

IMPLEMENTATION SUPPORT TOOL

Supporting a future-focused journey

Digital technologies in the
revised Technology Learning Area

**Is your school ready to
teach this from 2020?**






What, why and how

This tool gives a model process and plan to support schools with teaching the revised Technology Learning Area. It has been made for school leaders, school teams, clusters of schools and boards of trustees to help with change planning.

What do you need to know before using this tool?

In 2017, the national curriculum was revised to explicitly include digital technologies learning. The Ministry of Education expects that, by 2020, schools will be teaching from the revised Technology Learning Area. This tool has been made for those using The New Zealand Curriculum as their national curriculum framework.  #1

Why was there a curriculum change to the Technology Learning Area?

This is about preparing children and young people of New Zealand to thrive in a transforming digital world. Ensuring all of our young people develop the knowledge, skills and capabilities to deal with new problems and opportunities as they arise and be safe while doing so. This is to support the next generation of influencers, creators and thinkers to design digital technologies solutions – and make the world a better place.

We want to ensure that all of our tamariki and young people have the learning opportunities to gain the new specific technological skills and capabilities required for the future of work – an estimated 85% of jobs that will exist in 2030 haven't been invented yet* But more than this, we want to support children and young people to develop a strong sense of digital citizenship as people relate to one another in a way unlike before. This is why we need to focus digital technologies learning around the wellbeing of ourselves and others.

We are on this journey together to improve outcomes for all learners of Aotearoa.

Change takes time, and each school will be starting from a different stage on their journey to confidently and capably teach the revised Technology Learning Area.

No school needs to feel like they are on their own. We encourage schools to collaborate. Different schools will have different approaches to this change – whether your school is large or small, or you work as part of a network – it is about what works for you and your learners.

Together, we are committed to this mahi to make sure that all tamariki and young people of Aotearoa are positioned to capably take part in our evolving digital society and thrive in the future. This journey will continue to evolve from this point.

CHECK ALERT!

#1 The New Zealand Curriculum

The New Zealand Curriculum is a framework that sets out national requirements and expectations of learning.

Local curriculum is where the national expectations of learning are then shaped so that it has local context and meaning to learners.

School leadership works out how to shape and design their local curriculum by collaborating with parents, whānau, hapū, iwi and the wider community.

Teachers create teaching and learning programmes that fit their local curriculum direction.

* See final section for The New Zealand Curriculum requirements in the Technology Learning Area.

* Dell Technologies and IFTF. 2017. The Next Era of Human/Machine Partnerships: Emerging technologies' impact on society & work in 2030. Institute for the Future (ITF). URL: https://www.delltechnologies.com/content/dam/delltechnologies/assets/perspectives/2030/pdf/SR1940_IFTFforDellTechnologies_Human-Machine_070517_readerhigh-res.pdf

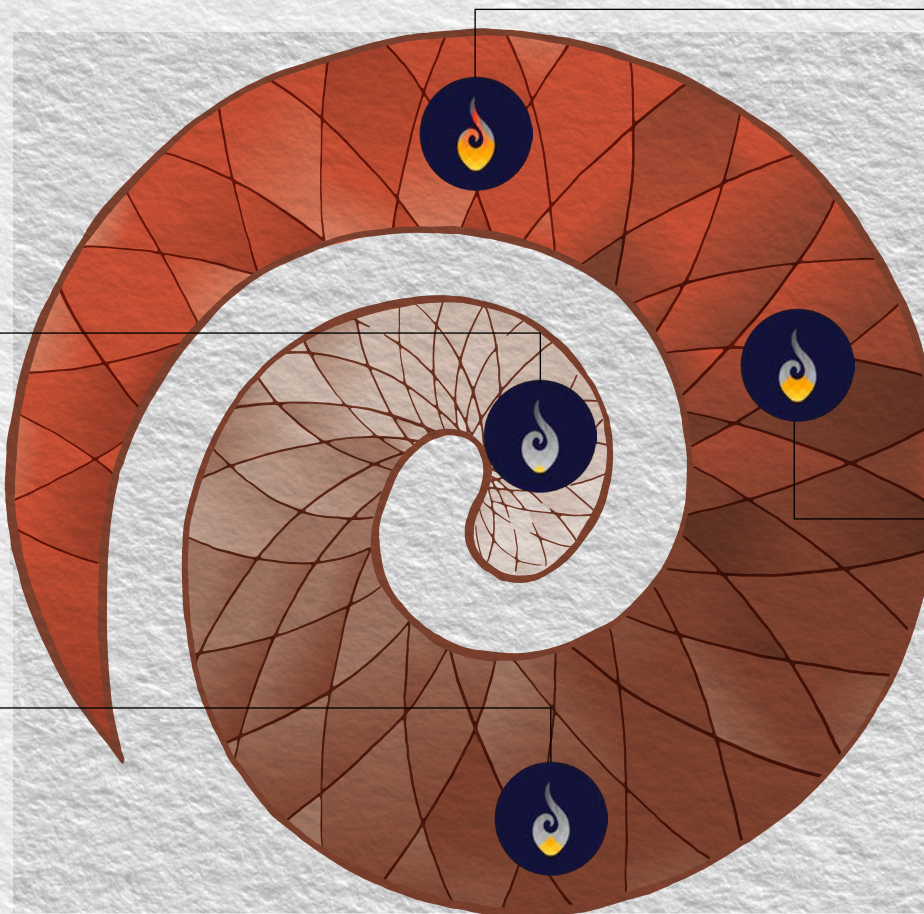
Is your school ready?

