



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

National Qualifications Framework Levels 1-3, 2003

Technology

National Moderator's Report

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General Guidance for Assessors of Achievement and Unit Standards

The purpose of external moderation is to provide reassurance that assessor judgements are at the national standard and are made on the basis of assessment activities that are fair and valid.

All assessment materials are expected to:

- give the learner the opportunity to meet the requirements of the standard
- have an assessment schedule that gives evidence of appropriate learner responses and clear judgements at all levels.

The Ministry of Education contracted subject experts to write assessment resources for achievement standards. These are not pre-moderated. The intention is that they are modified to suit teaching programmes and learner needs. They do not provide 'rules' but suggest different ways of assessing to the nationally registered standard.

General Overall Comment

Assessors who used the generic templates for the internal Level 1 and 2 achievement standards, developed assessment material that allowed their learners to present evidence that demonstrated the competencies necessary to meet the requirements for achievement of the standards. Assessment schedules provided examples of evidence of appropriate learner responses and allowed clear judgments to be made at each of the achievement grades (achieved, merit and excellence). The Level 1 and 3 generic templates for the internal achievement standards have been revised for use in 2004 to reflect the Version 2 Level 1 achievement standards and the registered Level 3 standards.

Assessors are reminded that both internal and external achievement standards can be embedded into a single assessment activity/technology unit. Some assessors have submitted material that that supports learners with learning experiences, that allow them opportunity to demonstrate the competencies required for both forms of assessment (internal and external).

It is recommended that assessors look at the recently published exemplars for Level 1 and 3 achievement standards on <http://www.tki.org.nz>, for examples of unit outlines that demonstrate how this can be achieved.

Level One

90045 Use a Plan of Action to Develop a Technological Solution to Address a Given Brief

90045 requires learners to develop a technological solution that addresses the requirements of a given brief through the undertaking of technological practice that is informed through planning.

Assessors need to ensure that the given brief is sufficiently demanding to allow learners the opportunity to reach an Achievement with Excellence standard.

The given brief may be one that the learners have developed themselves as part of a unit of work that was previously assessed against 90046, instead of one given by the assessors. Learners need to be encouraged to fully explore the situation surrounding the given brief as part of their technological practice. This exploration at times may identify a need for further refinement of the conceptual statement and/or the specifications, due to new knowledge or insight being gained from within practice.

Learners should be encouraged to consult with any identified stakeholders throughout their technological practice, rather than just seeing it as an isolated event at the beginning of the process and/or as an end point evaluation to complete their practice.

90046 Formulate a Brief to Address a given Issue

90046 requires learners to undertake technological practice to formulate a brief that addresses a given issue.

The issue on which the brief is developed needs to be shared by a range of stakeholders, which may include the learner, to enable learners to consider a variety of different views or opinions. Identification of who are the stakeholders to the issue should be included as part of the learner's technological practice.

Assessors need to ensure that an appropriate issue/s is identified (or negotiated with learners) so that they are able to complete all requirements of this achievement standard.

In formulating a brief that allows a technological solution to be developed, learners should be encouraged to investigate the key factors (see Explanatory Note 6) and consider likely conceptual solutions to verify that the developing briefs, conceptual statement and specifications will satisfy the issue. Part of this consideration may require learners to test potential conceptual solutions against their brief specifications. Consulting with identified stakeholders to ensure that the conceptual statement and specifications will address the given issue, should be an ongoing integral part of a learner's technological practice.

90047 Develop a Technological Solution by Widening the use of an Existing Technology

Achievement standard 90047 requires learners to provide evidence that shows that they have identified possible needs or opportunities and considered key factors when widening the use of an existing technology. As part of the learner's technological practice, they are required to formulate a brief that provides a clear description of both the desirable outcomes sought and the constraints to be met by a successful solution that widens the use of an existing technology. Potential future impacts of the developed solution should also be explored.

In order to develop a technological solution that *widens the use of an existing technology* learners are required to adapt, modify or integrate an existing technology(ies) into a new technological solution (product, system or environment) therefore changing the purpose or the performance of the existing technology.

