



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

# **National Qualifications Framework Levels 1–3, 2005**

## **Science**

### **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

Generally, assessors are following the required criteria and carrying out a valid assessment. The one standard still causing concern is AS 90186. Many assessors are giving too much direction to learners thus making this assessment invalid. In 2006, if there has been too much teacher direction, moderators will rule the task invalid. Unit standards are generally being well assessed.

### **AS 90186: Carry out a practical investigation with direction**

Explanatory Note 3 describes what is meant by "direction". At times, teachers give too much direction which invalidates the task.

The new version of this standard had new criteria for Achievement, Merit and Excellence. The sufficiency for Achievement is described in Explanatory Note 6, for Merit in Explanatory Note 7, and Excellence in Explanatory Note 8.

Explanatory Note 6 requires learners to identify the independent variable for themselves. If this is given in the task then the candidates cannot gain this standard.

Explanatory Note 7 requires a valid experiment for Merit, not just a feasible experiment.

Explanatory Note 8 requires a positive comment from learners as to why their conclusion can be justified. Negative responses, eg "I did not record the time accurately" or "I did not have the pieces of Mg the same size", destroyed the reliability of the method or the data and hence the candidate could not get Excellence.

The new version of AS 90186 does not require improvements that can be made to be included, though these can be mentioned.

Any form of the old 'bubble trouble' rates of reaction experiments, which occurred on the web, is invalid. In the old versions of these experiments the independent variable was given to learners and this contravenes Explanatory Note 6. Learners must work out how to change the concentrations themselves. Even giving a range of five concentrations and choosing three concentrations contravenes Explanatory Note 6.

**AS 90187: Process information to describe a use of science knowledge with direction**

The new version of this standard produced this year was easier for teachers to follow. Explanatory Note 6 explains what the students **must** be able to do to pass this standard. The moderation team has interpreted Explanatory Note 6 to mean the summarising must be mostly in “their own words”. The key concept is “processing scientific information”

Teachers need to be aware this is a two-credit standard and set the task accordingly.

**AS 90312: Carry out a practical investigation with supervision**

Explanatory Note 3 describes the meaning of supervision.

Explanatory Note 4 describes what is meant by an investigation and states that there are two types: fair testing (hypothesis testing) or pattern seeking.

Explanatory Note 5 describes what is required for Achievement.

Explanatory Note 6 describes what is required for Merit. Note that it needs to be a valid investigation.

Explanatory Note 7 describes what is required for Excellence. This standard requires a positive comment from candidates as to why their conclusion can be justified in terms of the reliability of their data and the validity of their method. What they did wrong does not meet this explanatory note and can invalidate their method gaining them Achievement at best.

Tasks on the TKI website are generally good. Teachers should check for the updated latest versions.

**AS 90771: Research information to present a scientific report**

Note the version for this standard is Version 1 as it is a new standard which replaced the AS 90313.

Explanatory Notes 3 and 4 describe what is required for Achievement.

Explanatory Note 5 describes the additional requirements for Merit.

Explanatory Note 6 describes the additional requirements for Excellence.

Tasks on the TKI website are very good. Teachers should check for the updated latest versions.

**AS 90727: Carry out an extended practical investigation with guidance**

This standard was generally done well by most schools. The new versions of the standard, tasks and assessment schedules are now on the websites.

**AS 90728: Research a current scientific controversy**

This standard was generally done well by most schools. The new versions of the standard, tasks and assessment schedules are now on the websites.

**AS 90733: Report on an astronomical event or discovery**

This task was generally done well by most schools. The new versions of the standard, tasks and assessment schedules are now on the websites.

### **189XX Series**

The standards of the 189XX series, used by schools in their Certificate Science classes, were generally done well. Tasks on the web were good except for the weather one which had a minor error. This has been fixed for 2006.

Note that the science and earth science 189XX standards (not chemistry, biology, and physics) and tasks have been rewritten for 2006.

### **Unit Standards**

The unit standards were generally done well. Schools using unit standards followed the special notes, elements, range statements and performance criteria very well.

Note that the science and earth science unit standards (not chemistry, biology, and physics) were reviewed in 2005 and new versions of the standards will operate for 2006. This will require changes to tasks and assessment schedules if the latest versions of these standards are used.