



National Qualifications Framework Levels 1–3, 2007

Biology

National Moderator's Report

NATIONAL MODERATOR'S REPORT

General Guidance for Assessors

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

The majority of assessment activities used in biology programmes provide the learner with opportunity to meet the requirements of the standard. Most providers are using versions of the Te Kete Ipurangi (TKI) tasks and are becoming more confident in the modification of these to suit their own programmes.

Achievement standard 90718 continues to cause difficulties in interpretation, however the quality of the assessment activities being used have shown improved consistency across the country.

Learner responses: Providers that provide scripts that they have annotated themselves have been seen to be more consistent in their judgements of learners work and are more likely to be making judgements at the national standard.

Research achievement standards: An increased number of samples of learners are meeting the requirement to reference work in the body of the report.

A number of sets of material submitted for moderation showed that authenticity of work and plagiarism are significant issues that providers are having difficulty dealing with.

Unit standards that have an element that involves ‘practical investigation’ are expected to be assessed through a practical investigation not a written test.

AS90714: Research a contemporary biological issue

Topic selection:

The topic needs to be a contemporary issue that allows the learners to provide a range of implications and opinions. For example some learners covered topics such as whaling only from one side of the issue. The issue must also be covered at a level appropriate to level 8 of the biology curriculum. This means that the biological information and ideas in the report are expected to be of similar level to the content

achievement standards. Often the information for topics such as whaling is too general for use with this standard.

AS 90718: Describe applications of biotechnological techniques

The guidelines in NZQA Assessment Matters circulars A2006/031 and A2007/025 should be used to assist with key interpretations of this standard.

Aspects required:

When this standard changed from being externally to internally assessed, the requirements changed. Providers must recognise this change and modify their assessments accordingly. For example, judgement/sufficiency statements used with the external exam format are not appropriate for assessment against version 2 of this standard. This achievement standard now requires learners to cover three aspects for each of two applications. These aspects are: what is the application, how/why two (different) techniques are used, and the human needs and demands. Assessment task design should allow for discussion of the three aspects so that learners have a better opportunity to achieve with excellence.

Depth required:

The information given in the assessment must be at a level appropriate to level 8 of the biology curriculum. Therefore specific information is required either in a report, or in answers to questions in a test, that show a depth of understanding. Simplistic or general statements as appear in newspaper articles are not sufficient. For example a description of ligase function as “joins DNA together” is too general.

When research is used another issue for providers is the rate at which techniques are developed and modified which means that assessors and moderators often have to research a technique before making a judgment on the evidence a learner presents. For example, ‘knock out pigs’ in xenotransplantation, Lanza technique in stem cell research and the range of techniques used in DNA profiling.

Discussion:

Where a test is used with an application given in context, it is more helpful if the task instructs learners to *discuss* the application, techniques, and human needs and demands in the context given.

Use of activities that include 90714:

AS 90714 can be used for partial assessment against this standard, providing the instructions cover all criteria from both standards. Often activities incorporating both standards contained a large number of instructions which made the task seem very large and some, especially achieved level learners, may have been disadvantaged by this.

The focus of AS 90718 is the application of biotechnological techniques to meet human needs and demands, rather than the implications and opinions around the applications in AS 90714. Activities that emphasised the techniques often did not allow the learners to provide evidence as to how the applications met human needs and demands.

AS 90457: Carry out a practical biological investigation with supervision

Direction/supervision:

This standard is to be carried out with supervision. See Explanatory Note 6. Some activities provide too much direction in the instructions. For example providing a template for the planning is too much direction.

Final method:

Many providers submitted scripts for moderation relating to the “Making Chips” activity. A significant number of these showed that learners had written out their method neatly two or three times during the assessment. This may have been due to the nature of this investigation, i.e. it must be left for 24 hours so the learners are working on it over two or three blocks of time. It is important to stress to learners that only the final method used needs to be written up in the final report.

