehensively you demonstrate your understanding of advanced concepts used in processing to make traditional Māori and/or Samoan breads.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions, and modify them if necessary to suit their learners.

# Task

In this activity you need to show that you are able to process and interpret information, and prepare a presentation that includes:

* the processing operations used and their resulting outcomes
* the specific tests used, and how processing operations and tests can be combined in a processing sequence and visually explained
* the differences between processing in a classroom environment and in industry, and the differences between health and safety regulations used in a classroom environment and in industry.

Present your understanding of advanced concepts used in processing to make traditional Māori and/or Samoan breads, for example rewena (Māori bread), fa’apapa or pani popo (Samoan sweet breads).

Confirm the format of your presentation with your assessor/educator. This could be, for example, a brochure that includes diagrams and photos, a video, a PowerPoint presentation, or a combination.

Include the following in your presentation:

* Explain operations that combine or manipulate materials and/or ingredients (i.e. process) to make traditional breads, and how they achieve the outcomes that are required. Ensure that you include at least one processing operation from each of the following categories:
	+ measuring/shaping/forming (for example automated filling of bread moulds, kneading the dough)
	+ contamination prevention/disposal (for example waste disposal, waste water treatment)
	+ mixing/extracting/separating/growing (for example making and/or using the starter bug, emulsifying to stabilise the dough)
	+ heating/cooling/reacting (for example fermentation for texture, flavour, protein structure; heating for gelatinisation, expansion, crusting, coagulation of protein, inactivation of enzymes)
	+ materials transfer (for example piping in temperature controlled water, proving − conveyer belt in a warm, humid cabinet).
* Describe tests, and explain why they are used in traditional bread processing operations.
* Explain visually, for example through a flow diagram, how traditional bread processing operations and tests can be combined in a processing sequence.
* Compare and contrast processing operations and tests used to produce traditional breads that use different ingredients or that are for different purposes, and their suitability for the particular product.
* Discuss possible processing decisions that could arise as the result of carrying out testing.
* Explain the differences between traditional bread processing in a classroom environment and in industry.
* Explain the differences between health and safety regulations in a classroom environment and in industry.

# Resources

Useful websites include:

<http://www.mccain.com/GOODFOOD/FOODSAFETYQUALITY/Pages/default.aspx>

<http://www.foodsafety.govt.nz/industry/general/fsp/develop.htm>

<http://www.foodsafety.govt.nz/industry/general/fsp/overview.htm>

<http://www.moh.govt.nz/moh.nsf/pagesmh/1188?Open>

<http://legislation.govt.nz/act/public/1992/0096/latest/DLM278829.html>

<http://www.osh.dol.govt.nz/order/catalogue/hse-publications.shtml>

<http://www.osh.dol.govt.nz/law/hse-regulations.shtml>

<http://legislation.govt.nz/regulation/public/1974/0169/latest/DLM42658.html>

Useful books include:

* Chambers IV, E and Wolf, MB 1996, *Sensory Testing Methods*, United States.
* Murano, P 2002, *Understanding Food Science and Technology*, Brooks Cole, United States.
* Hallam, E 2005, *Understanding Industrial Practices*, Nelson Thornes, United Kingdom.
* Resurreccion, A 1998, *Consumer Sensory Testing for Product Development*, Aspen Publishers, United States.
* Smith, K Cantry, Y and Ward, L 2000, *Oxford Food Technology Study Dictionary,* Oxford University Press, United Kingdom.
* Hutton, T 2001, *Key Topics in Food Science and Technology No 3, Food Manufacturing: an overview*, Campden and Chorleywood Food Research Association Group.
* Lyon, D Francombe, M Hasdell, T and Lawson, K 1994, *Guidelines for Sensory Analysis in Food Product Development and Quality Control,* Chapman and Hall, London, United Kingdom.

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to create a presentation demonstrating their comprehensive understanding of advanced concepts used in processing traditional breads.

# Conditions

The learners could work independently or in groups to develop their understanding but they need to create their presentation independently, and will be assessed individually.

Learners will need to confirm with you the format of their presentation.

# Resource requirements

To enable learners to achieve this standard, they should be given the opportunity to:

* Access information on processing operations and testing used to produce traditional breads in industry and in a classroom environment.
* Access facilities that enable processing operations and testing to be carried out.
* Examine different traditional breads, and discuss how they may have been made and tested during production.
* Practise processing and testing traditional breads, for example the learner could process rewena bread using different varieties of potatoes as the bug, and different processing operations (for example hand and machine kneading). Learners should consider the differences in equipment, volumes, packaging, testing and labour (noting specialised tasks) between a classroom environment and an industrial setting.
* Experience testing that would mimic that used in an industrial setting.
* Practise visually explaining processing operations and tests. Generally, flow diagrams would be used so learners will need an understanding of the symbols used, how to put them in the correct order, how to show where tests occur, and where they impact on the processing (for example feedback loops such as fermentation: if the process is not giving the right result, then recalibrate machines).
* Research the health and safety regulations used in industry, such as food safety plans, Food and Hygiene Regulations 1974, HACCP (hazard analysis and critical control points) and OSH (occupational safety and health) regulations and where these are used in processing traditional bread in an industrial setting. Learners should compare these health and safety practices with those used in a classroom environment.

# Additional information

Learners should also have the opportunity to visit industries that either process bread or use similar processes.

