



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

National Qualifications Framework Levels 1–3, 2006

Biology

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 judgments are at the national standard and are made on the basis of assessment materials 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 judgments 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

A number of providers are using the activities and schedules from the TKI website. It is pleasing to note the increasing amount of ‘own material’ that is being submitted for moderation. Many of the ‘own material’ activities are based on the TKI material and have been modified to fit with the provider’s programme.

This year a small number of providers have submitted whole scripts as examples of learner responses. These have been annotated to indicate which areas of the text provide evidence of description, explanation and discussion. It is noted that providers that do this are more likely to make appropriate assessor judgements at Not Achieved, Achieved, Merit and Excellence levels.

There are an increased number of Achievement and Unit standards that have more than two versions. Providers need to ensure that they are using an activity and schedule that match the version of the standard they are assessing against. For example, material submitted for moderation contained an activity relating to version 2 of 90713 and the assessment schedule related to version 1 of the standard. Another problem has been the use of a cover sheet on the learners’ work that states requirements that differ from those stated in the schedule. Some of these relate to the problem of different versions of the standard but other cases appear to relate to inappropriate interpretations of the assessment schedule.

When group work is used as part of the assessment, the provider is expected to provide evidence that each learner in the group has met all the requirements of the achievement standard. Often the assessment activity instructs learners to work “individually” but the work shows a high level of cooperation and sharing of results. Evidence is required that each learner can carry out ALL aspects of the criteria.

A number of activities, particularly those relating to unit standards, have been submitted for moderation with tasks that require more than the Achievement/Unit standard requires. It is helpful to learners and moderator if the tasks that relate to a particular element/performance criterion is clearly labelled eg PC 2.1. If answers to the tasks outside the requirements of the standard are included in the schedules, they should be clearly labelled as not providing evidence against the standard.

The activity must reflect the wording of the criterion or element and performance criterion. For example if the standard requires an “explanation” then the activity must indicate that an explanation is required. A number of Unit Standard activities moderated showed a mismatch between the requirements of the standard and the wording of the activity.

90713 (version 2): Carry out a practical investigation into an aspect of an organism’s ecological niche with guidance

Investigation content:

Investigations are expected to be at level 8 of the biology curriculum. The examples in the current curriculum document do not take into account the current assessment structure. Therefore this expectation is interpreted to mean that information and ideas **must be more advanced** than those used in investigations for assessment at NCEA level 1 and 2 biology. Also, the information and ideas in the “discussion” section of the report are expected to be explained at a level consistent with that expected in the **external achievement standards** such as 90716 Describe animal behaviour and plant responses in relation to environmental factors.

Appropriate Investigations:

Investigations are expected to **relate to the ecological niche** of the organism. In other words the investigation must investigate a factor, response, or behaviour that is significant to the organism in its natural habitat or if appropriate its niche in a cultivated/farmed/zoo situation. For example investigations of clover germination under coloured light are not appropriate.

Report introduction:

The introduction should be a **brief summary** of the ecological niche (see explanatory note 8) and cover **habitat requirements, feeding relationships and key adaptations as well as briefly stating why the aspect being investigated is important to the organism** (see explanatory 8 “...links this to the purpose of the investigation”). Most of the biology of why the aspect is important to the organism should be covered in the “Discussion” section of the report not the “Introduction”.

Purpose:

Many learners give an aim, prediction and hypothesis. Often these are lengthy and vague. Learners that achieve have a **stated clearly testable hypothesis** as the purpose. The hypothesis does not have to have to include a reason.

Measurement of growth in plants:

Dry weight sampling is the most appropriate way to measure the growth of plants. Measuring the height alone is not sufficient.

Use of statistical analysis:

Explanatory note 10 of the standard makes it clear that statistical analysis is not required for Excellence. The learner who shows the appropriate use of a **linear or non-linear regression** and the correct analysis is more likely to be working at excellence level. This year a number of scripts have shown several examples of statistical analysis, often with contradictory outcomes, and the learner shows no understanding of the purpose of the analysis.

Reference list:

The report must include a **reference list** (see explanatory note 8). While referencing in the body of the report is not expected it is good practice for learners to reference the ideas in the introduction and discussion that they have gained from research.

90714 (version 2): Research a contemporary biological issue

The title and criteria indicate that assessment is based on “**research**”, therefore:

- processing is required
- references are required in the body of the report
- specific information on the biology concepts and processes, implications and opinions will be included.

