Connected Ako: Digital and Data for Learning

A strategy for education agencies
2023 – 2033

Te Tāhuhu o te Mātauranga
Ministry of Education

NZQA
Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Tertiary Education Commission
Te Amorangi Mātauranga Matua

N4L

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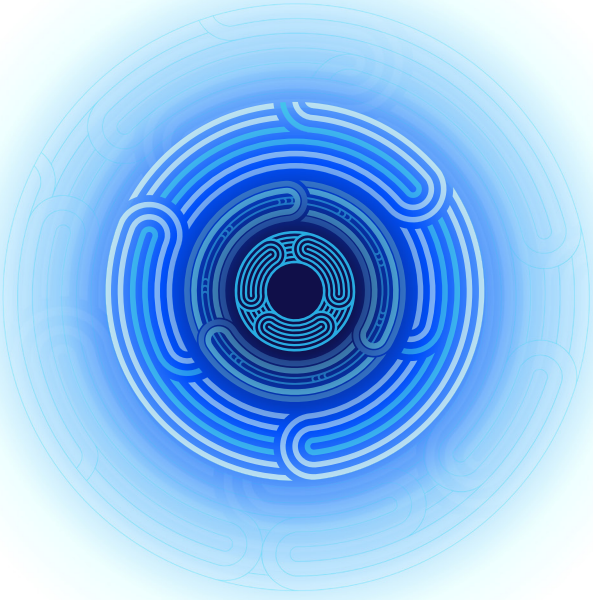
"He rangi tā matawhāiti, he rangi tā matawhānui"

A person with narrow vision has limited ideas and views. Someone with wider vision is more embracing of new things and the world before them.

About the design



Te Puna o te Whakaaro
The Wellspring of Thought

This whakatauāki speaks of the wellspring as the source of digital innovation, technology and connection. The ripples represent ako and the reciprocal flow of digital knowledge and learning between teachers, learners and the wider community.

By Randal Leach, Ngati Porou, Te Aitanga a Hauiti, contemporary Māori visual artist and educator

Contents

Executive summary

Connected Ako: Digital and Data for Learning is a 10-year strategy to guide the digital and data direction of New Zealand Government education agencies.

It draws from the Government's Digital Strategy for Aotearoa to explore the opportunities and challenges for the education sector.

It is a strategy for the Government's education agencies, led by the Ministry of Education (MOE), New Zealand Qualifications Authority (NZQA) and Tertiary Education Commission (TEC) which will form a plan of action based on the strategy.

The broader education agencies – Education New Zealand (ENZ), Education Payroll Limited, Education Review Office (ERO), Network for Learning (N4L), Teaching Council, Te Aho o Te Kura Pounamu (Te Kura) and Research Education Advanced Network New Zealand (REANNZ) – contributed to the strategy and will use it to inform and guide their own plans and decisions.

Te matawhānui
The vision

Learners and educators can thrive – live, learn and work – in the digital world

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People are digital and data capable, contributing to personal, community and New Zealand's growth

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Learning, teaching, assessment and research make best use of data and digital

Ngā pūtake
The foundations

Te Tiriti

Giving effect to Te Tiriti o Waitangi anchors the strategy, to benefit all New Zealanders

Digital and data are powerful tools to give reality to partnership, participation and protection. Agencies will work with Māori and wider government to establish a framework for progressing digital and data initiatives that give effect to Te Tiriti.

Equity

Trusted digital and data services can help all learners and whānau, educators and providers, to flourish

Digital approaches and the right use of data can improve equity. Agencies will work with partners across government, with education providers, iwi, Pacific peoples, communities and with business on long-term, sustainable approaches to improve equity.

Agencies working together

By identifying long-term aims and outcomes, education agencies can help educators, learners and providers reap the benefits of digital and data

Education agencies have distinct responsibilities for different parts of the education sector. We bring different areas of expertise and accountability. We will work to give coherence and leadership to the sector.

Te aronui
The focus

Te aronui	Te mahi	
Connection Building on the foundations		**Te ao Māori in digital design** We weave together the insights of te ao Māori and the power of digital and data.
		Using data to make a difference A trusted data system can shape education for individuals, whānau, education organisations and system-wide improvement.
		Safe and effective digital services Secure, future-ready digital solutions are accessible, streamlined and cost-effective.
Commitment How we work		**Engaging widely and effectively** We will work with many to bring coherence and leadership – including education providers, iwi, technology providers, businesses and communities.
		Future-focused leadership Emerging trends and technologies can benefit learning and teaching, with expert scanning, planning and trialling.
Capability To deliver		**Transformed learning, teaching, assessment and research** Learning, teaching, assessment and research can be transformed by digital and data to lift wellbeing, maximise capability, and improve learning outcomes.

From strategy to action

Upon adoption of the strategy, the key agencies, MOE, NZQA and TEC, will develop an action plan of work and priorities.

Broader agencies in the education whānau will use the strategy to inform and guide their own plans.

As the core agencies plan the work ahead, they will consider a wide range of work programmes, some already underway, some envisaged by individual agencies.

These include:

Te ao Māori in digital design

Action: agree processes to embed te ao Māori in digital design and delivery

Using data to make a difference

Action: design digital identity and deliver sector data framework

Safe and effective digital services

Action: improve digital services and support for schools and kura and cyber security assurance across all education organisations

