Chair
Cabinet Social Policy Committee
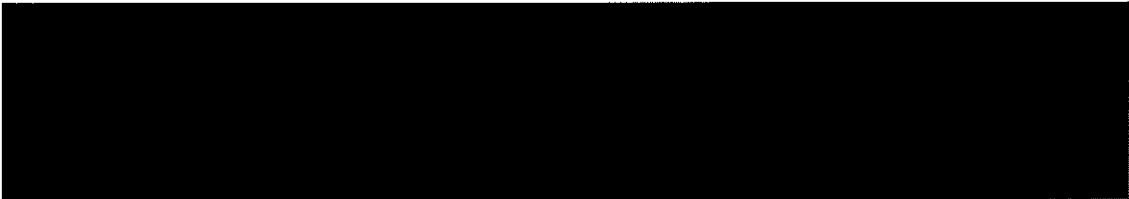
Strengthening Digital Technology in the New Zealand Curriculum

Proposal

1.   This paper informs you of my intention to explicitly strengthen digital technologies in the New Zealand Curriculum, in support of digital technologies as a major driver of our economic performance and social progress.

Executive summary

2.   The Government has an expectation that the education system will meet the educational achievement challenges for every child and young person.

3.   New Zealand's curricula, *Te Whāriki*, *The New Zealand Curriculum* and *Te Marautanga o Aotearoa*, are widely recognised as well-rounded, rich and world-class. They set the direction for what is to be learnt, allowing our teachers to produce students that have the core skills that employers need and are necessary for successful careers, such as relating to others, adaptability, entrepreneurship, critical thinking and problem solving.

4.   Over the past 10 years, digital technologies have also become a major driver of our economic performance and social progress, in a way that was not anticipated when the curricula were developed.

5.   It has become an expectation of tertiary education providers and employers and parents that every student's school education will encompass the teaching of digital technologies.

6.   To meet these expectations we need to increase the cohort of students acquiring these skills in senior secondary school, and support them on to tertiary level study and employment.

7.   In July 2014 our Government launched the *Science and Society Strategic Plan "A Nation of Curious Minds: He Whenua Hihiri i te Mahara" (Curious Minds)*. One of the key initiatives for the education sector in this plan was to Review the positioning and content of digital technology within *The New Zealand Curriculum* and *Te Marautanga o Aotearoa*.

8.   This review has been completed and has recommended that digital technologies are strengthened in *The New Zealand Curriculum* and *Te Marautanga o Aotearoa*.

9.   I intend to explicitly strengthen digital technology in the Technology learning area from levels 1 to 8 in *The New Zealand Curriculum* by:

- developing, trialling and registering new digitally focused achievement standards for NCEA Levels 1 to 3, in both English and Te Reo Māori

- encouraging and equipping schools to cover the digital technologies strand of the Technology learning area from years 1-10. This will involve redesign of the structure of the Technology learning area of *The New Zealand Curriculum.*

10. By including digital technology teaching and learning in the National Curriculum from years 1-10, by the time students reach year 11 they will have a deeper understanding of digital technology and therefore a higher expectation of learning outcomes.

11. The Ministry of Education will work with experts in both digital technologies and curriculum design to develop and publish the new draft content and a suite of support materials.

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Background

13. Digital technologies are ubiquitous and are becoming increasingly powerful in today's world. To participate fully in society, citizens need to be confident using a broad range of digital technologies in a variety of settings.

14. It has become an expectation of tertiary education providers, employers, and parents that every student's school education will encompass the teaching of digital technologies.

15. To meet these expectations we need to increase the cohort of students acquiring these skills in senior secondary school, and support them on to tertiary level study and employment.

16. We also need to increase the cohort of teachers who can support learning in digital technologies. This learning will prepare students for tertiary level study and employment.

17. In July 2014, this Government launched the *Science and Society Strategic Plan "A Nation of Curious Minds: He Whenua Hihiri i te Mahara" (Curious Minds)* - a joint plan between the Ministry of Education, the Ministry of Business, Innovation and Employment (MBIE), and the Office of the Prime Minister's Chief Science Advisor [SOC-15-MIN-0071 refers].

18. The Panel identified 'Science and Society' as the most important challenge if New Zealand is to responsibly apply science and innovation and optimally benefit from its investment in science. The objective of Curious Minds is to "encourage and enable better engagement with science and technology across all sectors of New Zealand society" to deliver outcomes of:

- more learners who are competent in science and technology and more who go on to a career in science, technology, engineering and mathematics (STEM)-related jobs

- a more scientifically and technologically engaged public and a more publicly engaged science sector

- a more skilled workforce and science and technology that is more responsive to New Zealanders needs.

