**NZQA**

**Approved**

Achievement standard: 91354 Version 3

Standard title: Undertake brief development to address an issue

Level: 2

Credits: 4

Resource title: High value added manufacturing

Resource reference: Generic Technology VP-2.1 v2

Vocational pathway: Manufacturing and Technology

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| Quality assurance status | These materials have been quality assured by NZQA. NZQA Approved number A-A-02-2015-91354-02-8245 |
| 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: 91354

Standard title: Undertake brief development to address an issue

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Vocational pathway: Manufacturing and Technology

Learner instructions

# Introduction

This assessment activity requires you to undertake brief development to address an issue relating to high value added solutions (improvements) in food and beverage manufacturing (including meat and dairy).

You are going to be assessed on how comprehensively you undertake brief development to address an issue, relating to food and beverage manufacturing – that is, how well you describe the high value added outcome. You will need to justify why the outcome should be developed, and justify the specifications in relation to the physical and functional attributes required for the outcome.

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

Develop a brief that is made up of a conceptual statement that describes the outcome and its purpose, and specifications that define the outcome’s requirements (its physical and functional nature).

Explore the context by researching current manufacturing practices (processing and storage) being carried out in the food and beverage industry to establish the type of high value added solutions (electronics, communications equipment, and appliances) that may occur.

Brainstorm potential problems (expensive losses, production times, safety issues) and evaluate these in order to identify an issue that allows you to determine a need or opportunity and associated stakeholders. Consider:

* the social environment (the people who will develop and use the outcome)
* the physical environment (the outcome’s technical requirements)
* the resources available
* the ongoing opinions of all the stakeholders connected to the outcome
* any constraints (for example resources, time and equipment).

Ensure your research is sufficient to enable you to prioritise considerations about where the outcome will be developed and situated. Write a conceptual statement.

Develop a clear set of specifications for your outcome by:

* considering the information you have gathered (such as any physical and functional requirements) and any additional information relating to your stakeholders’ needs and the social and physical environment in which the outcome will be placed
* using research of existing solutions (such as high value added products improving food and beverage manufacturing).

As a result of this research, explain the desired:

* physical attributes (for example aesthetics, form, materials)
* functional attributes (for example purpose, technical feasibility).

As a result of functional modelling and ongoing key and wider stakeholder consultation and consideration of the environment, justify the specifications in relation to the physical and functional attributes required for the outcome.

Present your final brief, which includes your fully developed conceptual statement and specifications. Your conceptual statement should clearly communicate what is to be done and why. It should:

* describe the purpose of the outcome
* describe the social and physical environment (for example where the outcome will be used and who will use it)
* justify why the outcome should be developed.

Your set of specifications should clearly justify the requirements of the outcome in terms of its physical nature (what it looks like, how it is made) and its functional nature (what it can do). They must enable you to judge whether the outcome defined by your brief has the potential to be ‘fit for purpose’.

You are not required to create your outcome as part of this assessment activity.

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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 undertake comprehensive brief development to address an issue relating to high value added solutions in food and beverage manufacturing.

Learners are not required to create the technological outcome as part of this assessment activity.

# Conditions

This is an individual assessment activity.

The evidence of brief development will be collected in the form of notes, drawings and photographs within a portfolio.

# Resource requirements

Learners will require access to:

* stakeholders (both key and from the wider community)
* the internet and a library
* a camera.

# Additional information

The *Technology Online* website [http://technology.tki.org.nz](http://technology.tki.org.nz/) provides useful definitions of technology terms.

## Other possible contexts for this vocational pathway

Contexts may include but are not limited to: safety gear linked to a specific job or vocation, such as welding practices or mass production assembly lines.

The context must be broad enough to allow learners to explore a broad range of issues, both current and future, related to it.