Engaging widely and effectively

Action: work with diverse stakeholders on building inclusive digital approaches

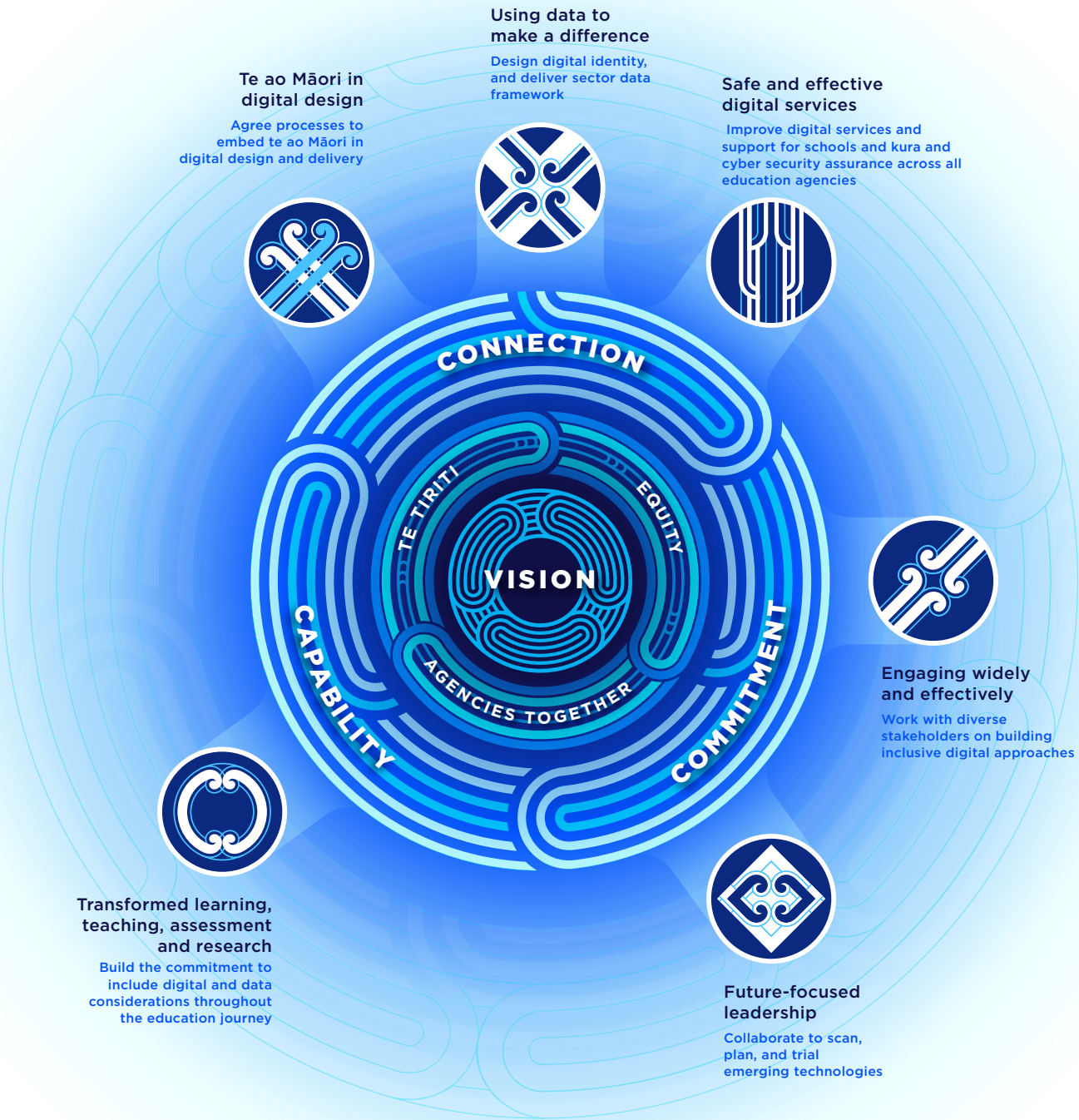
Future-focused leadership

Action: collaborate to scan, plan, and trial emerging technologies

Transformed learning, teaching, assessment and research

Action: build the commitment to include digital and data considerations throughout the education journey

Strategy at a glance



Why have a strategy?

This strategy addresses digital and data approaches for New Zealand's education agencies for the coming decade.

It is commissioned by the Education Sector Stewardship Forum, the Chief Executives of education agencies and associated entities.[1] While education agencies advance their own work programmes, we are most effective when there is agreement on the high-level direction and aims of the education digital ecosystem.

When developing the scope of the strategy there were many important considerations:

Barriers to access

- Ensuring learners of all ages can benefit from high quality online and flexible learning opportunities

Shared data

- A trusted data ecosystem with the learners and those who support their learning at its heart

Coordinating digital approaches

- A planned deliberate approach to promoting digital innovation, partnering with educators, interested stakeholders and the EdTech sector to support New Zealand's education system and create international economic opportunities

Lessons from COVID-19

- Capturing and learning from the innovations and disruptions of the pandemic

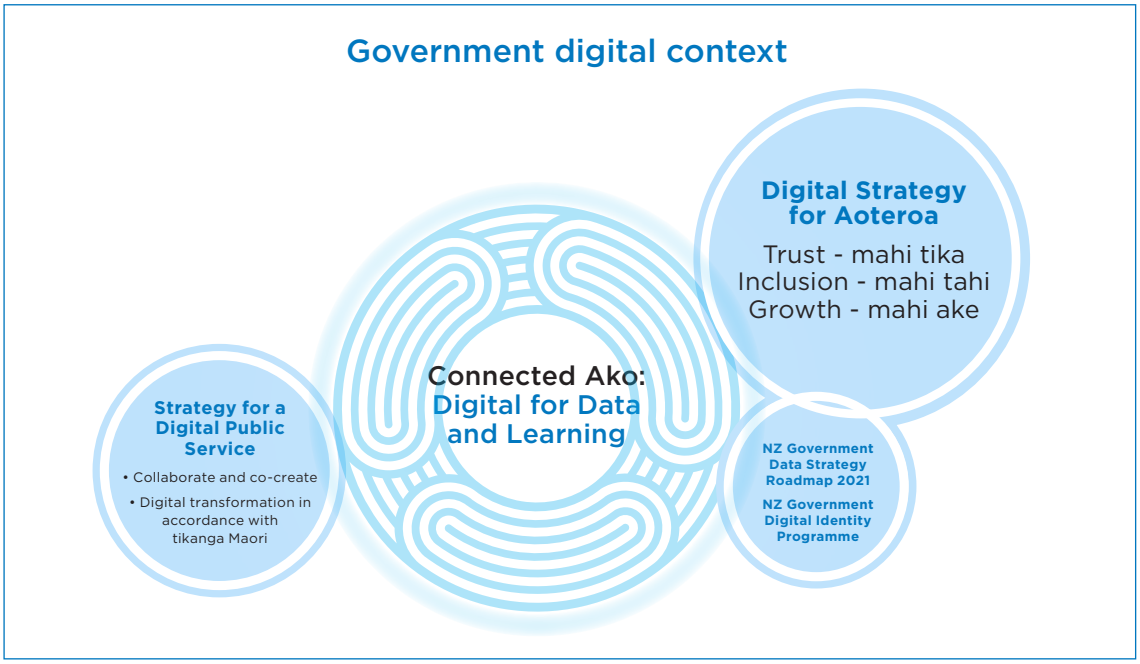
Cyber security

- Protecting learners, providers and the integrity of data

Education in context

- Alignment with the Government's overarching Digital Strategy for Aotearoa, recognising that the education system is a vital link to ensure current and future learners are equipped for digital futures in their lives and careers