NOT YET STARTED

- Preparing to start

NOW UNDERWAY

- Getting organised for change
- Unpacking the detail
- Getting to know where our people are at, and what other schools are doing
- Polishing off our high-level plans



LEADING AND INNOVATING

- Formally prioritising future-focused learning for all in strategic documentation and resource planning
- Creating a culture of growth, collaboration, innovation and sustainable practices
- Feeling confident with an Ako style of teaching and learning

2020 READY

- Making change planning visible
- Ensuring all can see and understand the future direction of your school's curriculum
- Continuing to get into the detail of the curriculum content and growing your own understanding
- Supporting ongoing professional growth

School leaders have the opportunity to make the revised Technology Learning Area cross-curricular, as part of their local curriculum. It is not something that is expected to be taught in isolation but rather integrated into an authentic learning context. Look for opportunities to weave this new curriculum content through teaching and learning that's happening already.

How to use this tool

There are four levels:

1. Not yet started
2. Now underway
3. 2020 ready
4. Leading and innovating

This tool gives a model process for schools to follow.

Find where your school is at by checking the detailed action steps listed against that level, later in the tool.



You and your team can then work through the suggested list of steps from that point.



Not yet started

Preparing to start

As a **leadership team**, you have:

- yet to consider learning beyond the ideas of e-learning, digital fluency and teaching learners to use devices – but are preparing to start your learning journey  **#2**
- reviewed the revised Technology Learning Area as part of The New Zealand Curriculum to find out what this new curriculum content is about  **#3** [nzcurriculum.tki.org.nz>The-New-Zealand-Curriculum>Technology](https://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Technology)

Then, having reviewed the technology learning area, you will have seen that progress outcomes are being used to describe learning progression. This feature will be new to many. The goal for learners is to make sure that by the end of year 10, students have progressed their learning to progress outcome 5 for Computational thinking for digital technologies and progress outcome 3 for Designing and developing digital outcomes.

[nzcurriculum.tki.org.nz>The-New-Zealand-Curriculum>Technology>Progress-Outcomes](https://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Technology/Progress-Outcomes)

(see progress outcomes on page 14)

- have chosen a person or group to lead this curriculum change at your school.



CHECK ALERT!

#2 This new learning is not about using the 'Enabling E-learning framework'. E-learning is defined as learning and teaching that is facilitated by or supported through the appropriate use of information and communication technologies (ICTs).

#3 The new curriculum content is about teaching learners how digital technologies work then having them use that knowledge to design digital solutions that make a positive difference in our world.

A digitally fluent person can decide **when** and **why** to use specific digital technologies to achieve a specific task or solve problems.

A digitally capable person **can create** their own digital technologies solution.

We are committing to a new and important area of contemporary and future teaching and learning.