Processing:

Information is expected to be processed into the **learners own words** (See explanatory note 2 – “...and interprets information...”). Therefore reports that contain large portions of information copied from the source or large portions of information in quote marks are at Not Achieved level.

References:

References are required, in the **body of the report**, for the researched ideas and information (see explanatory note 5) as well as a reference list/bibliography. All diagrams, graphs, photos and quotes also require their references beside them in the text.

Specific information:

It is expected that through research the description/explanation/discussion will contain specific information. For example, through research the **differing** opinions of **specific individuals, groups or organisations** will be identified and these will be described, explained or discussed and referenced in the final report.

Topics:

Some topics make it more difficult for the learner to provide evidence against achieved, merit or excellence, particularly in relation to the biological concepts and processes. For example, in a topic such as Whaling much of the material available is general, therefore guidance (See Explanatory Note 2) may have to be given to learners to ensure they cover the biological concepts and processes in sufficient detail for assessment at level 8 of the biology curriculum. Topics such as xenotransplantation, provide good implications and opinions but these topics may be harder to identify the biological concepts and processes involved. Again, more guidance through methods such as individual/group conferencing, can be provided to ensure learners have an understanding of what the biological concepts and processes associated with xenotransplantation are eg immunosuppression, genetic modification etc.

Evaluation of sources

Specific comments are expected on specific sources. Often the learners simply write in general terms about the range of sources they have used or rewrite the information from the TKI resources; this is not sufficient.

90769 (version 1): Research the interaction between humans and an aspect of biology

Research:

As this is a research standard the information contained in the report is expected to be specific and not general. Also the information is expected to be up-to-date. For example, some scripts on biological control have used old sites/information and have not recognised that RCD was introduced into NZ in 1997.

Referencing

References are required for the researched ideas and information (see explanatory note 2). Also all diagrams, graphs, photos and quotes require their references beside them in the text.

Topics:

The standard is about use of an applied biology technique to meet a human need or demand OR the impact of human activities on an ecosystem. Therefore, topics such as “Drugs in Sport” are not appropriate. The “impact of human activities” topic focuses on the “ecosystem” not an individual species, therefore the environment and more than one species must be considered. For example, the topic “crayfish fishing” may focus on crayfish but must describe / explain / discuss the impact of crayfish fishing on the abiotic environment and other species (biotic environment).

Format:

Powerpoint presentations and posters alone may not provide all learners the opportunity they need to develop a discussion; these formats may present a barrier to achievement at excellence level.

90460 (version 2): Investigate an interrelationship or pattern in an ecological population or community

Identification and sampling

Identification and sampling should be at the species level (eg green-lipped mussel) rather than at the “group” level (eg “mussels”, “barnacles” and “whelks”). Using group level data makes it more difficult to gain M and E as the pattern for a group is not as specific as it is for a species.

Method:

Learners are expected to select, from a range of equipment, the equipment that is most appropriate for the species being sampled.

Some confusion exists over whether the method is required for this standard. The method is not required as evidence against the standard. However if the learner includes the method in the report, it can be used to help evaluate whether the field data has been appropriately recorded and processed.

Amount of data processed:

While the field data should include a wide range of species and abiotic factors it is not expected that all this data will be processed into tables and/or graphs. Explanatory note 5 states that “...students are required to provide detail on only one species from the community in their description, explanation or discussion” therefore the processing should only include a small number of species that are relevant to the species being considered.

Data Processing

It is not appropriate for kite diagrams and graphs to have “quadrat number” as the axis label. A rocky shore study would require, for example “distance (m)” from high tide or low tide marks.

90165 (version 2): Describe the control of an introduced species that affects native species.

Native species:

This standard focuses on the impact of **introduced species** on **native species**. Therefore topics such as effects of rabbits on grassland and competition with sheep, or possums and bovine TB are not appropriate.

90457 (version 2): Carry out a practical biological investigation with supervision

Discussion for *Making Chips*:

Moderation has identified a number of scripts containing correct information about water potential, water movement and mass change that have been marked incorrect and incorrect information that has been marked correct.

8928 (version 3): *Use a microscope to investigate biological material*

Instructions:

Assessors need to ensure they do not provide too much direction in the instructions. For example, instructions such as “use a cover slip” and “add iodine” are providing too much direction.

Drawings

Drawings are often stylised and contain details that can't be seen with a light microscope, for example ribosomes, nucleolus. These are not consistent with the biological material being viewed, therefore should be marked as not achieved.