[1] Ministry of Education (MoE), New Zealand Qualifications Authority (NZQA) and Tertiary Education Commission (TEC) and supported by Education New Zealand (ENZ), Education Payroll Limited, Education Review Office (ERO), Network for Learning (N4L), Teaching Council, Te Aho o Te Kura Pounamu (Te Kura) and Research Education Advanced Network New Zealand (REANNZ).



What do we mean by digital? We are following the approach adopted in the Digital Strategy for Aotearoa:[2]

> *"When we talk about "digital" in this strategy, we are talking about computer hardware and software, the infrastructure that supports it, and the data that is so integral to these systems. The Strategy also talks about rules and policies governing digital technologies and their applications, and the wider socio-technical systems that digital sits within. This means we are not just focusing on the digital technologies themselves but also how they are designed and implemented and who gets a say, the data that feeds in and is created, the many ways they are used, and the resulting social, financial, environmental and cultural impacts."*

Through the Digital Strategy for Aotearoa, the New Zealand Government has outlined its vision for New Zealand's digital future with the three themes – mahi tika (trust), mahi tahi (inclusion) and mahi ake (growth). The digital economy is identified as a growth opportunity for New Zealand. Managed well, it provides an environmentally sustainable opportunity. In addition, Māori innovation in digital permits a unique contribution to the world as well as to the New Zealand economy.

In addition, we have considered the Government's Strategy for a Digital Public Service, and the work-streams that flow from it.[3] Our strategy shares its premise:

> *"Digital is about more than new technologies and improving IT systems. It also means doing things differently, using new mindsets, skills, data and technologies to overcome barriers and better meet New Zealand's needs."*

[2] Digital Strategy for Aotearoa
[3] Strategy for a Digital Public Service

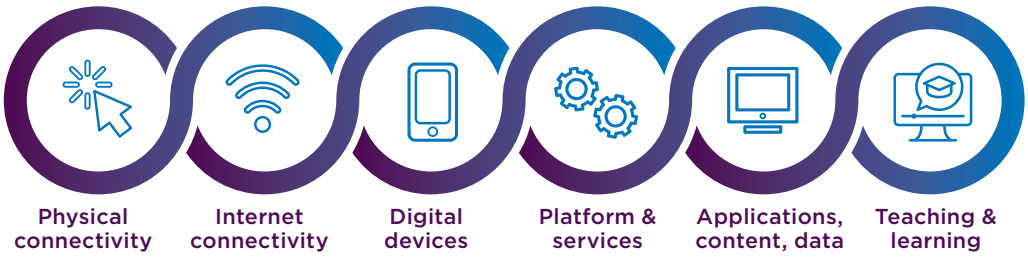
This digital and data strategy builds on the Education System Digital Strategy: Transforming Education for the Digital Age 2015-2020, which built a comprehensive view of digital developments in New Zealand education at the time. What has changed since then?

- Technology has advanced rapidly.
- Education is now very strongly focussed on giving effect to Te Tiriti o Waitangi.
- We have a stronger focus on working for equity and inclusion.
- Learners and their whānau are firmly at the centre of education considerations, initiatives and decisions.
- We expect continued disruptions caused by climate change.
- We have learned a great deal from the experiences of education during a time of global pandemic.

The strategy builds on the real-world experience of the early 2020s when COVID-19 disrupted education worldwide. The pandemic showed the potential and the limitations of existing education systems trying to pivot to different education delivery.[4]

We now better understand how all parts of the digital ecosystem impact education and effect improved outcomes for learners.

Digital ecosystem required for learning and teaching[5]



[4] Wenmoth. 2021. Evidence Review: Digital technologies in education during the COVID-19 pandemic
[5] Ibid

Education is increasingly enabled by digital technologies. They can inform and transform learning, teaching, assessment and research. They are the administrative and delivery engine of education agencies and most education providers. They provide both opportunities and risks to be managed.

New Zealand's education system is diverse and devolved. It includes: the early childhood sector with mainly private providers; public, private and integrated primary, intermediate, composite and secondary schools; the tertiary sector of universities, wānanga, Te Pūkenga - New Zealand Institute of Skills and Technology, private tertiary establishments, and tertiary organisations, including Ohu Mahi (Workforce Development Councils). Māori education, including full Māori medium at different levels of the system is a unique part of our education system's diversity. Universities, wānanga and Te Pūkenga have academic freedom and institutional autonomy as set out in the Education and Training Act 2020.

The diversity, self-management and autonomy of the sector is a strength; it also adds complexity and cost to digital approaches.

New Zealanders live in an increasingly digital world. The education system at all levels has a responsibility to prepare New Zealanders as citizens of that world. Digital competence, literacy, fluency and agency are required in order to thrive.[6]

Greater levels of digital fluency and digital agency equip people to realise further benefits and opportunities in their life, accessing services, creating new ones, growing employment and furthering learning as a life-long endeavour.

[6] Wenmoth. 2020. Digital Agency

New Zealand has a strong track record of supporting digital technologies in education[7] but there are continual challenges to address.

The Research and Education Advanced Network New Zealand (REANNZ) was implemented in 2005 to connect tertiary institutions, research organisations, libraries, and museums with the world for research and education purposes.

In schools, successive initiatives since the early 1990s have helped teachers and learners have access to technologies that can support education. High-speed broadband and managed services provided through the Network for Learning (N4L) from 2012 and through a range of educationally focussed national and international providers, have given many learners access to digital services that enrich education.