19. One of the key initiatives for the education sector in Curious Minds is to:

"Review the positioning and content of digital technology within The New Zealand Curriculum and Te Marautanga o Aotearoa: We will work alongside sector partners to review the positioning and content of digital technology within the framework of the New Zealand Curriculum and Te Marautanga o Aotearoa"

20. This review has now been completed and included consultation and engagement with key stakeholders from industry, as well as education representatives.

21. One of the major outcomes of consultation was the need to make digital technologies more explicit in the National Curriculum to support students in gaining the required skills and knowledge to be active participants in a rapidly changing society.

Comment

Findings of the review

22. Although Technology teaching is compulsory from years 1 to 10, digital technologies may or may not be included in individual schools' curricula. Schools choose what context they use to teach the knowledge and skills of the Technology learning area.

23. Stakeholders do not always distinguish clearly between learning with digital devices (something which we aim to enable and encourage across the curriculum) and learning about digital technologies as part of the Technology learning area of the curriculum.

24. The differences need to be clearly articulated and communicated so that schools can fully understand how to support students to use the digital devices for learning purposes and how to provide learning opportunities in the digital technologies learning area.

In primary schools

25. *The New Zealand Curriculum* expresses technology in generic statements around technological practice, technological knowledge and the nature of technology. Consequently, teachers and schools lack the specific resources and guidance to develop and deliver a school or classroom curriculum for digital technologies. Primary schools that are delivering digital technologies using their local curriculum are often dependant on one teacher.

26. This accurately reflects the experience of kaiako in the Māori medium sector as well. The only reference to digital technologies in *Te Marautanga o Aotearoa* is a broad

reference made in the introductory pages to e-learning. This description suggests that e-learning supported by information and communication technology affords ākonga access to knowledge from a wide range of sources, access also to varied experiences beyond the school and home, and enables non-collocated groups to collaborate together. It stops short, however, of describing how that might happen.

27. Schools find it difficult to know how to differentiate between learning concepts such as computational thinking and computer programming at each level of the curriculum.

In secondary schools

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Strengthening technology

32. We need to ensure that children in primary school and kura gain exposure to and understanding of the concepts and skills involved in digital technologies, including digital capability for citizenship, as part of the full curriculum.

33. We also need to ensure that students at the secondary school level have opportunities to study digital technologies at an advanced level, in combination with other technology areas if they choose, and see digital technologies as a rewarding choice that will provide them with exciting options for tertiary level study and their future careers.

34. I intend to explicitly strengthen digital technology in the Technology learning area from levels 1 to 8 in *The New Zealand Curriculum*:

 • this change would encourage schools to cover the digital technologies strand of the Technology learning area from years 1-10. This will involve redesign of the structure of the learning area

- the new learning objectives for curriculum levels 6-8 will result in new achievement standards for NCEA Levels 1 to 3 being written, trialled and registered to reflect the depth of prior learning in the compulsory schooling years

- I propose to develop NCEA dual curricular achievement standards in both English and Te Reo Māori. This signals a significant lift in the overall outcomes for digital technologies within schooling, both in the expected level in the learning outcomes, and the profile and importance of digital technologies outcomes

- by including digital technology teaching and learning in the National Curriculum from year 1-10, by the time students reach year 11 they will have a deeper understanding of digital technology and therefore a higher expectation of learning outcomes.

35. Updating an existing learning area enables the education workforce to build on existing skills, knowledge and pedagogy, thereby leading with pedagogy and accelerating through digital technologies. This also means evidence based design can be trialled and evaluated within a uniquely New Zealand context.

36. This will be a phased approach, starting with NCEA new achievement standards, and subsequently bringing in changes to years 1-10. Phased timing ensures new achievement standards for NCEA are in line with NZQA policy and process and opportunities exist for liaison with employers and tertiary providers to ensure strong transition points for students, while also providing time for school's to adjust to new requirements for years 1–10.

37. The Ministry of Education will work with experts in both digital technologies and curriculum design to develop and publish the new draft content and a suite of support materials.

38. Digital fluency is one of five national priorities in our new approach to centrally provided Professional Development and Learning for the education workforce [SOC-15-MIN-0013 refers]. Digital fluency included both learning with digital technologies and learning about digital technologies.

39. The new approach to PLD will support Communities of Learning, schools and kura to accelerate student progress and promote successful learning across a range of curriculum outcomes. It will also support the development of network of expertise, locally, regionally and nationally to promote greater access for teachers and leaders to the knowledge and practice they need. PLD will be tailored to support teachers to understand and implement the new learning area.