Storytelling

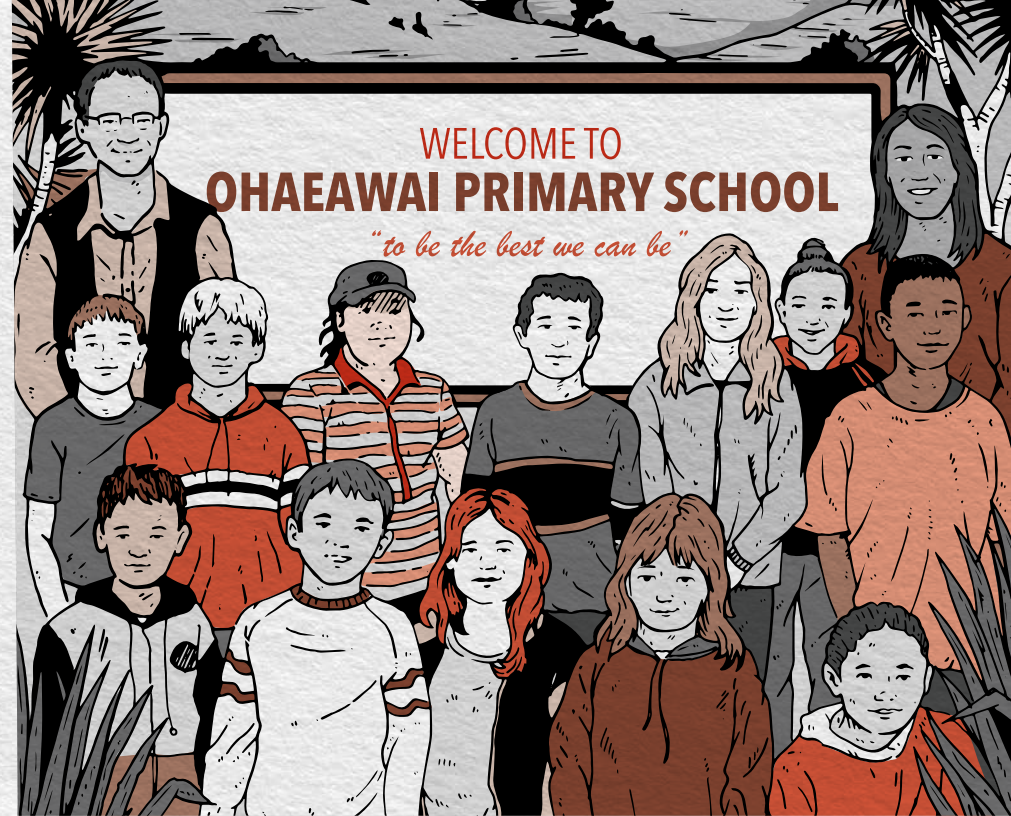
Throughout this tool, we'll show you how one school introduced digital technologies curriculum content into their teaching and learning.

Ohaewai Primary School in Northland is a small, 160-student rural school. One of their classes has been set the challenge of discovering more about the famous Battle of Ohaewai - to find out more about it, and present their findings back to the school at the end of the term.

The learning objective is to see how the same event can be seen differently by different people. At the same time, the learners need to start thinking about how they could best present their story.

How digital technologies fit

- step-by-step thinking process
- planning for the needs of the end user when telling their story
- considering the tools they have available to help them bring the story to life.






Now underway

Getting organised for change

As a **leadership team**, you:

- recognise this new learning as part of your school's strategic plans and goals
- reviewed your current professional development practices relevant to digital technologies
- reviewed your local curriculum to see the fit with the revised Technology Learning Area and are preparing a plan on how to implement this.  #4

CHECK ALERT!

#4 Want more information about what a school's 'local curriculum' means and would like help to do this? Refer to these Leading Local Curriculum guides and/or to the Local Curriculum Design Tool.

[nzcurriculum.tki.org.nz>Strengthening-local-curriculum>Leading-Local-Curriculum-Guide-series](https://nzcurriculum.tki.org.nz/Strengthening-local-curriculum/Leading-Local-Curriculum-Guide-series)
curriculumtool.education.govt.nz

Unpacking the detail

As the **leadership team / curriculum leaders**, you:

- have read the revised Technology Learning Area – and unpacked what might need to change in your school
- had a look at the kinds of professional supports that are available and decided which ones look relevant for your school. (The Ministry of Education offers a professional support package here [technology.tki.org.nz>Technology-in-the-NZC>Digital-technologies-support](https://technology.tki.org.nz/Technology-in-the-NZC/Digital-technologies-support).)

For an overview, see pages 12–14 of this *Implementation Support Tool*. Use helpful exemplars and resources on Technology Online:

[technology.tki.org.nz>Technology-in-the-NZC>CT:Progress-outcomes-exemplars-and-snapshots](https://technology.tki.org.nz/Technology-in-the-NZC/CT:Progress-outcomes-exemplars-and-snapshots)

[technology.tki.org.nz>Technology-in-the-NZC>DDDO:Progress-outcomes-exemplars-and-snapshots](https://technology.tki.org.nz/Technology-in-the-NZC/DDDO:Progress-outcomes-exemplars-and-snapshots)

Getting to know where your people are at and what other schools are doing

As the **leadership team / curriculum leaders / change leaders**, you have:

- connected with your teachers to determine their prior knowledge, capability and confidence.

