

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 2022. It also provides further insights from moderation material viewed throughout the year and outlines the Assessor Support available for Physics.

## Insights

### **91521: Carry out a practical investigation to test a physics theory relating two variables in a non-linear relationship**

This standard requires collecting data, determining uncertainties, using graphical analysis to form a conclusion, and comparing the result with a physics theory.

Evidence that met the standard described how variables were controlled and why, determined a gradient and stated the equation of the relationship with uncertainties. Further evidence included comparing the determined result with a physics theory (often a formula) and stating the limitations of the result.

### **91522: Demonstrate understanding of the application of physics to a selected context**

This standard requires students to explain how or why the key physics ideas relate to the selected context.

Evidence that met the requirements of the standard had clear explanations of the physics in situations such as: energy around a roller coaster track, relating how Bohr's atomic model can be used when describing a stellar spectrum, or nuclear radiation use in medical imaging.

Physics concepts from Level 8 of the curriculum are required to meet this standard. Using the more familiar physics concepts from Level 7 makes it difficult to meet the standard.

### **91525: Demonstrate understanding of Modern Physics**

Modern Physics refers to discoveries since approximately 1890 that have caused paradigm shifts in physics theory.

Evidence that met the requirements of the standard explained physics concepts such as: the Bohr model of the hydrogen atom, the photon, quantisation of energy, discrete atomic energy levels, electron transition between energy levels, ionisation, atomic line spectra, the electron volt, the photoelectric effect, or wave-particle duality.

Responses that involved physics concepts that were at Level 8 of the curriculum allowed the standard to be met. Responses connecting the concept of binding energy to energy outputs per gram of fusion and fission reactions demonstrated understanding of this part of Modern Physics.

### **91527: Use physics knowledge to develop an informed response to a socio-scientific issue**

This standard requires students to explain and relate relevant physics concepts to a socio-scientific issue and use this information to present a personal response.

Evidence that met the requirements of the standard had explicit links relating the socio-scientific issue and the physics concepts. For example, linking properties of radioactive substances and their long half-lives to the problems of storing used radioactive fuel and then using this information to develop a response to the issue.

Where the issues chosen involved physics concepts that were at Level 8 of the curriculum, the standard was able to be met. Issues involving solar energy, nuclear energy, and electromagnetic radiation have generated physics ideas at Level 8 of the curriculum that can be related to socio-scientific issues and used to make informed responses.

## **Assessor Support**

### **Online**

NZQA's learning management system (Pūtake) offers 150+ easy to access courses, materials and products. These are designed to support teachers as assessors to improve their assessment of NCEA standards.

Online, subject-specific, bite-sized learning modules and short courses are now available to complement the traditional face-to-face workshops that NZQA offers. These online courses can be accessed using your Education Sector Logon.

Online Making Assessor Judgements workshops are also available throughout the year. These workshops are structured to guide teachers to improve their understanding of each grade level by examining several full samples of student work. The following standards are available for enrolment in 2023:

- 91521 Carry out a practical investigation to test a physics theory relating two variables in a non-linear relationship
- 91522 Demonstrate understanding of the application of physics to a selected context

Feedback from teachers for these workshops indicates that more than 90% of participants agreed or strongly agreed that the content in the module was beneficial:

*"This would be a really good department exercise to do in a meeting before marking the standard."*

*"I found reading and analysing the extracts for evidence against Level 8 in the curriculum very useful."*

The Assessor Practice Tool will be used to provide assessors with support for the new NCEA standards from 2024 onwards. Schools will receive further information about Phase Two of the Assessor Practice Tool in early 2023.

NZQA will continue to offer several non-subject-specific modules and workshops, designed to improve general assessment practice. The following modules and workshops will be available in 2023:

- Assessment Approaches, an online workshop exploring different methods of assessment
- Culturally Responsive Assessment
- Assessment Guidance – Reviewing Your Practice
- Tāku reo, tāku mahi – My voice, my work, a guide to managing authenticity
- Why Less is More, a guide to reducing volumes of student evidence

We will also continue to run the Transforming Assessment Praxis programme, an online workshop relevant to all subjects which helps assessors learn about re-contextualising assessment resources and collecting evidence in different ways, in order to better meet the needs of students.

Check the NCEA subject pages on the NZQA website regularly, as more online modules, workshops and courses will be added throughout 2023.

### **Live and Face-to-face**

The Best Practice Workshops (online and face-to-face) offered by Assessment and Moderation continue to be viewed by the sector as significantly contributing to improved assessor practice:

*"The workshop helped to review my own knowledge, and great to share ideas."*

*"It was great having time to challenge my thinking in assessment."*

Workshops, webinars or presentation slots can be requested to provide targeted support to local, regional or national audiences. National Moderators are available to present at conferences, local or national hui or via live webinars. These services are available on request and subject to availability.

### **Contact NZQA**

More detailed information, including how to request or register for a workshop or online course, can be found on our [Assessor Support](#) pages or by emailing [workshops@nzqa.govt.nz](mailto:workshops@nzqa.govt.nz).

To give feedback on this report click on [this link](#).