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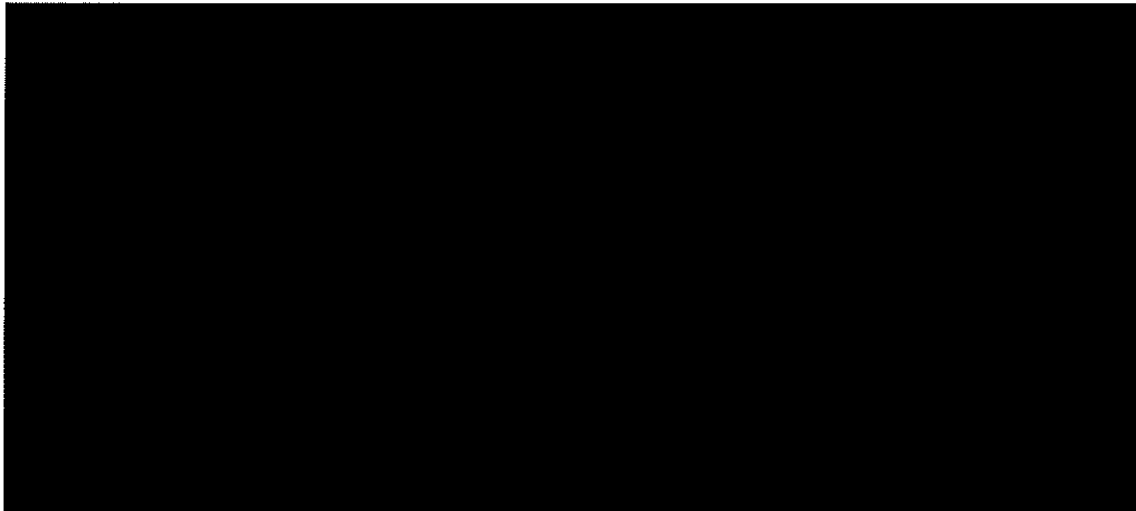
41. I intend to announce this change at my keynote address at the New Zealand Education Technology Summit on 5 July in Auckland. This event focuses on bringing the education and IT sectors together to encourage students to be creators and developers of new digital technologies, and provides a timely and high profile opportunity to make this announcement.

42. The Summit is organised by the New Zealand Technology Industry Association, who represent over 300 registered IT focussed businesses, from small start ups to large multinational companies.
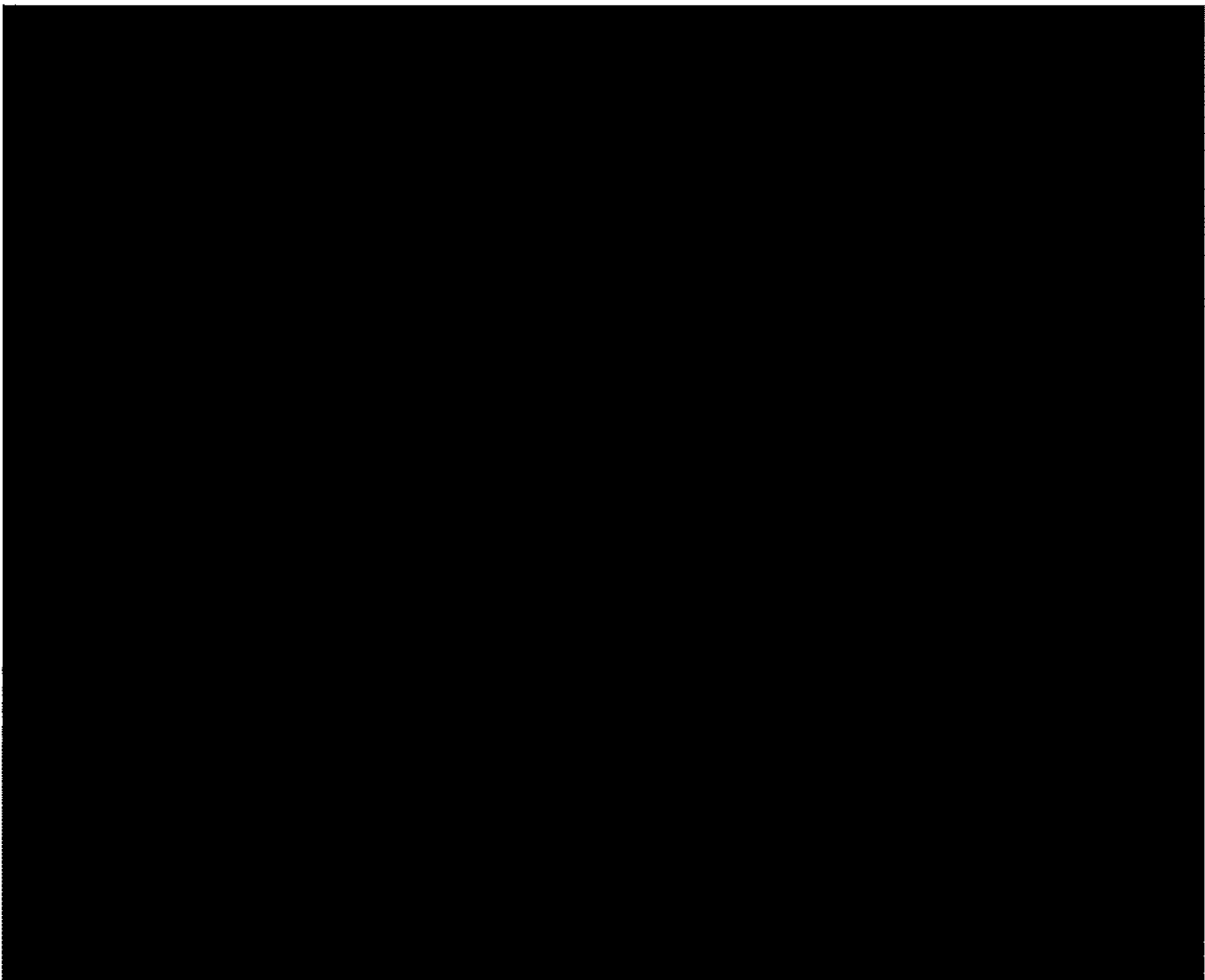
Consultation