Purpose:

The prediction/hypothesis should be linked to a biological concept, often this is missing. See Explanatory Notes 7 and 8 of the standard.

Conclusion:

Some assessors are not recognising an incorrect/incomplete conclusion in the ‘Making Chips’ investigation. For example, “as sugar concentration increases mass loss increases”, when the graph and data clearly show that at low concentrations mass is gained not lost.

Evaluation:

The criteria at excellence level require ‘evaluation’. To evaluate, the learner must justify the findings they have stated in their conclusion. This means they must discuss how/why the method they used was valid or how/why the data collected is reliable. A number of learners focus on the limitations of the investigation, saying what was wrong with their method or what limited the accuracy of the data they collected. This does not justify the conclusion therefore is not excellence.

Group work:

Some providers are using group work for assessment of practical work. In this situation providers are expected to submit for moderation, evidence that individual learners have met all the requirements of the standard whilst acting as part of a group. The process by which this is to occur should be stated in the conditions.

AS 90769: Research the interaction between humans and an aspect of biology

Referencing:

This standard requires facts, ideas, diagrams, photos, graphs etc to be referenced within the body of the text. Refer to Explanatory Note 2. Referencing can be by footnote.

Level of work:

The ideas and information in the report must be appropriate to level 7 of the biology curriculum. This means that the report must include specific biological information and terms at the level expected in the content achievement standards at level 2.

AS 90460: Investigate an interrelationship or pattern in an ecological population or community

It is helpful to learners if the type of community or population interrelationship/pattern is clearly stated in the aim of the instructions. Refer to Explanatory Notes 3 and 4 of the standard.

Equipment:

The equipment that will be provided must be listed. It is expected that a range of equipment will be provided to enable learners to select a sampling method appropriate for the type, size and number of organisms being sampled, and the type of habitat. If quadrats are used then the size of the quadrat is expected to be recorded with the data.

Appropriate recording and processing:

The requirement for appropriate recording, where the field data must be recorded in a way that allows it to be processed later, comes in at merit level (Explanatory Note 6). Organism counts should be rounded to whole numbers.

Discussion:

Comments must be specific and relate to a named species. For example, “large trees grow in that region because there is more light”, is too general. Learners require prior teaching about what is a significant difference in abiotic variables, eg temperatures of 15 °C, 14 °C, 14 °C, 13 °C 15 °C do not show significant difference. Also prior teaching is required that provides information about the habitat that is being investigated. For example, that the distribution seen may be caused by changes in an abiotic variable over a year (eg mean temperature, frost days, monthly rainfall) rather than a reading that can be made on the day.

AS 90161: Carry out a practical biology investigation with direction

Version of standard and activities:

Providers should be using the current version of this standard and using assessment activities that relate to the current version of the standard.

Group work:

Some providers are using group work for assessment of practical work. In this situation providers are expected to submit, for moderation, evidence that individual learners have met all the requirements of the standard whilst acting as part of a group. The process by which this is to occur should be stated in the conditions.

Evaluation:

The criteria at excellence level require ‘evaluation’. To evaluate, the learner must justify the findings they have stated in their conclusion. This means they must include in their discussion at least two of the three bullet points listed in Explanatory Note 7. This involves how/why the method they used was valid or how/why the data collected is reliable, or discussion of the biology involved in the investigation. It is not appropriate for the evaluation to focus on the limitations of the investigation, saying what was wrong with the method or what limited the accuracy of the data collected. This does not justify the conclusion, therefore is not excellence.

US 8928: Use a microscope to investigate biological material

Direction/supervision:

Some activities provide too much direction. For example the instructions include statements such as: “Place a cover slip over the material”, “Add a drop of iodine” “Focus on medium power”, “Use pencil”. At level 7 of the biology curriculum learners are expected to have learnt the requirements for slide making and viewing, and for biological drawings, and then demonstrate this in an assessment.

Learner responses for drawing:

Annotated examples of the expected quality of drawing of cells and tissues, in the context of those investigated, are expected to be included with the schedule.