Digital Technologies & Hangarau Matihiko – How this links to ECE

New Zealanders are now living in a digital society. Our young people need to be confident and fully equipped to contribute and flourish in the society of the future (Minister's forward in the Digital Technologies | Hangarau Matihiko (DT|HM) consultation document).

On 28 June 2017, Minister of Education Nikki Kaye, announced a 40 million dollar package of initiatives to support the implementation of the Digital Technologies & Hangarau Matihiko programme for years 1 to 13.

This has come about as the result of the review of the positioning and content of Digital Technologies & Hangarau Matihiko in our national curriculum. In July 2014 the former Education Minister Hekia Parata and Minister Steven Joyce launched the Science and Society Strategic Plan "A Nation of Curious Minds: Te Whenua Hihiri i te Mahara". The review was a key initiative of that plan.

Through June to September consultation occurred with schools and communities about the draft content of the Digital Technologies & Hangarau Matihiko curriculum. In November 2017 a report which illustrates the key themes from this consultation process will be available.

From 2018 Digital Technologies & Hangarau Matihiko will be included in the *New Zealand Curriculum* and *Te Marautanga o Aotearoa*, starting at Year 1 through to Year 13, and will form part of the Technology Learning Area.

There is an English and Māori medium pathway. This approach is world leading; the Ministry of Education are not aware of another national curriculum where digital technology has been introduced into an indigenous language curriculum.

The new Digital Technologies & Hangarau Matihiko curriculum content will build on the existing key competencies in the *New Zealand Curriculum* and *Te Marautanga o Aotearoa* to further enable young people to develop the skills and confidence to identify local and global problems and opportunities, and design and develop digital solutions in response.

Within the Technology and Hangarau Learning area of the *New Zealand Curriculum* and *Te Marautanga o Aotearoa,* two new areas have been introduced for both English and Māori medium:
- o Computational Thinking for Digital Technologies
- o Designing and Developing Digital Outcomes.

The key ideas for these areas include:
- o understanding the computer science principles that underlie all digital technologies
- o developing computational and algorithmic thinking skills
- o knowing how to develop instructions to control digital technologies and solve problems
- o understanding the digital world, how to use technologies ethically, and the implications of being a digital citizen
- o understanding how to design and operate digital devices and system.

In addition to the above, dual areas of content developed for Digital Technologies & Hangarau Matihiko, will also enable students to:
- learn about digital technologies in various situations from a Māori worldview
- demonstrate Māori values and principles to ensure that designers and users create a positive impact in their whānau, hapū, iwi, local and global environment.

How does the DT/HM curriculum link to Te Whāriki?

The new Digital Technologies & Hangarau Matihiko curriculum content will build on the existing key competencies in the *New Zealand Curriculum* and *Te Marautanga o Aotearoa*.

Te Whāriki: Early childhood curriculum, The New Zealand Curriculum and *Te Marautanga o Aotearoa* all have a similar vision for children and young people. These relate to being confident and competent learners who are able to fully participate in society. The strengthened Digital Technologies & Hangarau Matihiko content links closely to *Te Whāriki* 2017.

Te Whāriki 2017 supports the development of digital fluency and promotes:
- integrated use of digital technologies, with children experiencing a wide variety of materials and technologies in their early education, including digital devices
- the use of these technologies to access and engage with the world, including the ability to represent discoveries using creative and expressive media, including digital media, and supporting children to develop an understanding of safety and security when communicating in a digital world
- children to be increasingly capable of using a range of strategies for reasoning and problem solving.

What does this mean for Early Learning Services?

Computational thinking for digital technologies is one of the new areas being introduced into the school curriculum. Computational thinking is a problem solving process that includes a number of characteristics and dispositions. It enables a student to take a complex problem, understand what the problem is and formulate possible solutions. This information is then presented in a way that is understood by a computer.

In early learning services kaiako can be intentional in the role they play in supporting children to develop skills in algorithmic thinking. An algorithm is a plan, a set of step by step instructions to solve a problem. The learning opportunities provided in early learning services can support children's early understanding of this concept, such as:
- dressing oneself
- following a recipe
- planting seeds
- using poi.

Supporting children to develop an understanding of the process they are following and the order in which it is undertaken is an algorithm. In later learning these algorithms are used as a starting point for creating a computer programme.

Designing and developing digital outcomes is about understanding that digital systems and applications are created for humans by humans. They develop increasingly sophisticated understandings and skills related to designing and producing quality, fit-for-purpose, digital outcomes. In early learning services kaiako could encourage children to:

- o consider what digital device is most appropriate to use in different situations
- o develop an awareness of some computer applications and their purpose.

In an early learning context this approach should be integrated into the curriculum, build on children's prior knowledge and encourage critical thinking skills. *Te Whāriki* should be used as a lens to guide kaiako practice and to inform the development of a responsive, child-centred curriculum.

What is important to note here is that a lot of learning in Digital Technologies & Hangarau Matihiko doesn't require a digital device – it focuses on digital thinking and ideas which, particularly when working with young children, can be achieved in a range of non-digital environments.

Across the learning pathway
Consideration is being given to this initiative and how it relates to learners across the learning pathway. The MOE is currently designing a variety of interventions in the Digital Fluency programme using a pathway approach and is looking for opportunities to connect with the early learning sector. One current initiative is that early learning services who are members of Kāhui Ako will be able to apply for Professional Learning and Development with a focus on Digital Fluency.

(Digital technologies & Hangarau Matihiko – How this links to ECE. *Swings & Roundabouts,* Summer 2017*.)*