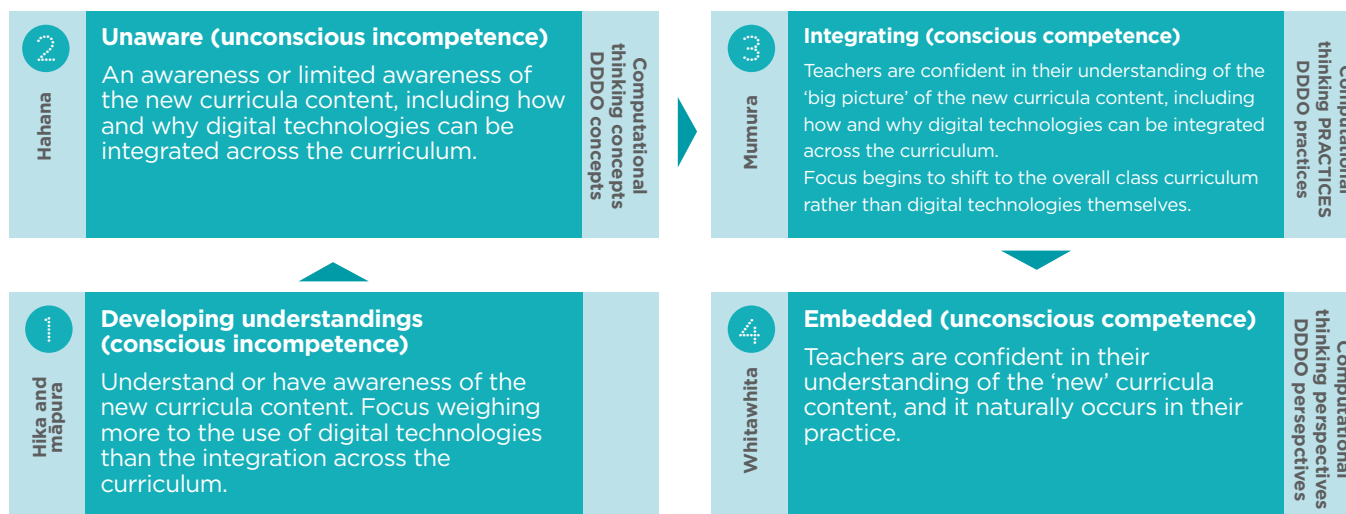



Figure 1: The Raranga Matihiko Kaiako Framework

This framework is underpinned by the conscious-competence model. Howell, W.C. and E. A. Fleishman (eds.), (1982). *Human Performance and Productivity*. Vol 2: Information Processing and Decision Making. Hillsdale, NJ: Erlbaum.

- done a 'stocktake' or 'audit' of what digital technologies teaching you were already doing across your curriculum and found some pockets of learning that looked similar to the new curriculum content
- talked to your students to find out what they know and can do already – some have experienced digital technologies learning and may well be self-motivated in this area  #5
- have talked to other schools about their plans or what they are already doing and are encouraging your teachers to do the same. You have also talked to other local experts to gain more knowledge and ideas.

Find helpful case studies, videos and Networks of Expertise groups here on the Technology Online website:

[technology.tki.org.nz>Technology-in-the-NZC>Digital-technologies-support>DT-professional-learning](https://technology.tki.org.nz/Technology-in-the-NZC/Digital-technologies-support/DT-professional-learning)

Polishing off your high-level plans

As the **Board of Trustees**, and the **leadership team**, you:

- have included this new learning as part of your school's strategic plans and goals
- have decided how you will resource this change
- have a plan to upskill your teachers using professional supports (This plan is based around how your school teaches technology, and then what you need to do to support your teachers. The plan will also cover a current baseline – detailing what digital technologies learning is going on and where your students are at with this.)
- share information with the community.



The learners first visited the Museum of Waitangi to learn about the early navigators like Kupe, the early interactions between Māori and Europeans and events surrounding the Treaty signing – including the Battle of Ohaeawai.

CHECK ALERT!

#5 Not sure what this digital learning could refer to?

For example, students may have attended Code Club Aotearoa codeclub.nz. Or they may have created their own digital solution to address a problem – like an app or a game to help a good cause.

Around the country, tamariki and young people are designing: online games to promote awareness around

mental health, pollution and climate change; apps to help new students get familiar and settled at a new school; drones that are helping to look after the environment and robots that can lift recycling bins to help elderly citizens. Get more ideas of digital solutions from the 'Tech talks' showcase here:

[education.govt.nz>our-work>changes-in-education>digital-technologies-and-hangarau-matihiko-learning>information-for-students](https://education.govt.nz/our-work/changes-in-education/digital-technologies-and-hangarau-matihiko-learning/information-for-students)

How digital technologies fit

- refining initial ideas with increasing gathering of information
- storing and retrieving their work from cloud-based programmes.



2020 READY

Change planning is visible

As the **Board of Trustees** and **school leader**, you have:

- digital technologies learning in your strategic goals and planning
- a plan to resource this change
- a plan to evaluate progress, which will include appropriate measures to determine students' development against the progress outcomes.



CHECK ALERT!

#6 The progress outcomes are there to guide teaching and shouldn't be used as a formal assessment tool. Progress outcomes give a roadmap for learning – and the journey is important! Make sure you are teaching the big ideas that are at the right level for your learners.

As this is new learning and a journey for all, we expect that teaching confidence and capability will grow as time goes on.