The Smart Data and Digital Technology Project (OECD/CERI) survey of 2022 (to be published) will give an overview of the current state of digital provision in New Zealand education in comparison with other OECD countries.

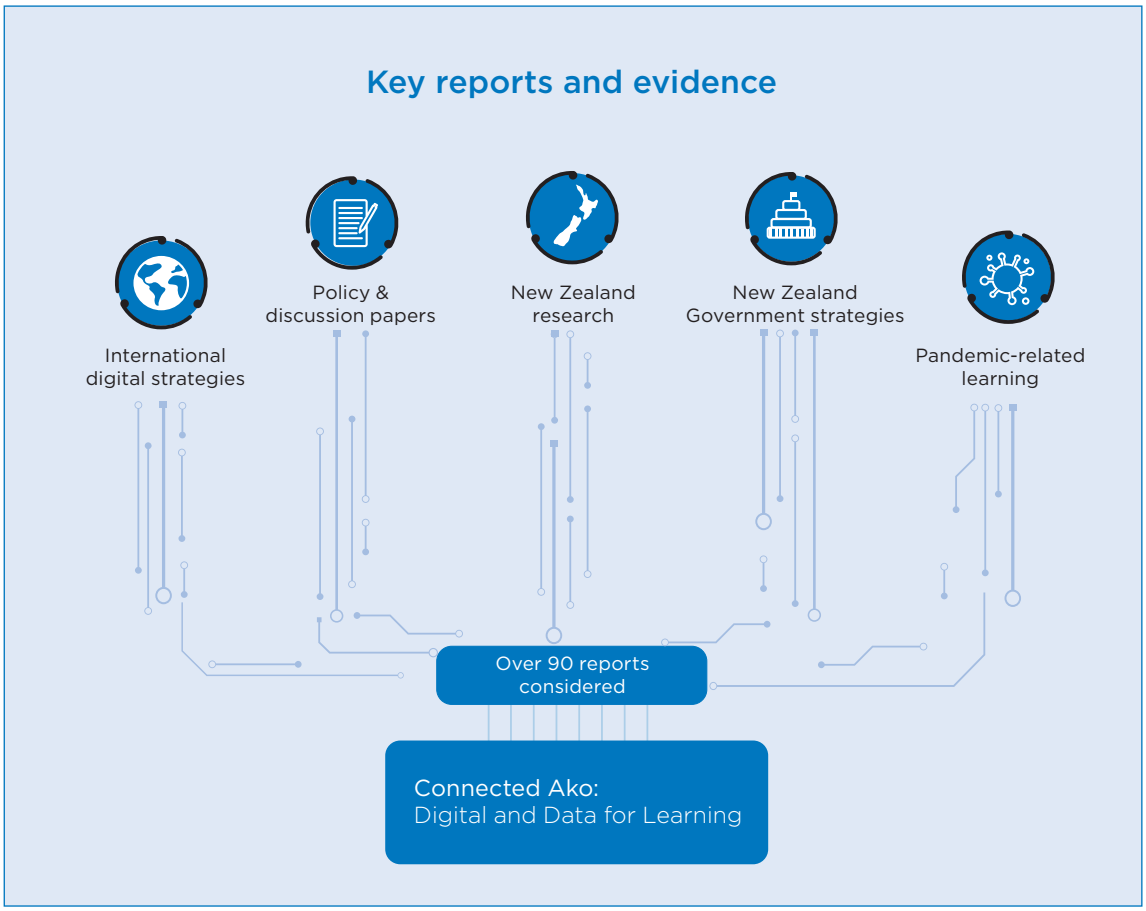
An environment scan was undertaken in 2022 to examine global, national and local trends impacting society. These include the nature of work, climate change and demographic and technological shifts.

[7] Appendix 2 – Timeline of IT in New Zealand education

Environment scan[8]

	Political	Economic	Employment	Technological	Legal	Environmental	Social	Education
Global	• Threats to democracy • Political uncertainty • Sectarian challenges Terrorism (incl. cyber and bio) • Changing balance of power and alliances • Pandemics / global health	• Changing world of work • Economic inequity • Inflation and economic uncertainty • Supply chain disruption • Innovation economy • International marketplace • Loss of the 'middle' income earners • "Green jobs" for the future	• New occupations • Changes in skill sets required • Talent war • Outsourcing • Gig / portfolio Workers • Zero-hour contracts • Tech skills challenge • Demand for digitally skilled employees • Multi-disciplinary teams	• 4th Industrial Revolution • Ubiquitous, high-speed internet with blackspots • Cloud-based technologies • Big data /analytics • Artificial Intelligence • Cloud technology • Blockchain • Gaming, gamification • Robotics • Renewable energy sources	• Jurisdiction and sovereignty of nation states • Global corporates - Tax avoidance • Intellectual Property (copyright, creative commons) • Privacy • Cyber security • Digital inclusion	• Climate change • Degradation of natural environments • Bio-diversity loss • Impact of extractive industries • Natural disasters • Access to potable water	• Changing demographics (population growth, urban shift, aging and longevity etc.) • Refugee and migrant growth • Human rights abuses • Gender and race challenges • Growing wealth gaps • Increasing poverty	• Hybrid Learning • Redefining 'success' • New models of assessment • Emphasis on competencies and capabilities • Global competence • Digital fluency • Learner agency & personalisation • Wellbeing
NZ Specific	• NZ a stable, open, democracy • Growing inequities – wealth, housing, digital access. • Access to trade • Access to public services • Technology seen as an equaliser to fulfil the vision of a democratic society.	• Growth in tech sector as contributor to GDP • Strong economic performance in recent years – benefitting middle- and high-income earners • Growing economic divide • Physical vs virtual investment	• High employment • Demand for skilled workers – esp. tech skills • Overseas options attractive for NZ workers • Strain on public service workforce	• Intl. reputation for innovative tech industries • Low level of support available for R&D across all sectors • High level of tech uptake by general population	• National broadband rollout, but still significant gaps in uptake • Cyber security threats • Freedom of information	• Loss of 'clean, green' image • Impacts of global warming • Growing concerns re water • Progressive policy plans – not universally supported	• Bi-cultural frameworks – Te Tiriti honouring • Increasing cultural diversity • Emphasis on inclusion (culture, gender, disability etc.)	• Declining performance in core skills • Poor outcomes for socio-economic disadvantaged, Māori and pacific • Significant reviews underway • System highly decentralised – pockets of excellence

