



The following report gives feedback to assist assessors with general issues and trends that have been identified during external moderation of the internally assessed standards in 2024. It also provides further insights from moderation material viewed throughout the year and outlines the Assessor Support available for Earth and Space Science.

Insights

91410: Carry out an independent practical Earth and Space Science investigation

Performance overview:

To achieve this standard, students need to conduct a valid scientific investigation in an Earth and Space Science (ESS) context. This valid context must be at level 8 of the curriculum. This investigation further builds on the requirements of 91187 by requiring the students to make a detailed link between the investigation and the Earth and Space Science behind it. Students need to give appropriate explanations of the ESS at curriculum level 8. The chosen investigation needs to be selected and carried out by the student. Investigations based on geology or astronomy meet the requirements of the standard and make for valid pattern seeking investigations.

Practices that need strengthening:

Issues identified with this standard occur when students conduct investigations that do not have a direct link to Earth and Space Science or are not at level 8 of the curriculum. For example, many students selected rockets, but looked at changing acid concentration to get horizontal distance and linked this to chemical concentration or the physics of forces, not to Earth and Space Science. Additionally, the Earth and Space Science surrounding rockets is at curriculum level 7, and does not meet the requirements of the standard.

Level 3 tasks should have no scaffolding, as this may give students too much guidance or limit possible responses.

91412: Investigate the evidence related to dating geological event(s)

Performance overview:

To achieve this standard, the evidence needs to explain a geological event and the evidence related to estimating the date the event occurred. Students need to use at least two relevant different geological methods for dating the explained event. The methods chosen must be able to allow for cross correlation of the dates to give a more accurate final estimate.

Practices that need strengthening:

Appropriate methods need to be chosen by the student to give the most accurate estimate of the date of the event. For example, U/Pb dating would not be used to date the last time the Alpine Fault moved, as the percentage error is beyond the date of the last time the fault moved. Carbon dating could be useful here, because it is used to date events up to 60,000+ years old. Carbon dating cannot be used for geological events older than 100,000 years old because the age cannot be validly verified. For Excellence, students need to be able to use cross correlation between their two methods to give the final age of their chosen geological event.

91415: Investigate an aspect of astronomy

Performance overview:

To achieve the standard, students need to select and process a wide range of reliable information related to an astronomical event and the science which lies behind it. The astronomical event also needs to be explained, in detail, using up to date and relevant scientific understanding.

The contexts for this standard are very wide, but moderators look for an explanation of the astronomical event and the science behind it. Students should aim to use about 1500 words in their report. However, many students wrote much more than this.

Practices that need strengthening:

Where students only explained the astronomical event, but failed to give the key science behind it, they did not achieve the standard. For example, Black Holes are a popular context and many students describe what a Black Hole would look like, but few looked at the science of intense gravitational pull and the formation of a singularity to help with the science behind Black Holes.

Assessor Support

NZQA offers online support for teachers as assessors of NZC achievement standards. These include:

- Exemplars of student work for most standards*
- National Moderator Reports*
- Online learning modules (generic and subject-specific)**
- Clarifications for some standards*
- Assessor Practice Tool for many standards**
- Webcasts*

*hosted on the NZC Subject pages on the NZQA website.

**hosted on Pūtake, NZQA's learning management system. Accessed via Education Sector Login.

We also may provide a speaker to present at national conferences on requests from national subject associations. At the regional or local level, we may be able to provide online support.

Please contact workshops@nzqa.govt.nz for more information or to lodge a request for support.

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