This may encompass:

- taking an existing technology and incorporating it into different context and/or,
- extending the performance characteristics of an existing technology so that it meets specifications beyond those for which it was first designed.

The selection of an existing technology that provides learners with the opportunity to widen its use to meet a selected need or opportunity is critical.

Assessors are encouraged to work with their learners to ensure that an appropriate existing technology is selected, so that learners are able to complete all requirements of this achievement standard.

90048 *Develop a Conceptual Product Design and Outline Means for its Ongoing Production*

90048 required learners to identify key factors that contribute to a specific technological practice of ongoing production, to formulate a brief for a product that is intended to be produced in an ongoing manner, develop a conceptual design for the product and propose a means for its ongoing production.

Learners need to be encouraged to explore the nature of ongoing production and the general principles that apply, including such things as quality control procedures, application of safety laws, stock control etc. Key factors identified by learners should relate to the product to be produced, the nature of ongoing production, and how the two interact.

Learners may use a technological solution that they developed as part of working towards achievement of 90045 or 90047 as their conceptual product design and adapt it where necessary as a conceptual design, to allow for its ongoing production. Alternatively, they may develop a conceptual design of a technological solution, taking into account its needs for ongoing production from the start of their technological practice, or work from an existing product and suggest adaptations to it, where necessary, for ongoing production.

Level Two

90338–90344 *Develop and model a conceptual design in <area specific> technology*

Assessment for 90338–90344 requires learners to identify an issue, formulate a brief to address the issue, and to develop and use a plan of action to develop and model a conceptual design within a specific technological area.

Learners are encouraged to present for assessment all their evidence of undertaking technological practice, to develop and model a conceptual design. This includes presenting evidence of how their research findings impacted on the nature of the technological practice they undertook to:

- formulate the brief
- develop the plan of action and
- develop a conceptual design that satisfies the issue.

Evidence of ongoing evaluations of the design ideas as well as an end-point evaluation, and evidence of testing ideas using mock-ups, models, sketches, interviews, and so on, should also be presented. Ongoing consultation with, and consideration of identified stakeholder/s needs is an important aspect of technological practice at this level.

Assessors need to ensure that the selected context or setting for a unit is broad enough to allow learners to identify their own issue, while also being appropriate to allow learners to undertake technological practice.

Learners should be encouraged to identify any constraints on their technological practice and provide evidence of consideration of this for assessment. In saying this however, it is the assessor's role to oversee that development of a conceptual design for the selected issue is manageable for a learner, within any learning environment constraints such as resources (including access to stakeholders) and the time available.

Plans of action can be developed on a format decided upon by the learner in negotiation with the assessors, or may be evidenced throughout learners practice using communication tools such as audio, written, diagrammatic, computer based, video and modelling tools. The undertaking of ongoing

reflection, evaluation and modification of plans of action as new information/understandings come to light, should be apparent in the learner's evidence submitted for assessment.

90345–90351 *Develop and implement a one-off solution in <area specific> technology*

Assessment for 90345-90351 requires learners to identify an issue, formulate a brief to address the issue, and to develop and use a plan of action to develop and implement a one-off solution within a specific technological area.

For assessment, learners are encouraged to present all their evidence of undertaking technological practice, to develop and implement a one-off solution.

This includes presenting evidence of how their research findings impacted on the nature of the technological practice they undertook to:

- formulate their brief,
- develop their plan of action and
- develop a one-off solution that satisfies the issue.

Evidence of ongoing evaluations of their design ideas as well as an endpoint evaluation, and evidence of testing ideas using mock-ups, models, prototypes, sketches, interviews and so on, should also be presented. Ongoing consultation with, and consideration of identified stakeholder's needs is an important aspect of technological practice at this level.

Assessors need to ensure that the selected context or setting for a unit is broad enough to allow learners to identify their own issue, while also being appropriate to allow learners to undertake technological practice. The issue that a learner selects can be a community-based issue or one which is personal to them. If a personal issue is selected, it is still expected that learners will identify and consider the potential impact of their one-off solution and its development on other stakeholders, as part of the technological practice that they undertake.

