

The development of these Level 1 achievement standards was completed in time for implementation in schools in 2014.

Main changes resulting from the review

- All TMoA Level 6 (NZQF Level 1) outcomes are now assessed using achievement standards.
- Grading criteria for achievement standards were reviewed in accordance with the Standards Review Guidelines.
- Five new standards were created for *Pūtaiao* that align to TMoA outcomes.
- Unit standards that recognised similar outcomes as achievement standards, or had minimal usage, were recommended for expiry (see [table](#) below).
- The English language versions of the standards have been amended to show that they also derive from achievement objectives in TMoA, and their review date has been changed to December 2016.

For a detailed description of the review of, and the changes to, the *Pūtaiao* standards see the appendix at the end of this report.

Current consent for			Consent extended to		
Nature of consent	Classification or ID	Level	Nature of consent	Classification or ID	Level
Subfield	General Education Māori	Any	Subfield	Te Marautanga o Aotearoa	Same
Domain	General Education Māori >Pūtaiao	Any	Domain	Te Marautanga o Aotearoa > Pūtaiao	Same

Impact on Consent and Moderation Requirements (CMR)

All new achievement standards have been registered on CMR 0233.

Impact on registered qualifications

None.

Impact of changes on [Exclusions List](#)

None.

Review Categories and changes to classification, title, level, and credits

The following summary shows the changes made to the standards as a result of the review. All changes are in **bold**. Where a new or a new version of an externally assessed achievement standard is registered, the following designation appears after the title **[Externally Assessed]**.

Key to review category	
A	Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number
B	Changes made, but the overall outcome remains the same - the new version of the standard carries the same ID and a new version number
C	Major changes that necessitate the registration of a replacement achievement standard with a new ID
D	Achievement standard will expire and not be replaced

Internally assessed unit standards categorised as category D expire at the end of	December 2014
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Unit standards

Māori > General Education Māori > Pūtaiao

ID	Title	Level	Credit	Review Category
15984	Demonstrate knowledge of the use of kohatu Māori	1	2	D
15989	Demonstrate knowledge of a native mammal and its significance to Māori	1	2	D
19530	Investigate the aerodynamics of a nititeka	1	2	D
19534	Investigate the aerodynamics of manu aute or tukutuku	1	2	D

Revised Achievement standards

Science > Science

Domain	ID	Ref	Title	Level	Credit
Biology	90925	1.1	Carry out a practical investigation in a biological context, with direction	1	4
	90926	1.2	Report on a biological issue	1	3
	90927	1.3	Demonstrate understanding of biological ideas relating to micro-organisms [Externally assessed]	1	4
	90928	1.4	Demonstrate understanding of biological ideas relating to the life cycle of flowering plants [Externally assessed]	1	4
	90929	1.5	Demonstrate understanding of biological ideas relating to a mammal(s) as a consumer(s) [Externally assessed]	1	3
Chemistry	90930	1.1	Carry out a practical chemistry investigation, with direction	1	4
	90931	1.2	Demonstrate understanding of the chemistry in a technological application	1	2
	90932	1.3	Demonstrate understanding of aspects of carbon chemistry [Externally assessed]	1	4
	90933	1.4	Demonstrate understanding of aspects of selected elements	1	4
	90934	1.5	Demonstrate understanding of aspects of chemical reactions [Externally assessed]	1	4
Physics	90935	1.1	Carry out a practical physics investigation that leads to a linear mathematical relationship, with direction	1	4

Domain	ID	Ref	Title	Level	Credit
	90936	1.2	Demonstrate understanding of the physics of an application	1	2
	90937	1.3	Demonstrate understanding of aspects of electricity and magnetism	1	4
	90938	1.4	Demonstrate understanding of aspects of wave behaviour	1	4
	90939	1.5	Demonstrate understanding of aspects of heat	1	4
Science – Core	90940	1.1	Demonstrate understanding of aspects of mechanics [Externally assessed]	1	4
	90941	1.2	Investigate implications of electricity and magnetism for everyday life	1	4
	90942	1.3	Investigate implications of wave behaviour for everyday life	1	4
	90943	1.4	Investigate implications of heat for everyday life	1	4
	90944	1.5	Demonstrate understanding of aspects of acids and bases [Externally assessed]	1	4
	90945	1.6	Investigate implications of the use of carbon compounds as fuels	1	4
	90946	1.7	Investigate the implications of the properties of metals for their use in society	1	4
	90947	1.8	Investigate selected chemical reactions	1	4
	90948	1.9	Demonstrate understanding of biological ideas relating to genetic variation [Externally assessed]	1	4
	90949	1.10	Investigate life processes and environmental factors that affect them	1	4
	90950	1.11	Investigate biological ideas relating to interactions between humans and micro-organisms	1	4
	90951	1.12	Investigate the biological impact of an event on a New Zealand ecosystem	1	4
	90952	1.13	Demonstrate understanding of the formation of surface features in New Zealand	1	4
	90953	1.14	Demonstrate understanding of carbon cycling	1	4

Domain	ID	Ref	Title	Level	Credit
	90954	1.15	Demonstrate understanding of the effects of astronomical cycles on planet Earth	1	4
	90955	1.16	Investigate an astronomical or Earth science event	1	4