50.　During 2015 a cross-agency education sector working group was established to ensure advice received from partners spanned the beginning of schooling to tertiary.

51.　Representatives were invited to present proposals outlining the potential future content and positioning of digital technologies in the National Curriculum. The proposals included the positioning of digital technologies in the National Curriculum, new content, and focusing on the transition from schooling to tertiary studies or the workforce.

Financial implications

52.　There are no financial implications.

Human rights

53.　There are no human rights implications.

Legislative implications

54.　There are no legislative implications.

Regulatory impact analysis

55.　There is no regulatory impact.

Gender implications

26.　There are no gender implications.

Disability perspective

27. There are no disability implications.

Publicity

28. I intend to announce this at the New Zealand Education Technology Summit on 5 July and there will be accompanying communications around this.

Recommendations

The Minister of Education recommends that the Committee:

1. **note** that New Zealand's curricula, *Te Whāriki, The New Zealand Curriculum* and *Te Marautanga o Aotearoa*, are widely recognised as well-rounded, rich and world-class. They set the direction for what is to be learnt, allowing our teachers to produce students that have the core skills that employers need and are necessary for successful careers, such as relating to others, adaptability, entrepreneurship, critical thinking and problem solving.

2. **note** that in *The New Zealand Curriculum* the Technology learning area covers a wide range of subjects from digital technologies to biotechnology. The aim of the Technology learning areas is to develop in students "a board technology literacy that will equip them to participate in society as informed citizens and giving them access to technology-related careers".

3. **note** the flexibility of the current Technology component of *The New Zealand Curriculum* means that digital technologies may or may not be included in individual schools' curricula.

4. **note** I have completed a review of the positioning of digital technologies within the National Curriculum as part of the Government's plan *Science and Society Strategic Plan "A Nation of Curious Minds: He Whenua Hihiri i te Mahara"*.

5. **note** that this review included consultation and engagement with key stakeholders from industry, as well as representatives of education.

6. **note** that this review found that:

    a. under the current settings teachers and schools lack the specific resources and guidance to develop and deliver a school or classroom curriculum for digital technologies

    b. schools find it difficult to know how to differentiate between learning concepts such as computational thinking and computer programming at each level of the curriculum

    c.

    d.

Strengthening digital technologies in the curriculum

7. **note**, I intend to explicitly strengthen digital technologies within the Technology learning area of *The New Zealand Curriculum* from levels 1 to 8 by:

   a. developing, trialling and registering new digitally focused achievement standards for NCEA Levels 1 to 3, in both English and Te Reo Māori

   b. encouraging schools to cover the digital technologies strand of the Technology learning area from years 1-10. This will involve redesign of the structure of the Technology learning area of *The New Zealand Curriculum*.

8. **note** that digital technologies curriculum resources and new NCEA achievement standards will be developed to support schools in developing and implementing local curricula for digital technologies.

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10. **note** that I have instructed the Ministry of Education to determine the optimal positioning and content of digital technologies in *Te Marautanga o Aotearoa*.

11. **note** that these changes will be introduced through a phased approach, involving further consultation with the education sector, starting with NCEA new achievement standards, and subsequently bringing in changes to years 1-10.

12. **note** I will be announcing this change at the New Zealand Education Technology Summit on 5 July.

Hon Hekia Parata
Minster of Education

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