[8] Wenmoth. 2022. Education Environment Scan

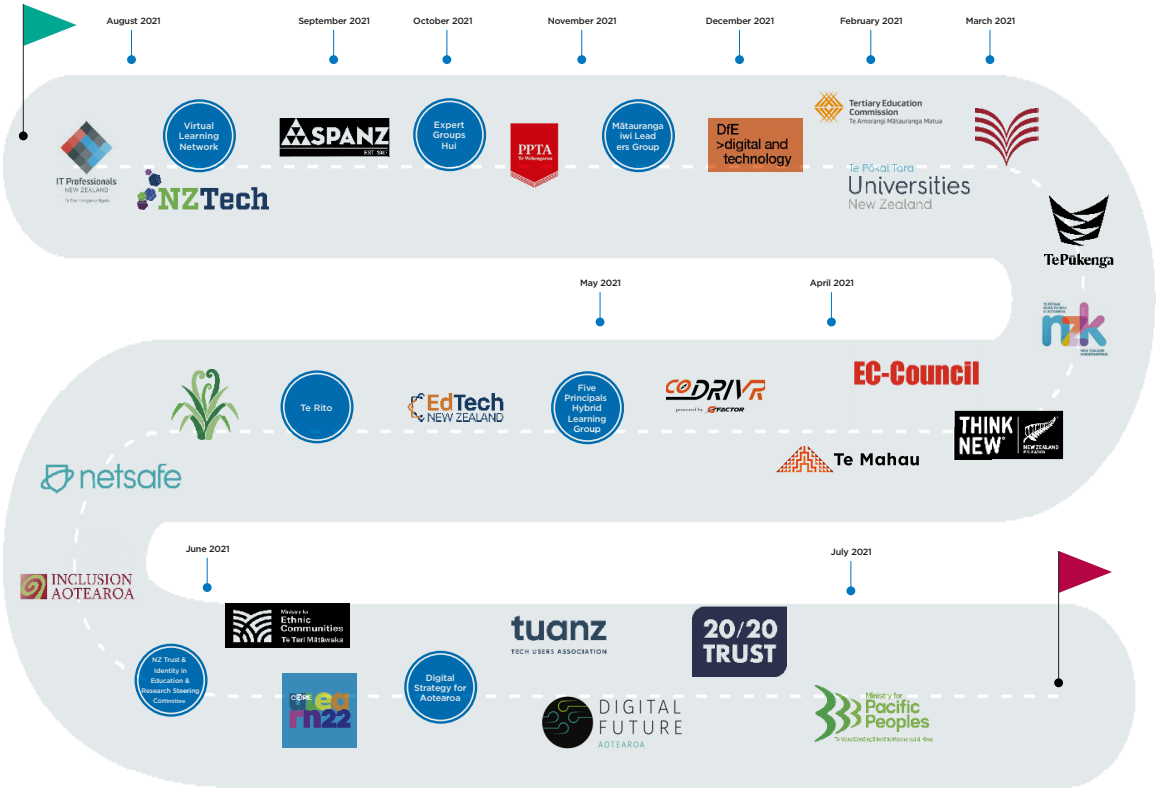


The Kōrero Mātauranga discussions of 2018 began a conversation about the future of education in New Zealand. We have drawn on strands of that dialogue, tested ideas and received advice from groups across the education sector and from other stakeholders to inform this work.

There is a full list of all the references and reports consulted in the appendices.[9]

[9] Appendix 4 – References

Targeted engagements across the education sector[10]



Common themes emerged from engagement and research:

Digital equity

- Access to connectivity and devices at home and within education organisations. It was generally acknowledged that digital equity is a whole of government and civil society responsibility, which needs a coordinated approach and that it requires more than access – trust, motivation, capability as well as affordable access to devices and connectivity.

Learning and teaching

- Building digital capability and understanding of best pedagogical practice in a digital world is very important across the education sector.

Digital identity

- This is a critical enabler for areas including hybrid learning and digital assessment, the learner journey throughout their education and for teacher, parent and whānau access to information.

[10] Appendix 1 – Engagement

Data

- The potential to improve the use of data at learner, teacher, whānau, provider and system level and its collection, storage and access to inform decisions and planning.

Interoperability of systems

- Across the education landscape this is an issue as education providers deal with the complexity of different student management systems, learning management systems, and data required at school and system levels.

Complexity, cost and futureproofing of technology platforms

- Complexity, cost and futureproofing of technology platforms is a challenge for many education providers who are looking for guidance, direction and leadership.

Stretched time and resources

- Some education providers and peak bodies were wary of any strategy which might impose further demands or expectations on their already stretched time and resources.

Inclusion

- Support and access for people with disabilities, neurodiversity and language barriers, socio-economic barriers, geographical barriers and age barriers are critical.

The context

The strategy within education and Government priorities

This strategy does not exist in a vacuum.

The Education System Vision sets the broad aspirations for education in New Zealand. It is given effect primarily through the National Education and Learning Priorities and the Tertiary Education Strategy. Within these are many educational initiatives and directions which this strategy supports and reflects.

All operate within the broader government commitment to give effect to Te Tiriti o Waitangi and the Child and Youth Wellbeing Strategy.

In a digital context, the Government's approach is summarised in the Digital Strategy for Aotearoa, the Strategy for a Digital Public Service, and multiple associated workstreams. The following diagram summarises key government and education priorities and strategies.[11]

[11] Appendix 4 - References

The strategic landscape

Te Tiriti o Waitangi | The Treaty of Waitangi

Government strategies and priorities that inform/guide the education programme

Digital Strategy for Aotearoa lists 50 plus government strategies and initiatives in this area.

Child and Youth Wellbeing Strategy

Children and young people at the centre. Transform how Ministers and agencies work together to improve wellbeing of children and young people.