New Achievement standards

Māori > Te Marautanga o Aotearoa > Pūtaiao

ID	Ref	Title	Level	Credit	Review Category
91719	1.1	Te whakatairite i ngā āhuatanga o tētahi kaupapa pūtaiao mai i te tirohanga o mātauranga Māori me mātauranga Pākehā	1	3	New
91720	1.2	Te whakaatu māramatanga ki ētahi āhuatanga o te rauropi	1	4	New
91721	1.3	Te tūhura i ētahi āhuatanga o tētahi pūnaha-hauropi i Aotearoa	1	3	New
91722	1.4	Te whakaatu māramatanga ki ētahi āhuatanga e pā ana ki a Papatūānuku	1	4	New
91723	1.5	Te whakaatu māramatanga ki ētahi āhuatanga e pā ana ki a Ranginui	1	4	New

Development of Pūtaiao Level 1 Achievement Standards

Process of aligning standards with Te Marautanga o Aotearoa (TMoA)

The Pūtaiao level 1 achievement standards have been developed to align the outcomes with the level 6 Te Ao Tūroa (The Natural World) and Ngā Tautake Pūtaiao me ngā Kōrero o Mua (Philosophy and History of Science) strands of the Pūtaiao learning area of TMoA. The Ō Ahupūngao (The Physical World) and Ō Kawekawe (The Material World) strands are covered by existing Science achievement standards.

The process of aligning achievement standards with TMoA was informed by a series of audits across all learning areas commissioned by the Ministry of Education from Māori-medium subject specialists in 2007. The audit made three recommendations for the Pūtaiao learning area:

- phase out the translated Science achievement standards
- rationalise the number of Pūtaiao unit standards
- explore the possibility of developing unique new achievement standards for Pūtaiao.

It was subsequently determined that translating the Science standards would not reflect the whāinga paetae within the Pūtaiao learning area of TMoA and so the decision was taken to develop some new achievement standards. The reasons for taking this approach included:

- to reflect the differences between the two curricula (i.e., Pūtaiao and Science) – the different grouping of knowledge in two of the four strands, namely Te Ao Tūroa and Ngā Tautake Pūtaiao. There is no equivalent to the latter of these in the Science curriculum.
- to reflect the distinct nature of wharekura/senior secondary Māori-medium school programmes and the difference between these and English-medium Science, and to meet aspirations for contextually appropriate assessment of Pūtaiao. Pūtaiao is science education in contexts where the language of the school is Māori, which is an endangered indigenous language that has little in common with English, the dominant global language of science. Minority-language science education is almost non-existent globally, and the language task Pūtaiao represents cannot be over-emphasised. Innovative and specific modes of assessment are therefore required, as are new achievement standards to make these possible.

A specialist Pūtaiao writing panel, consisting of subject specialists working in wharekura, was convened by the Ministry of Education to develop the new suite of standards informed by the recommendations from the audit report. In aligning the standards to the new marautanga, the panel was guided by three principles:

- learners need to be exposed to a wide range of Pūtaiao skills and knowledge
- the current form and features of NCEA Pūtaiao need to be changed
- coherent assessment programmes need to be provided to guide kaiako pūtaiao, based on central concepts.

Further, the panel considered that the development of new standards provided an opportunity to improve participation and access for Māori-medium students in NCEA Pūtaiao qualifications by:

- developing Pūtaiao-specific standards with assessment activities written for and from a Māori-medium perspective;
- employing assessment forms other than language-based questions, i.e., increased

- use of symbolic language and visual representations of science concepts;
- addressing the key issue of the criteria used for grade distinctions.

Accordingly, the panel developed a set of five new internally assessed Pūtaiao Level 1 achievement standards (91719–91723) that are robust and challenging, bring together knowledge from science, and acknowledge direct experience of the natural world and relevant Māori traditions.

Conditions of Assessment have been developed to assist in the interpretation of achievement standards and the development of teaching and learning programmes.

Addressing Duplication

Careful consideration was given to ensuring that the Pūtaiao standards were differentiated from the Science standards and accordingly new standards were not developed within the Ō Ahupūngao (The Physical World) and Ō Kawekawe (The Material World) strands, as they would have been too similar to Science achievement standards.

The new standards have been developed to be complementary to existing Science achievement standards. Wharekura will have opportunities to build their own assessment programmes from a selection of achievement standards available in both Pūtaiao and Science.

Addressing Credit Parity

The credits allocated to the standards reflect the time required for the teaching and learning involved. Three standards carry a credit value of 4 and two are worth 3 credits.

External and Internal Assessment

The method of assessment for each standard best reflects the teaching and learning involved for each standard.

Internal assessment was considered the most appropriate medium for all the Pūtaiao standards.

What has changed (summary)?

At Level 1 there are five new achievement standards (91719–91723):

- Pūtaiao 1.1 (AS91719) assesses the new strand Ngā Tautake me ngā Kōrero o Mua (History and Philosophy of Science) and is basically a research standard, set at 3 credits.
- The remaining four standards (AS91720–91723) assess Te Ao Tūroa, utilising the Māori organisation of that strand, and drawing on content from Ō Kawekawe and Ō Ahupūngao as required. Each assesses a range or eclectic mixture of knowledge including science knowledge, Māori/indigenous symbolism and local knowledge/experience relating to the natural world. These standards vary in the focus they place on Rauropi, Taiao, Papatūānuku and Ranginui, and in the balance between the two āhuatanga whānui, Te Tūhurātanga and Te Whakamahinga o te Pūtaiao.
- Each of these achievement standards assesses competence in the generic skills contained in the overarching science literacy āhuatanga whānui, Te Reo Matatini.