

MATHEMATICS AND STATISTICS

SUBJECT EXPERT GROUP RESPONSE TO FEEDBACK ON THE PHASE 1

MATERIALS

The Mathematics and Statistics Subject Expert Group (SEG) would like to thank those members of the sector and wider public who put their time in to review the Phase 1 Mathematics and Statistics subject content. We received 139 responses to the online survey.

The feedback has been collated into main themes, and the SEG has responded to each theme. All feedback has been considered – those suggestions which are more discrete in nature, or are overly detailed or technical, are in the process of being actioned.

Theme One

General clarification of subject content required

Response

The Learning Matrix outlines the most Significant Learning for Mathematics and Statistics, that every student is expected to engage with in a full year course. This is intended to strike a balance between consistency across New Zealand and flexibility in teaching and learning, to allow teachers to best meet the needs of the learners in front of them.

The Course Outlines further support the Learning Matrix. They are indicative of how the Significant Learning may be practically incorporated into a year-long Mathematics and Statistics course. These will be reviewed by the SEG during Phase 2 and republished in August alongside the assessment materials. The Glossary will also be reviewed to ensure it best supports a consistent interpretation of the subject content.

Theme Two

Interaction with mātauranga Māori and inclusion of te ao Māori

Response

As New Zealanders and leaders in education, kaiako have a responsibility to honour Te Tiriti o Waitangi. The move towards explicitly acknowledging te ao Māori in subject content is for all New Zealanders. We need to provide our ākonga with the confidence and perspective to navigate a bi-cultural Aotearoa. Change 2 of the NCEA Change Package calls for mana ōrite mō te mātauranga Māori. Realising this change means we ensure mātauranga Māori is equitably valued and resourced in NCEA, broadening access to mātauranga Māori pathways and increasing teacher capability. This means incorporating mātauranga Māori, te ao Māori and te reo Māori appropriately into the new Mathematics and Statistics content.

The current Teachers Only Days are intended to support teachers and kaiako capabilities in this area, which is a key part of the NCEA changes.

The subject content provides additional capability support:

- Learning Matrices and Course Outlines illustrate how mātauranga Māori can be woven through teaching and learning
- The Glossary will define any kupu Māori used in the subject content
- Assessment resources, student exemplars, and examples of Teaching and Learning Programmes used in the trial and pilot will further exemplify the integration of mātauranga Māori in the future.

[A further response from the Ministry can be found here.](#)

Theme Three

Mathematics and Statistics is too large as one subject

Response

The SEG was formed after the Level 1 Subject List was confirmed, in December 2020. It is not a function of the SEG to review the Subject List or provide advice on it.

The subject list was approved on the basis that one broad and foundational subject should be developed, with more specialised subjects at Levels 2 and 3. The Ministry advice on this recommendation is publicly available [here](#).

Theme Four

Too much Significant Learning

Response

A focus of the RAS, and the NCEA Change Package, is to emphasise learning before assessment. The intention is for broad coverage of curriculum content and to ensure that learners leave NCEA Level 1 with a broad foundational knowledge of the mathematics and statistics that they will need for life. Learning across Years 9 to 11 is expected to contribute to preparing students for Level 1.

We understand that teachers and kaiako are concerned that these changes will add to the workload of both them and their learners. Change 1, of the NCEA Change Package, aims to offer broader standards from which ākongā can sample different packages of learning, combined with greater choice of assessment methods and opportunities. Change 1 also provides greater opportunity to build cross-strand skills and understanding in learners. This will give learners the capabilities they need to apply mathematical skills and concepts to more contexts, which may be applicable across multiple Achievement Standards.

Theme Five

Concerns about assessment of Achievement Standards

Response

The new standards will be designed so that they do not prescribe avenues or approaches to learning. This approach allows more packages of learning to be assessed by each standard, while also allowing for wider coverage of content. Standards are being drafted in the next phase of development.

Some respondents commented that there was an imbalance between statistics and mathematics in the products – leaning towards more statistics. The standards, as they have been proposed, include one that is focussed on statistics, one focussed on mathematics, and two which draw from Significant Learning from across the entire Learning Matrix.

Some respondents were concerned that the Course Outlines indicated that standards would be assessed by portfolio. The SEG has listened to this feedback and will consider it carefully during the next stage of development. Decisions pertaining to method of assessment have not yet been made, and this work will be undertaken in the next stage of development.

Some confusion has potentially been caused by the name of the subject 'Mathematics and Statistics'. This may have led to the conclusion that statistics is being discussed where the intent is to discuss the subject as a whole. The subject content will be updated for greater clarity.

Theme Six

Achievement Standard 1.1 – too much work required

Response

We have taken onboard feedback that the draft statistics standard requires too many investigations to be carried out. The need for collected data to be 'primary' will also be reviewed in the next phase.

Theme Seven

Course Outlines do not sufficiently guide teachers and kaiako in delivering this change

Response

The Course Outlines are draft and will be republished at the end of the next stage of product development. They will focus more strongly on providing examples of how to teach cross-strand, at varied ability levels, and in authentic contexts.

Theme Eight

Learner ability level in mathematics, statistics, and numeracy

Response

We share the concern that many learners come into NCEA Level 1 underprepared, and can struggle. The solution to this problem is not to develop a less rigorous standard. If learners are not engaged and challenged, they will continue to fall behind, and Aotearoa will further slip in global numeracy rankings.

The SEG is committed to exploring more flexible assessment options which authentically sample the learning that ākongā have done, wherever that learning is. There is nothing that prescribes that learners sit all four standards (20 credits) or sit NCEA Level 1 standards only during Year 11. As a foundational subject, Mathematics and Statistics is designed to build ākongā confidence and capability in mathematics and statistics. The intention is not to leave any learners behind.

Theme Nine

Mixed response to teaching, learning and assessment guidance

Response

The response to the teaching, learning and assessment guidance was mixed, with many liking the aspirational framing of the subject content but wanting to see more examples of how it could be implemented. This will be addressed when the Course Outlines are republished.

Theme Ten

Further Explanation of External Assessment

Response

The specific details of assessment have not yet been produced. In Phase 2 we will develop the Achievement Standards, Assessment Schedules, External Assessments, Internal Assessment Activities, and associated materials. Further guidance including exemplars of student work will be provided after the full pilot in 2022.

The Phase 1 Mathematics and Statistics content currently published is foundational subject content, to give you an indication as to the direction for assessment. This is published early in the development process to give you the opportunity to comment on the proposed teaching and learning at a formative stage. The SEG is currently using the compiled Phase 1 survey feedback to refine the subject content.

Theme Eleven

Feedback on Change Programme

Response

Many respondents were unclear on how the numeracy standards would relate to the new Level 1 Achievement Standards. The standards will be a corequisite which must be completed to achieve an NCEA. There will be no pre-requisites for any Achievement Standard, which means that no standard will be inaccessible if a learner has not already achieved their numeracy standards.

More information on the numeracy corequisite can be found [here](#).