Education System Vision

Whakamaua te pae tata kia tina – take hold of your potential so it becomes your reality.
Whaia te pae tawhiti kia tata – explore beyond the distant horizon and draw it near.

National Education and Learning Priorities and the Tertiary Education Strategy

Create learner-centred environments where more learners, especially Māori and Pacific, are successful.

Early Learning Action Plan

Quality of early learning, improve equity and enable choice so that children learn and thrive. Create a learning pathway to schooling.

NZ Curriculum Refresh

Ensure all ākonga experience rich and responsive learning through: A refreshed New Zealand Curriculum that honours our obligations to Te Tiriti o Waitangi, is inclusive, clear about the learning that matters, and easy to use from year 1 to year 13.
A redesigned Te Marautanga o Aotearoa that reflects a more indigenous curriculum, grounded in te ao Māori, based on the conceptual framework Te Tamaiti Hei Raukura.

NZ Certificates of Educational Achievement Changes

Strengthen NCEA, improve wellbeing, equity, coherence, pathways to further education, employment and credibility.

Reform of Vocational Education (TEC)

Strong, unified, sustainable, vocational education system fit for the future.

Future Qualifications and Assessment (NZQA)

Te Whakakitenga 2025.

Engaging in Learning Strategy

Address barriers to make learning places safe, inclusive, relevant for all ākonga.

Literacy & Communication and Maths Strategy

Shape a cohesively designed early learning and schooling system that produces world-class literacy & communication and maths outcomes for children and young people.

Hei Raukura Mō Te Mokopuna

Strengthen te reo matatini and pāngarau across te reo Māori education pathways.

International Education Strategy (ENZ)

Ensure international education contributes to a thriving and globally connected New Zealand through world-class education.

Learning Support Action Plan

Ensure all ākonga progress and achieve in critical foundational skills to reach their potential in school and life.

Early Learning and Kura | Schooling Workforce Report

Developing greater visibility and understanding of demand, supply and capability issues for early learning and kura/schooling workforce. Including further identifying the data, analysis and insight enablers important for policy advice, operational policy and design.

Education Research Evaluation & Development Strategy

A 10 year plan to support and guide research and development decisions across education agencies to deliver on Government's education vision and priorities.

Connected Ako: Digital and Data for Learning

A 10-year plan across education agencies to help ākonga/learners and kaiako/teachers thrive in the digital world

Ka Hikitia

System shifts in education to support Māori learners and their whānau, hapū and iwi to achieve excellent and equitable outcomes. Create opportunities to contribute to local narratives, critical to understanding multiple perspectives.

Tau Mai Te Reo

Māori language strategy supports identity, language and culture in learning. Ākonga and whānau at the centre, grounded in te ao Māori and te reo Māori.

New Zealand Disability Strategy

Disabled people engaging in excellent education to achieve their potential. Inclusive learning places, systems and curricula meet learner needs and create educationally powerful relationships with whānau.

Action Plan for Pacific Education

Diverse Pacific learners and their families feel safe, valued and equipped to achieve their education aspirations. Inclusive learning places, systems and curricula meet learner needs and create educationally powerful relationships with community.

All of Government Specific education plans that impact the education sector

Te matawhānui
The vision

Te matawhānui, the vision of the strategy, is threefold:

Learners and educators can thrive – live, learn and work – in the digital world

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People are digital and data capable, contributing to personal, community and New Zealand's growth

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Learning, teaching, assessment and research make best use of data and digital

Ngā pūtake
The foundations

The strategy is built on e toru ngā pūtake,
three foundations:

Te Tiriti

Giving effect to Te Tiriti o Waitangi anchors the strategy, to benefit all New Zealanders.

We endorse the commitment of the Digital Strategy for Aotearoa that:

> *Māori should be able to trust that their cultural knowledge and interests are actively protected in digital transactions.*[12]

We will work with Māori to build approaches that work for all ākonga, kaiako and whānau, giving effect to Te Tiriti o Waitangi and its principles.

The role of Te Tiriti in education is often described in terms of partnership, participation and protection.

Partnership involves working with Māori to develop practices, priorities and strategies for Māori education. Participation encourages Māori involvement in initiatives at all levels of education. Protection refers to the value of Māori knowledge, worldviews, language, culture and other taonga.

For example, from a te ao Māori perspective, some would argue that data collected by providers and education agencies does not meet community needs. It is collected to meet the needs of central government or providers. An example is monitoring ākonga te reo Māori fluency levels at regular points throughout education. Some iwi want more specific measures of fluency in their dialect.

The data records we keep on attendance provide another example. For tangi or other significant cultural events, absence is recorded as absence from learning and yet in terms of culturally responsive learning or understanding language and identity, these are valuable experiences.

Likewise, how do we interpret or analyse data? There are few data analysts with a Māori world view, with the knowledge and real-life experience of the situations many Māori find themselves in. While other analysts can describe the high-level trends and summary statistics, they are limited in their ability to delve into underlying cause and effects on whānau, hapū and iwi.

Improving access to data and insights through digital channels can support ākonga and their whānau in exercising agency over their learning. Digital technologies can enable inclusive learning approaches, reducing barriers between early childhood centres, schools, campuses, families and communities.

[12] Digital Strategy for Aotearoa

A “mana to mana” approach is being developed by Government to strengthen the Māori-Crown relationships in digital and data contexts, including agreed ways to engage with the Government Chief Digital Officer and exploring data governance issues, through the Strategy for a Digital Public Service.

In partnership with Māori, education agencies are exploring the opportunities of digital for iwi education – reaching distributed peoples, supporting the uptake and longevity of te reo Māori. There are many examples of partnering with iwi on local curriculum and education projects that use digital means to achieve education aspirations: by Māori for Māori.

Equity

Trusted digital and data services can help all learners and whānau, educators and providers, to flourish.

The Digital Strategy for Aotearoa outlines a vision of all New Zealanders enriched by digital opportunities. The theme of mahi tahi (inclusion), envisages an inclusive digital society, where all New Zealanders have the means, the ability and opportunity to connect with their whānau and communities, express their cultural identities, work, and access inclusive government services.