[nzcurriculum.tki.org.nz>The-New-Zealand-Curriculum>Technology>Progress-Outcomes](https://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Technology/Progress-Outcomes)

Your future direction for curriculum is visible to all

As the **school leader / leadership team**, you:


- have informed parents and whānau and the community about the change to the national curriculum and let them know how you plan to include this in your school's curriculum
- are trialling teaching the revised Technology Learning Area in some classes across the school, and are creating connections to other learning so that it is cross-curricular. Teachers create learning experiences that connect ideas across the breadth of the curriculum. This includes teaching technology across learning areas and simultaneously developing key competencies: managing self, relating to others, participating and contributing, thinking, and using language, symbols and texts
- are connecting with parents, whānau, industry, and iwi and community contacts to look for real-life learning opportunities with students.

Continuing to get into the detail of the curriculum content and growing your own understanding

As the **school leader / leadership team**, you:

- are participating in professional development and support – and are encouraging others to keep growing: [technology.tki.org.nz>Technology-in-the-NZC>Digital-technologies-support>DT-professional-learning](https://technology.tki.org.nz/Technology-in-the-NZC/Digital-technologies-support/DT-professional-learning)
- are encouraging all those teaching years 1-10 and middle leaders to access professional learning on the revised Technology Learning Area
- are encouraging all those teaching years 11-13 to also access professional learning on the revised Technology Learning Area. Current specialist technology teachers do have a leadership role to play in teaching students who wish to specialise further. Over time, all students will expect an integrated approach across their learning areas. This will need to build on what they have learnt in years 1-10.

As **curriculum leaders**, you:

- are mapping the progress outcomes across your school curriculum – this is helping to make connections across learning  **#6**
- have developed a teaching digital technologies curriculum content resource plan – using what's set out in the progress outcomes as the guide
- monitoring teaching and learning to gauge effectiveness.

Supporting ongoing professional growth

As the **leadership team / change leader**, you have:

- checked how everyone is doing turning their professional development into effective practice and adjusted plans accordingly. You are encouraging teachers to use Teaching as Inquiry to support their thinking, see Figure 2 below
- encouraged your teachers to network internally and across schools and Kāhui Ako to support the curriculum change implementation journey
- reported to the Board about progress being made in curriculum development, effective teaching and student progress.

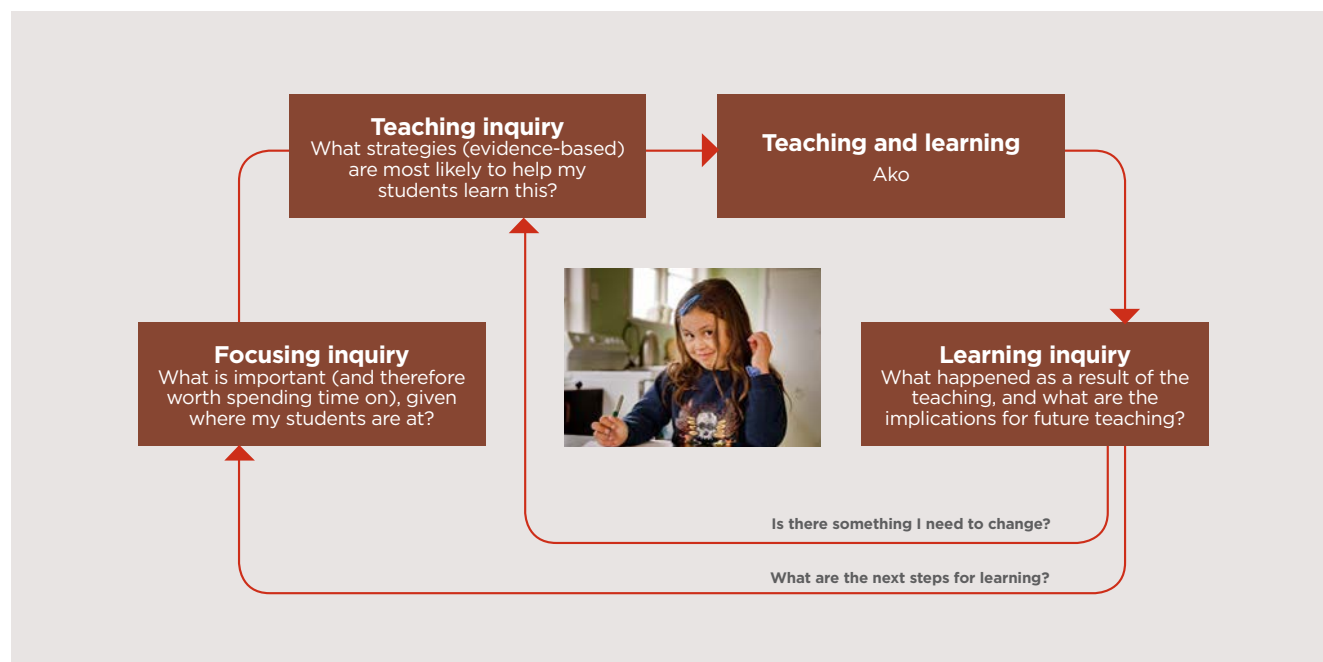


Figure 2 - Teaching as Inquiry

<http://nzcurriculum.tki.org.nz/Curriculum-stories/Case-studies/Teachers-as-learners-Inquiry/Teaching-as-inquiry#4>