# Assessment schedule: Processing Technologies 91352 – Kapai te kai

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner demonstrates understanding of advanced concepts used in processing traditional breads by:* describing processing operations and identifying the impact of these on resulting outcomes

For example:The learner’s description includes at least one processing operation from each of the following categories:* + measuring/shaping/forming e.g. how machine kneading makes the bread lighter and airier; how the shaping of the bread determines the surface area, the ratio of crust to crumb, the amount of water evaporation through the crust and therefore particular characteristics
	+ contamination prevention/disposal e.g. covering the dough to prevent contamination from bacteria
	+ mixing/extracting/separating/growing e.g. the conditioning and/or longer life effects of emulsifiers
	+ heating/cooling/reacting e.g. the effects of heating (gelatinisation, expansion, crusting, coagulation of protein, inactivation of enzymes)
	+ materials transfer e.g. CO2 systems that cool flour as it moves through pipes toward the mixer, and the effects of the cooler flour on fermentation and thus the taste of the bread.
* describing the nature of specific tests used in processing operations

For example:The learner describes what the tests were used for, e.g. to test for doneness at the end of the baking process, they knocked the top of their rewena bread while the baker used a digital probe thermometer.* explaining visually how processing operations and tests can be combined in a processing sequence

For example:The learner draws a process flow diagram showing operations and testing, using accepted symbols and feedback loops.* explaining the differences between processing in a classroom environment and processing in industry

For example:The learner compares the bread made by them with that made in industry. The explanation considers such things as setting up machines, waste disposal, material transfer, testing and/or quality control, product specifications and cleaning regimes.* explaining the differences between health and safety regulations in a classroom environment and in industry

For example:The learner’s explanation includes an account of OSH (occupational safety and health) information, health and safety regulations, and the role of the health and safety officer in the plant the learner visited. The learner compares these with the rules in their own learning environment.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates in-depth understanding of advanced concepts used in processing traditional breads by:* explaining processing operations and how these achieve required outcomes

For example:The learner’s explanation includes at least one processing operation from each of the following categories:* + measuring/shaping/forming e.g. why machine kneading makes the bread lighter and airier; how the shaping of the bread determines the surface area, the ratio of crust to crumb, the amount of water evaporation through the crust and therefore particular characteristics
	+ contamination prevention/disposal e.g. covering the dough to prevent contamination from bacteria
	+ mixing/extracting/separating/growing e.g. the conditioning and/or longer life effects of emulsifiers
	+ heating/cooling/reacting e.g. the effects of heating (gelatinisation, expansion, crusting, coagulation of protein, inactivation of enzymes)
	+ materials transfer e.g. CO2 systems that cool flour as it moves through pipes toward the mixer, and the effects of the cooler flour on fermentation and thus the taste of the bread.
* explaining why specific tests are used in processing operations

For example:The learner explains what the windowpane test is, and how it determines whether the gluten is ready or whether further kneading is required*.** explaining visually how processing operations and tests can be combined in a processing sequence

For example:The learner draws a process flow diagram showing operations and testing, using accepted symbols and feedback loops.* explaining the differences between processing in a classroom environment and processing in industry

For example:The learner compares the bread made by them with that made in industry. The explanation considers such things as setting up machines, waste disposal, material transfer, testing and/or quality control, product specifications and cleaning regimes.* explaining the differences between health and safety regulations in a classroom environment and in industry

For example:The learner’s explanation includes an account of OSH (occupational safety and health) information, health and safety regulations, and the role of the health and safety officer in the plant the learner visited. The learner compares these with the rules in their own learning environment.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates comprehensive understanding of advanced concepts used in processing traditional breads by:* comparing and contrasting processing operations and tests, and their suitability for different materials and/or purposes

For example:The learner compares and contrasts at least one processing operation from each of the following categories:* + measuring/shaping/forming e.g. why machine kneading makes the bread lighter and airier; how the shaping of the bread determines the surface area, the ratio of crust to crumb, the amount of water evaporation through the crust and therefore particular characteristics
	+ contamination prevention/disposal e.g. covering the dough to prevent contamination from bacteria
	+ mixing/extracting/separating/growing e.g. the conditioning and/or longer life effects of emulsifiers
	+ heating/cooling/reacting e.g. the effects of heating (gelatinisation, expansion, crusting, coagulation of protein, inactivation of enzymes)
	+ materials transfer e.g. CO2 systems that cool flour as it moves through pipes toward the mixer, and the effects of the cooler flour on fermentation and thus the taste of the bread.

The discussion includes comparing processing operations, and how these produce a different traditional bread that has a different purpose, e.g. baked and half-baked bread (same material but a different purpose). The discussion includes for a half-baked bread:* + investigating the ‘bake off technology’
	+ baking without a crust (i.e. baking at lower temperature with lots of steam)
	+ investigating the testing of preservative and stabilisers for shelf life versus taste balance.
* discussing the implications of testing outcomes on processing decisions

For example:The learner’s discussion covers how the results from a particular test will influence changes in processing of traditional breads:* + the implication of visual and/or moisture tests on the possible addition of liquids or flour
	+ how testing determined the precise amount of kneading and rise time to give the required depth of flavour, character of crumb etc.
* explaining visually how processing operations and tests can be combined in a processing sequence

For example:The learner draws a process flow diagram showing operations and testing, using accepted symbols and feedback loops.* explaining the differences between processing in a classroom environment and processing in industry

For example:The learner compares the bread made by them with that made in industry. The explanation considers such things as setting up machines, waste disposal, material transfer, testing and/or quality control, product specifications and cleaning regimes.* explaining the differences between health and safety regulations in a classroom environment and in industry

For example:The learner’s explanation includes an account of OSH (occupational safety and health) information, health and safety regulations, and the role of the health and safety officer in the plant the learner visited. The learner compares these with the rules in their own learning environment.*The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.