This is especially important for communities where there is a lack of digital equity – Māori, Pacific peoples,[13] older, disabled, ethnic communities and new migrants to New Zealand are among those affected.

Education should help equip people to become skilled, digitally literate citizens, adept and safe in handling online opportunities and demands, readily adapting to new digital environments, tools and systems.

Some people seek and gain specialist IT skills to equip them to work and prosper in the technology sector and technology-enabled businesses, which have a growing demand for skilled people. This specialisation is identified as an important source of growth and diversification of the New Zealand economy.

Digital initiatives should grow equity, not increase disparity. The aim for inclusion needs to be at the heart of the design, development and delivery of digital and data approaches. Designing for disabled and neurodiverse learners includes proactively anticipating barriers as the default, not the exception.

The experiences of the COVID-19 pandemic highlighted challenges in achieving digital equity. The rapid movement to hybrid, blended, online and distance learning exacerbated longstanding disparities, especially in accessing learning from home.[14]

These factors raise complex issues, including access to devices and connectivity, affordability and capability. The solutions are part of a broader, interconnected, and coherent Government and societal approach to matters including funding, accountability and eligibility which will take time to achieve.

Agencies will work with partners across government, with education providers, iwi, Pacific peoples, communities and with business on long-term, sustainable approaches to improve equity.

[13] Action Plan for Pacific Education 2020-2030
[14] Appendix 4 – References

Agencies working together

By identifying long-term aims and outcomes, education agencies can help educators, learners and providers reap the benefits of digital and data.

Education agencies have distinct responsibilities for different parts of the education sector. We bring different areas of expertise and accountability. While we each focus on our areas of accountability, we know that the complexities and rapidly changing possibilities of digital and data impact the whole sector. Where appropriate, we will identify areas of shared focus.

We work with partners across government to bring educational needs to the forefront.

It also involves working with community groups including Māori, Pacific peoples, new migrants, rural groups, neurodiverse and disabled people to ensure that digital approaches and tools are accessible and designed to meet their needs.

Because this strategy involves multiple agencies that work with their own governance arrangements and budgetary appropriations, it proposes agreed directions and outcomes rather than prescribed programmes of work.

Upon adoption of the strategy, the key agencies, MOE, NZQA and TEC, will develop an action plan of work and priorities. Other agencies and entities in the education whānau will use the strategy to inform and guide their plans.

Agencies will work together to bring coherence and leadership for the education sector.

Te aronui
The focus

The work of the strategy is shown in te aronui, areas of focus, for agencies: connection, commitment and capability. Within each area of focus, important work is identified.

Connection

Building on the foundations

This work highlights critical initiatives; te ao Māori in digital design, using data to make a difference, and safe and effective digital services.

Te ao Māori in digital design

We weave together the insights of te ao Māori and the power of digital and data.

Te ao Māori can enrich learning in digital environments, with benefits for all learners. Digital approaches offer new ways to achieve this.

Education at all levels encompasses and supports Māori world views.

Digital initiatives provide many opportunities to work alongside Māori to shape education. The potential of digital to support mātauranga Māori and advance te reo Māori is already apparent. There is a scope to bring these opportunities to more ākonga.

Learn more *about how te ao Māori impacts a virtual digital world for deaf learners at Rūaumoko Marae.*

Whānau, hapū and iwi have a critical interest in education and education outcomes for ākonga. For iwi and hapū, tikanga will determine best practice in appropriate digital contexts.

When using international tools and platforms education agencies seek to provide opportunity for te ao Māori, in keeping with partnership and Te Tiriti.

Inclusively designed technology can open doors, enhancing the voices and views of those not currently well served by the education system.

Agencies will agree processes to embed te ao Māori in digital design and delivery.

Using data to make a difference

A trusted data system can shape education for individuals, whānau, education organisations and system-wide improvement.

Both the Digital Strategy for Aotearoa and the Government's Data Strategy and Roadmap[15] recognise that mahi tika (trust) is fundamental to unlocking value from data. To maintain trust, we need to ensure ethical and appropriate data collection, protection and use, considering themes such as data sovereignty, identity and responsible stewardship.

Education data helps deliver better outcomes at individual learner, whānau, provider and education system level. Education providers and government education agencies collect data about learners; their attendance, progress and qualifications.

At a local provider level, education data can help shape education offerings and respond to community, iwi and hapū needs and circumstances.

Timely use of data can identify emerging learner needs and inform learning design to reflect the holistic context and experience of ākonga and whānau.

Learners expect to be able to move seamlessly between learning organisations and the workplace, supported by online, blended, hybrid and distance learning modes and skilled educators who strive for excellent outcomes for all learners. Learners should expect to be able to create and carry with them evidence of their own learning in diverse ways as they progress.

Data can be used to make well-informed decisions about further education and pathways. For that reason, a learner's access to their own data, which follows their educational journey, is important.

At an aggregated system level, compiled anonymised data provides insights for strategic allocation of resources and system design. To do this equitably we require analysts with

[15] New Zealand Government Data Strategy and Roadmap

appropriate cultural competency and experience to understand unique factors impacting Māori, Pacific peoples, new migrants, rural groups, neurodiverse and disabled people.

Principles and approaches are being refreshed in an education data framework to guide the use of data in education and to address growing opportunities to generate anonymised information and insights about individuals, groups, communities and/or educational organisations.

Safely shared data is critical for the design and function of the education system, using trusted providers, platforms and services.

Willingness to share, partner with, and use education data is fostered by trust, confidence, capability and opportunity. To enable that, we must be clear, consistent and transparent about purpose and use.

Rules for ethical and appropriate use of data are established through legislation, frameworks, guidelines and standards to give certainty to developers and users of data and to protect the rights of people who own the data. An education data framework needs to reflect and support the data needs of all users, including Māori ākonga, whānau and iwi.

Ongoing policy development is required to address the data implications of areas such as artificial intelligence, machine learning and developing data science.

Learn more *about how data better identifies learners in need of support at Massey University.*

Agency spotlight:

Digital identity

Secure digital identity for learners, whānau, educators and administrators provides access within the education ecosystem, unlocks entitlements, and increases system effectiveness. This includes awareness of and working with all-of-government approaches for verifiable credentials.