Next, they visited the Carving Studio in the Waitangi Treaty Grounds, where they heard the stories of the battle that have been told in the carvings. They also learnt more about the Treaty of Waitangi signing.

How digital technologies fit

- refining initial ideas to bring in new perspectives
- storing and retrieving their work from cloud-based programmes
- thinking how the two points of view fit with the overall plan.

 **CHECK ALERT!**

Feeling confident with an Ako style of teaching and learning

As teachers, you:

- have talked to your students, and you and they feel comfortable using digital technologies vocabulary, like for example: algorithm, inputs, outputs, sequence and iteration, binary and debug
- use student expertise in the classroom and where possible allow students to design curriculum learning activities.

Formally prioritising future-focused learning for all in strategic documentation and resourcing

As the **Board of Trustees**, you have:

- prioritised digital technologies learning in your strategic goals and planning
- a plan to resource full implementation across school
- a plan to evaluate progress.



Back in the class, the students gather their thoughts and ideas together in a working group. They start a storyboard that helps them with both their narrative and what tools they can use to bring their stories to life for their audiences.

How digital technologies fit

- developing a step-by-step process for telling the story sequentially
- exploring digital tools available to help them tell the story – the tools they selected are all freely available online.

rarangamatihiko.com>teacher-resources

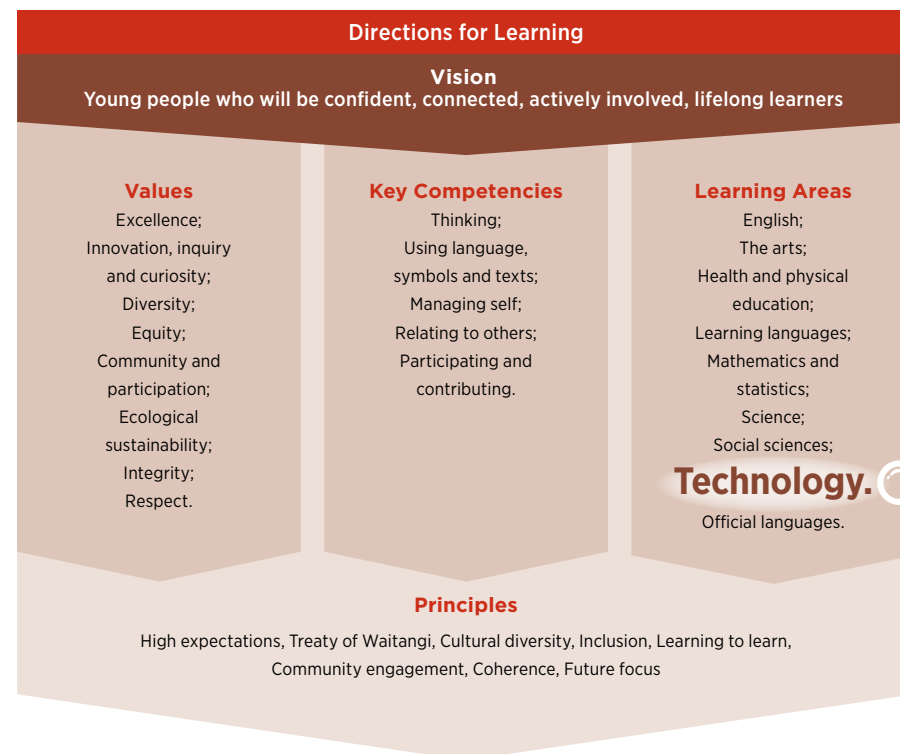


Once their plan of attack is agreed, the learners begin the fun part – bringing the story to life! The great thing is the range of tools available means there are choices for where learners' interest or passions lie.

How digital technologies fit

- developing a piece to camera where learners take the role of a news crew and presenter
- creating a traditional pā using Tinkercad design software
- animating a new output, using models the students have made.

