PHYSICS EARTH AND SPACE SCIENCE

SUBJECT EXPERT GROUP RESPONSE TO FEEDBACK ON THE PHASE 1 MATERIALS

The Physics Earth and Space Science Subject Expert Group (SEG) would like to thank those who took put their time in to review the Phase 1 Physics Earth and Space Science subject content. We received 122 responses to the survey.

Five themes were identified in the feedback.

Theme One

General Clarification of Subject Content

Many respondents in the online feedback stated that there is too little information provided in the Phase 1 subject content to give adequate feedback.

Response

Our response is that the Phase 1 Physics Earth and Space Science (PES) content currently published and engaged on is foundational subject content, with an indication as to the direction of 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.

Assessment will be clarified in detail when Phase 2 subject content is published in August. Phase 2 includes the development and subsequent publication of the Achievement Standards, Conditions of Assessment, Internal Assessment Activities, and associated materials. Further guidance including exemplars of student work will be provided after the Pilot year in 2022.

Concern was expressed that there is not sufficient content prescription in the products for teachers to know what to teach and to ensure students do not miss out on important learning.

Our response is that the Learning Matrix outlines the most significant learning for PES that every student is expected to engage with in a full year course. This is intended to strike a balance between consistency across Aotearoa New Zealand and flexibility in teaching and learning, to allow teachers to best meet the needs of the students in front of them.

The Course Outlines further support the Learning Matrix. They are indicative of how the significant learning may be coherently incorporated into a year-long PES 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.

We will revisit the Learning Matrix and supporting content to see where more explicit guidance, as to content, can be included without restricting the freedom of schools to

develop individualised local curricula. We still want to avoid over prescribing content, while providing clear guidance on the skills that are essential for learners to engage with as part of a Level 1 course. This focus on skills rather than prescribed content allows the course to remain broad and foundational and means that all kaiako and ākonga can engage with the subject in contexts that are meaningful and appropriate to them.

Theme Two

Engagement with Mātauranga Māori

Several respondents were concerned about their own ability and the ability of the teaching community in general to deliver mātauranga Māori content in science with sufficient expertise and authenticity and there were a number of calls for further exemplification, resourcing and PLD. Respondents also noted disparity in engagement with mātauranga Māori both within the Physics Earth and Space Science content and across the Science Learning Area.

Response

Change 2 of the NCEA Change Package requires 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 PES content.

The subject content provides capability support:

- Learning Matrix, Course Outlines and other guidance material illustrate how mātauranga Māori can be woven through teaching and learning
- The Glossary will define kupu Māori used in the subject content
- Assessment resources, student exemplars, and examples of Teaching and Learning Programmes created in the Pilot will further exemplify the integration of mātauranga Māori in the future.

The feedback made it clear that people want to see exactly what mātauranga Māori will look like in assessment. The Course Outlines made it more clear how this could be incorporated into the teaching and learning but there is less clarity when it comes to the actual assessment. As previously mentioned, this will be made more explicit with the further development of assessment materials and activities. We will explore opportunities in the subject content to better explain, illustrate and exemplify mātauranga Maōri in physics. Experts in mātauranga Māori and mātauranga pūtaiao will be engaged to ensure the subject matter is treated accurately and appropriately.

We also acknowledge the disparity in explicit engagement with mātauranga Māori, both between Physics and Earth and Space Science as well as with the Chemistry and Biology materials. The Ministry will seek expert advice to explore ways to address this issue.

We acknowledge the disparity in engagement with mātauranga Māori across the Science Learning Area. To improve consistency, Learning Area Leads have been appointed by the Ministry to work across subjects within each Learning Area, providing curriculum oversight. Ahead of the next phase, they will review subject content in their Learning Area (including already published content) and will look at consistency as part of this review. However,

please note that there may be some variation between subjects as bespoke content is produced to meet their individual requirements.

A further response from the Ministry can be found here.

Theme Three

Physics and Earth and Space Science treated as distinct subjects.

Response

Many respondents noted the separation of the disciplines, marking this as a consolidated rather than combined course. While the Course Outlines and teaching and learning guidance aim to exemplify how the content from these two disciplines can be taught together coherently, the direction currently set remains to keep the standards separate. This does not mean the standards cannot still be used to assess learning from an integrated course; rather it allows schools to create different kinds of courses that best suit their students and programmes.

Additionally, the SEG view is that creating compulsorily integrated standards would require the covering of content that was beyond Level 6 of the curriculum.

Theme Four

Preparation for NCEA Levels 2 and 3 and beyond

Response

The feedback raised concerns about how well this Level 1 content would prepare students for NCEA Levels 2 and 3. This is an understandable concern, however, this may be due in part to the nature of a consolidated, as opposed to a specialised, course. It is important to remember that the aim of Level 1 is to give learners a broad, foundational understanding of a subject area that will stand them in good stead for whatever their pathways are after they finish the course. It is not the aim of Level 1 to cover all material that will be taught in Level 2; rather, learners will be armed with the skills and understandings of scientific concepts necessary to fully engage with Level 2 content.

NCEA Level 2 and Level 3 are yet to be developed. The draft subject list is set to be released for public engagement from June. Work on NCEA Level 2 and Level 3 will progress according to the RAS timeline. This will be informed by and aligned with the new Level 1 subject content, to ensure appropriate progression for students.

There was specific concern about the scope of some of the standard titles. As part of further standard development, we will explore options for clarifying the scope of these. For Achievement Standard 1.3, we will look at how a wider range of interactions can be incorporated.

For Achievement Standards 1.2 and 1.4, while the intention is that these be open to use with a range of content, that does not mean that all content will have to be covered as part of each standard, rather, any of the content may be selected to engage with a standard.