Achievement Standard

Subject Reference: Chemistry 1.1
Title: Carry out a practical chemistry investigation, with direction
Level: 1  Credits: 4  Assessment: Internal
Subfield: Science  Domain: Chemistry
Status: Registered  Status date: 30 November 2010
Planned review date: 31 December 2019  Date version published: 20 November 2014

This achievement standard involves carrying out a procedure to collect and process primary data and interpret the results, with direction.

Achievement Criteria

<table>
<thead>
<tr>
<th>Achievement</th>
<th>Achievement with Merit</th>
<th>Achievement with Excellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Carry out a practical chemistry investigation, with direction.</td>
<td>• Carry out an in-depth practical chemistry investigation, with direction.</td>
<td>• Carry out a comprehensive practical chemistry investigation, with direction.</td>
</tr>
</tbody>
</table>

Explanatory Notes


   This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](http://seniorsecondary.tki.org.nz).


3. With direction means that general instructions for the investigation will be specified in writing and direction will be given in the form of a purpose, an outline of the method,
and the equipment and/or chemicals from which to choose. A template or suitable format for planning the investigation will be provided for the student to use.

4 A practical chemistry investigation includes collecting, processing, and interpreting primary data to reach a conclusion in a chemistry context using chemistry vocabulary, symbols, conventions and equations as appropriate. Suitable contexts could include: acid-metal reactions, acids and bases, rates of reaction, energy output of fuels, fermentation.

5 Carry out a practical chemistry investigation involves:
   - developing a method for collecting primary data with units, relevant to the purpose, based on the manipulation of the independent variable over a range of values
   - processing and representing the data in an appropriate way (graph, table, calculation etc)
   - writing a conclusion based on the processed data.

6 Carry out an in-depth practical chemistry investigation involves:
   - developing a procedure for collecting primary data, with units, relevant to the purpose, based on the manipulation of the independent variable over a valid range of values with repetition to show reliability
   - controlling the variable(s) that could have a significant effect on the results
   - using techniques to increase the accuracy of the measured values of the dependent (and independent) variable
   - processing and representing the data to enable a conclusion to be reached
   - writing a conclusion based on the processed data that links to the purpose of the investigation.

7 Carry out a comprehensive practical chemistry investigation involves an in-depth investigation that also:
   - justifies the choices made to increase accuracy during the investigation
   - justifies the conclusion in terms of the processed data and the purpose of the investigation
   - relates investigation findings to applicable chemistry ideas.

8 Conditions of Assessment related to this achievement standard can be found at http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards.

Replacement Information
This achievement standard replaced AS90169.
Quality Assurance

1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.

2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference 0233