The New Zealand Curriculum

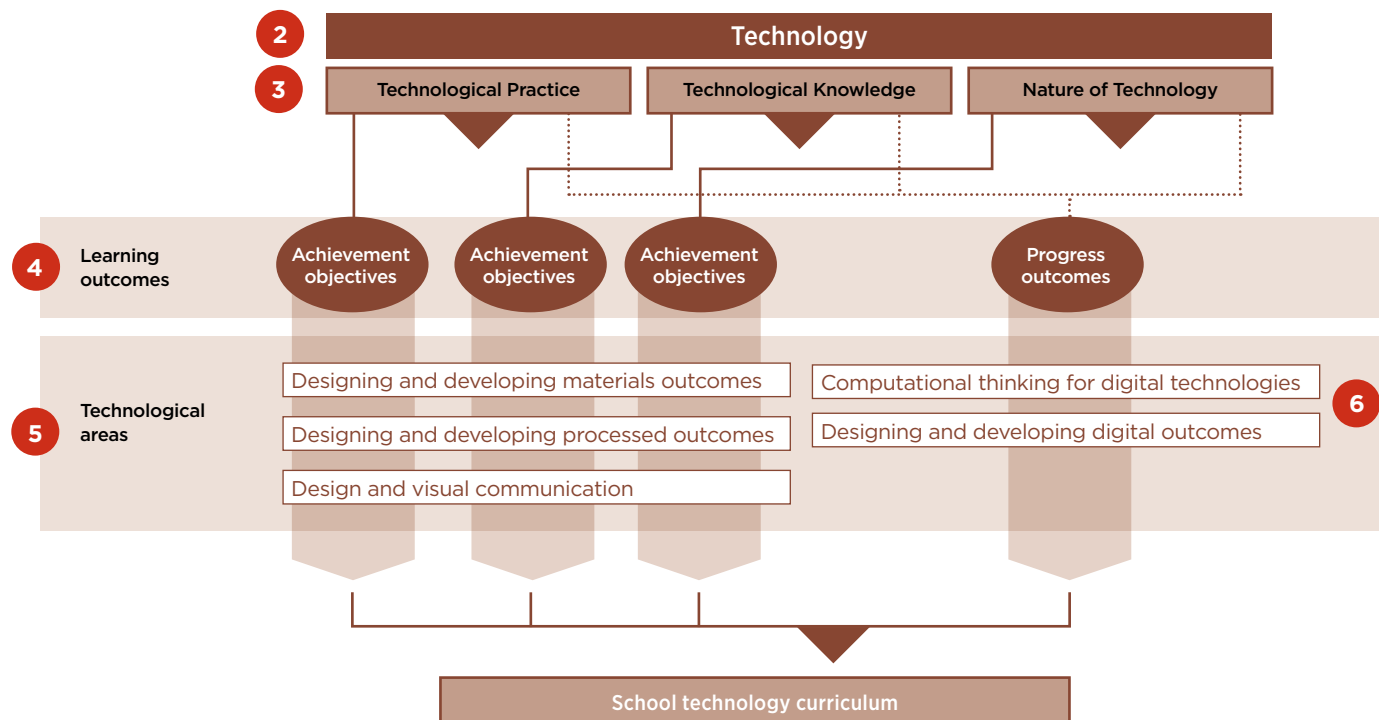


1 The School Curriculum

Curriculum levels 1–8

- 1 Each board of trustees through the principal and staff, is required to develop and implement a curriculum for students in years 1–13: that is underpinned by and consistent with the principles, in which the values are encouraged and modelled, that supports students to develop their key competencies, and that provides all students with effectively taught programmes of learning in each of the learning areas – including the Technology Learning Area.

Technology in the curriculum



- 2 Each school is required to have its own Technology Curriculum. Teachers will plan ways to link across the strands and technological areas – and look for cross-curricular learning opportunities as well – accessing relevant knowledge and skills from other learning areas to build on their developing key competencies. How you choose to deliver that curriculum across your school or across your year groups is up to you.
- 3 The strands show the breadth of the learning area, broken into parts. In order to specialise further in technology learning, you need to have this full grounding of knowledge. A technology curriculum should make sure it covers all three strands: technological practice, technological knowledge and nature of technology. The strands are inter-related. And so, when teaching and learning programmes are being developed, the strands should be integrated together.
- 4 The achievement objectives describe the kinds of learning young people should experience in each of the strands.
- 5 The five technological areas provide contexts for technology learning and are also inter-related. By offering a variety of contexts, teachers help their students to recognise links between technological areas.
- 6 Two of the five technological areas are digital technologies – designing and developing digital outcomes ‘DDDO’ and computational thinking for digital technologies ‘CT’, and are supported with ‘progress outcomes’.

7 If you are teaching students in years 1-10 – make sure your technology curriculum gives the opportunity to learn from all three strands and the five technological areas. The goal is to make sure that by the end of year 10, students have progressed their learning to progress outcome 5 for Computational thinking for digital technologies and progress outcome 3 for Designing and developing digital outcomes. Over time, schools should support all students to achieve the outcomes expected by the end of year 10.