Learners should be encouraged to identify any constraints on their technological practice and provide evidence of consideration of this for assessment. The selected issue is manageable for a learner within any learning environment constraints such as resources, including access to stakeholders, materials, budgets, access to specialist equipment and expertise, and the time available.

Learners need to provide evidence that they have put their one-off solution into use and can demonstrate how it meets the specifications of the brief, including addressing the concerns of key stakeholders and those in the wider community.

For example:

- a learner who develops a website for the school intranet would be expected to put it on the intranet as a final one-off solution, before finally evaluating its success or otherwise by gaining feedback from a range of users. Any identified necessary changes would be addressed.
- a learner who develops a dress for a party would be expected to wear it to the party and evaluate its success from their own perspective, as well as gain feedback from other stakeholders involved. Any possible garment alterations, if required, should be identified and suggested modifications provided.

Plans of action can be developed on a format decided upon by the learner in negotiation with the assessors, or may be evidenced throughout learners' practice using communication tools such as audio, written, diagrammatic, computer based, video and modelling tools. The undertaking of ongoing

reflection, evaluation and modification of plans of action as new information/understandings come to light, should be apparent in the learner's evidence submitted for assessment.

90352–90358 *Develop a solution in <area specific> technology and a process for its on-going production*

Assessment for 90352–90358 requires learners to formulate a brief that considers the need for a solution and a process for its on-going production within a specific technological area, to develop a solution that will allow it to be manufactured by ongoing production, and propose a means for its ongoing production including estimating key resources, their availability, likely sales revenue and major costs.

For assessment, learners are encouraged to present all their evidence of undertaking technological practice, to develop a solution that is suitable for on-going production.

This includes presenting evidence of how their research findings impacted on the nature of the technological practice they undertook to:

- formulate their brief,
- develop their plan of action and
- develop a solution that allows for its on-going production.

Evidence of ongoing evaluations of their design ideas as well as an end point evaluation, and evidence of testing ideas using mock-ups, models, prototypes, sketches, interviews and so on, should also be presented. Ongoing consultation with, and consideration of identified stakeholder/s needs is an important aspect of technological practice at this level.

Learners need to demonstrate in the evidence that they present for assessment that they have identified and incorporated appropriate quality control protocols, legislative requirements, formats and other conventions used by technologists who work in a similar context to that of their solution.

Learners should be encouraged to identify any constraints on their technological practice and provide evidence of consideration of this for assessment. In saying this however, it is the assessors role to oversee that the development of a conceptual design for the selected issue is manageable for a learner, within any learning environment constraints such as resources including access to stakeholders, materials, budgets, access to specialist equipment and expertise, and the time available.

90362, 90364, 60366, 90368, 90370 and 90372

Assessment for 90362, 90364, 60366, 90368, 90370 and 90372 requires learners to demonstrate that they can perform skills required to support technological practice, when developing one-off technological solutions and/or solutions for on-going production within a specific technological area.

For assessment, learners are encouraged to present all their evidence of performing skills when undertaking technological practice.

Safe and responsible practices should be clearly be demonstrated by the learner.

The means, by which learners communicate their evidence of being able to perform skills associated with a specific technological area, should be appropriate to the context, learning environment and learner's individual strengths. This may include the use of photographs, video clips, the solutions/mockups/prototypes themselves, details of the skills performed and safety practices

undertaken in the learner's record of the technological practice undertaken to develop a one-off solution and/or solution for on-going production.

Unit Standards

There is a suite of registered unit standards that assessors may use to assess specific learner competencies in technology. These include unit standards that were written to assess Technology in the New Zealand Curriculum (1389–13413, 14374–14375) The majority of these standards focus on assessing specific skills and knowledge.

While many of these unit standards can be assessed through one-off assessment activities, they should be embedded into a unit that requires learners to demonstrate the competencies required for undertaking technological practice to develop a technological solution.

Assessors who use a mixture of unit and achievement standards to assess learner competencies in the same technology unit, need to ensure that learners are provided with an opportunity to display all the competencies required by the standard.