# Assessment schedule: Generic Technology 91354 – High value added manufacturing

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner undertakes brief development to address an issue by:   * identifying an issue as a result of exploring the context of food and beverage manufacturing * determining a need or opportunity and associated stakeholders * reflecting ongoing consideration of the social and physical environment where the outcome will be developed and situated * reflecting ongoing key stakeholders’ opinions * describing the outcome to be developed and explaining why such an outcome should be developed * explaining the physical and functional attributes required for an outcome * producing a final brief comprised of a conceptual statement and specifications   For example:  The learner determines through research that milk factories are looking to reduce expensive losses by developing high quality, value added products such as electronics, communication equipment, and appliances that reduce time and wastage in milk production and storage. High value added possible issues (milk contamination, loss of production time and maintenance costs) are identified and solutions are researched. An opportunity to design an inspection robot for identifying cracks in milk silos is determined.  The learner considers the views of key stakeholders who would be using the inspection robot and the environment it would be used in (milk silos); possible solutions, electronic and software requirements are considered.  The learner describes a wall-climbing inspection robot, which will be used to inspect milk silos for cracks. This will eliminate the hazards of current inspection methods; reduce maintenance costs, milk contamination and interruptions to production times.  The learner explains why key stakeholders require functional attributes such as movement, form and physical attributes of strength and flexibility.  The learner confirms the conceptual statement saying what is to be done and why, and specifications that define the requirements of the outcome in terms of its physical and functional nature. Specifications allow for the inspection robot to be judged as ‘fit for purpose’ (e.g. controlled movement allows remote viewing inspections, strong and compact robot form to hold all required components).  *The above expected learner responses are indicative only and relate to just part of what is required.* | The learner undertakes in-depth brief development to address an issue by:   * identifying an issue as a result of exploring the context of food and beverage manufacturing * determining a need or opportunity and associated stakeholders * prioritising social and physical environmental considerations related to where the outcome will be developed and situated * reflecting ongoing feedback from key and wider stakeholders * describing the outcome to be developed and explaining why such an outcome should be developed * explaining the physical and functional attributes required for an outcome * producing a final brief comprised of a conceptual statement and specifications   For example:  The learner determines through research that milk factories are looking to reduce expensive losses by developing high quality, value added products such as electronics, communication equipment, and appliances that reduce time and wastage in milk production and storage. High value added possible issues (milk contamination, loss of production time and maintenance costs) are identified and solutions are researched. An opportunity to design an inspection robot for identifying cracks in milk silos is determined.  The learner considers the views of key stakeholders who would be using the inspection robot and the environment it would be used in (milk silos). Possible solutions are considered; and wider stakeholders are sought (product and design engineers) for expert opinions about technical requirements (electronics and software).  Key stakeholders expressed a view that the robot needed to be able to move independently but still be functional (climb walls, remote view, environmental conditions) so the learner prioritises that the robot’s size (compact) would be critical to incorporate all software (i.e. treads, electronics, camera) yet gain access to different milk silos, as satisfaction and fitness for purpose is important to key and wider stakeholders.  The learner describes a wall-climbing inspection robot, which will be used to inspect milk silos for cracks. This will eliminate the hazards of current inspection methods; reduce maintenance costs, milk contamination and interruptions to production times.  The learner explains why key stakeholders require functional attributes such as movement, form and physical attributes of strength and flexibility.  The learner confirms the conceptual statement saying what is to be done and why, and specifications that define the requirements of the outcome in terms of its physical and functional nature. Specifications allow for the inspection robot to be judged as ‘fit for purpose’ (e.g. controlled movement allows remote viewing inspections, strong and compact robot form to hold all required components).  *The above expected learner responses are indicative only and relate to just part of what is required.* | The learner undertakes comprehensive brief development to address an issue by:   * identifying an issue as a result of exploring the context of food and beverage manufacturing * determining a need or opportunity and associated stakeholders * prioritising social and physical environmental considerations related to where the outcome will be developed and situated * reflecting ongoing feedback from key and wider stakeholders * describing the outcome to be developed and justifying why that particular outcome should be developed * justifying the specifications in relation to the physical and functional attributes required for an outcome * producing a final brief comprised of a conceptual statement and specifications   For example:  The learner determines through research that milk factories are looking to reduce expensive losses by developing high quality, value added products such as electronics, communication equipment, and appliances that reduce time and wastage in milk production and storage. High value added possible issues (milk contamination, loss of production time and maintenance costs) are identified and solutions are researched. An opportunity to design an inspection robot for identifying cracks in milk silos is determined.  The learner considers the views of key stakeholders who would be using the inspection robot and the environment it would be used in (milk silos). Possible solutions are considered; and wider stakeholders are sought (product and design engineers) for expert opinions about technical requirements (electronics and software).  Key stakeholders expressed a view that the robot needed to be able to move independently but still be functional (climb walls, remote view, environmental conditions) so the learner prioritises that the robot’s size (compact) would be critical to incorporate all software (i.e. treads, electronics, camera) yet gain access to different milk silos, as satisfaction and fitness for purpose is important to key and wider stakeholders.  The learner describes a wall-climbing inspection robot, which will be used to inspect milk silos for cracks, and justifies how this will reduce hazards and maintenance costs in dairy manufacturing (e.g. the learner explains how using a fully movable robot to inspect milk silos can avoid potential problems before they contaminate the milk, reducing costly losses).  The learner carries out further research, functional modelling and stakeholder consultation to establish specifications that define the requirements of the inspection robot in terms of its physical and functional nature (e.g. the learner researches functional attributes such as the robot’s movement and form and physical attributes such as strength and flexibility; technical considerations such as software - speed, size, components) and electronics (i.e. mechatronic engineering) are compared and evaluated against these attributes. Wider stakeholders, such as product designers and engineers are consulted on technical requirements (movement, form, remote viewing), with functional modelling carried out to confirm and/or modify specifications as required.  The learner confirms the conceptual statement saying what is to be done and why, and specifications that define the requirements of the outcome in terms of its physical and functional nature. Specifications allow for the inspection robot to be judged as ‘fit for purpose’ (e.g. controlled movement allows remote viewing inspections, strong and compact robot form to hold all required components).  *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.