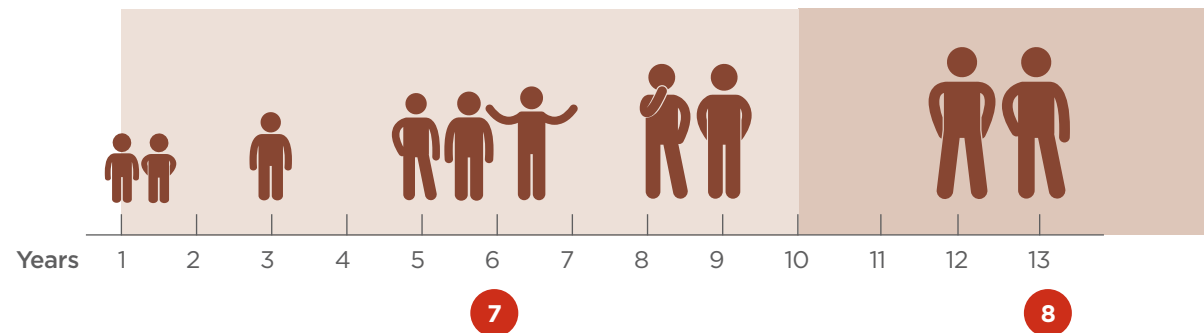
8 If you are teaching students in years 11-13 – make sure your technology curriculum gives the opportunity to learn from all three strands and the technological areas that they choose to specialise in. Students should progress in their learning from curriculum levels 6-8, and that aligns to NCEA 1-3. Students in years 11-13 work in fewer contexts in greater depth.

9 The progress outcomes describe different stages of learning over time. Along with supporting exemplars, progress outcomes are a model to support the new learning and development of expertise to be undertaken by both teachers and students.

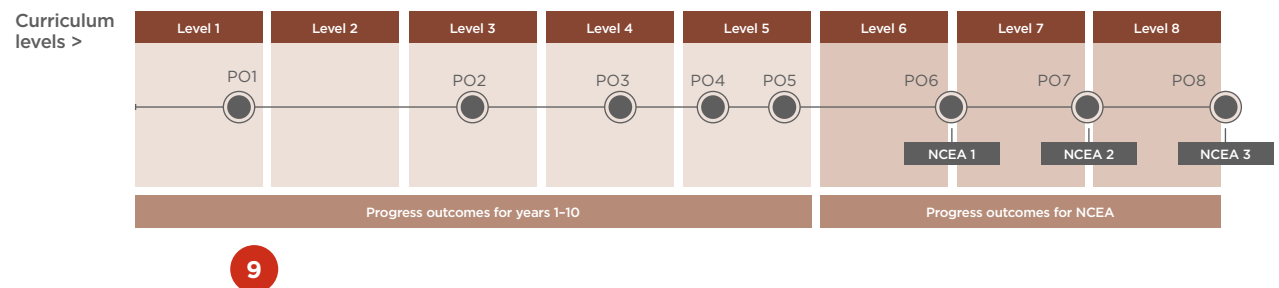
What should learners experience?

Technology curriculum: teaching and learning at schools

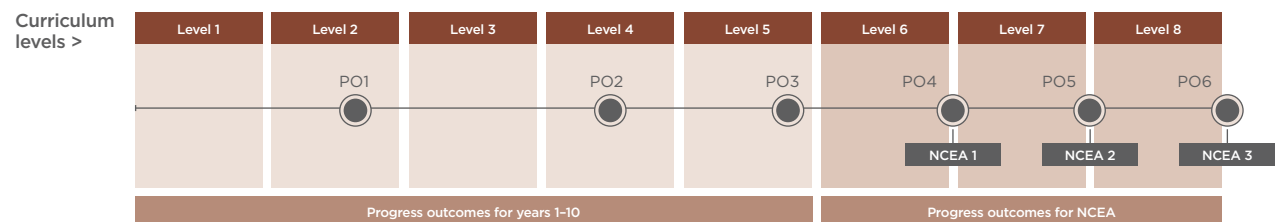
What should learners experience?



Computational thinking for digital technologies



Designing and developing digital outcomes





The big day arrives. After all that work, the learners are ready to present their story to a large audience. This includes their schoolmates, teachers, family and whānau.

How digital technologies fit

- they have developed a presentation using Google slides that features their illustrations, 3D drawings and video footage



More info:

Subscribe to Technology Online news here:

To contact the Ministry of Education, email:

Quick links to the professional support package:

services.education.govt.nz/pld/dthm/digital-technologies

services.education.govt.nz/pld/dthm/digital-technologies/regional-champions-list

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He mea **tārai** e mātou te **mātauranga**
kia **rangatira** ai, kia **mana taurite** ai ōna **huanga**.