A data framework for the education ecosystem

A shared education ecosystem data framework will enable genuine system-level collection, analysis, safe sharing and use of data to inform individual, provider and system-level decision-making. At present data is held in disparate, sometimes inconsistent ways that are not easy to access or share.

The framework will support data sovereignty decisions, ownership rights, collection, sharing and use of data, to build trust and provide information and agency for learners, educators, education and EdTech providers and policymakers. Learners and whānau will have better information to support decision making. Managers and policy makers can access data insights to guide resource allocation and determine priorities.

Within such a framework, a record of learning is designed to travel with the learner and their whānau, providing information and insights to shape education decisions. Together with secure digital identity, the dataframework builds trust and agency – putting the learner and whānau at the centre of education decision-making.

Safe and effective digital services

Secure, future-ready digital solutions are accessible, streamlined and cost-effective.

There are many players in the education system – approximately 5,000 early childhood education centres and kōhanga reo, approximately 2,500 schools and kura (public, private and integrated primary, intermediate, composite and secondary schools), eight universities, three wānanga, Te Pūkenga - New Zealand Institute of Skills and Technology and private training establishments as well as tertiary education organisations, for example Ohu Mahi (Workforce Development Councils) which give industries a greater voice in the vocational education system to ensure their future workforce needs are met.

The diversity, self-management and autonomy of the sector is a strength; it can also add complexity and cost to digital approaches.

Learners, whānau, communities and providers increasingly expect to move through the education system with ease. Leadership, guidance and agreed systems and standards will help.

Infrastructure and support services are critical factors that contribute to the success or failure of educational institutions:

Learn more *how building teachers' digital skills sparks imagination in learners at Avonside Girls' High School.*

> *Infrastructure and operations are the enabling conditions that lower barriers for implementation, facilitate uptake, and support scaling and sustaining new education technology. These conditions include physical resources, broadband internet connectivity, students' remote devices and connectivity, human resources, system specifications, operational policies, and funding.*[16]

Some education organisations have IT departments to maintain and develop services. Some rely on contracting specialist support. Others have small numbers of part-time staff or dedicated teaching and support staff who have acquired expertise to support IT initiatives.

All are effectively stand-alone IT enterprises serving from tens to hundreds to thousands of users. In a business sense, this parallels the full range of corporate enterprise: from small to medium to large.

Technology offers educational organisations diverse products and services to support their work. However, choices can be complex, and decisions are made at many levels throughout each organisation and the education system.

The technology that supports education organisations includes off-the-shelf solutions, proprietary products, and services and solutions from national and multinational providers. Looking after IT in an educational organisation is increasingly complex and costly.

All education organisations run student management systems with various levels of complexity. Most run finance management systems. Many use library systems, learning and research management systems, and human resources systems.

Increasingly, outreach to communities of learners, whānau and alumni is occurring digitally, through websites, text and email or social media.

Many organisations offer portals and services online. Increasingly, many offer content and classes or tutorials for learners online. This has changed exponentially since 2020 and the emergence of COVID-19.

Education organisations deal with issues of privacy, information management, and the overall safety of online information and experience. In areas as fundamental as password management, identity authentication and accessibility of information for all proper users, technology requires increasing levels of skill, supported by well-informed design and governance.

Critical areas such as systems, standards and interoperability are being examined across agencies. There is a tension between local autonomy and central direction and delivery of services.

Technological changes such as cloud hosting and the rise of cybersecurity threats, point towards more coherent, co-ordinated approaches to managed services incorporating agreed standards and frameworks, mindful of academic freedom and institutional autonomy.

[16] University of Virginia. 2021. The EdTech Genome Project

Agency spotlight:

ICT support for schools and kura

A programme of work is being planned within the Ministry of Education to improve the quality and safety of digital technologies in kura and schools.[17] It will work towards a safer, more secure, connected education system designed to put the needs of learners, and their parents and whānau at the centre.

- to provide better protection to schools' digital systems against cyberattack and privacy breaches.
- to assess a range of models for delivering digital services to kura and schools.
- to take a whole of system approach to enable system cohesion, resilience, scalability and sustainability.

Key workstreams include reliable and trusted student management systems that are secure and fit for purpose; making it easy to access quality-assured digital services and timely digital support; making it easy and safe for teachers, learners, parents and whānau to access their education data and resources.

Cyber security

Learners, whānau and educators must be able to trust the digital services they use and have digital competence, literacy, fluency, and agency to manage risks.[18] A programme of work is being actioned, involving the early childhood sector, schools and tertiary providers to address immediate and future cyber security risks and improve security and awareness.

[17] Cyber security in schools
[18] Wenmoth. 2020. Digital Agency

Commitment

How we work

This area focuses on ways agencies will work together to deliver the strategy within a complex environment of competing priorities; engaging widely and effectively, and showing future-focused leadership.

Engaging widely and effectively

We will work with many across the sector and more broadly to bring coherence and leadership – including education providers, iwi, technology providers, business and communities.

The best digital approaches for education require contributions from diverse participants, enabling and encouraging innovation. There is a need to work together with communities, iwi, learners, teachers, EdTech, and with wider government agencies.

Learn more *how building teachers' digital skills sparks imagination in learners at Avonside Girls' High School.*

Good ideas, new approaches and transformational shifts can come from anywhere.

National planning is important. So too are community solutions to local issues.

Locally designed products and services can bring cultural responsiveness and awareness of te ao Māori and community aspirations in ways that are attuned to local needs.

Future-focused leadership

Emerging trends and technologies can benefit learning and teaching, with expert scanning, planning and trialling.

Digital leadership in learning, teaching, assessment and research is critical given the complexity and fast changing nature of digital environments. Education agencies will collaborate with the technology industry and other stakeholders to leverage insights and help meet emerging needs.

The pace of technology change is increasing. Cloud computing, data exchange and storage, open access standards, the integration of social media and community networks in learning are here. The Internet of Things, 3D printers, software as a service, the networking advances of 5G have recent impact.

> *Technologies such as robotics, machine learning and artificial intelligence offer huge scope for education. Among the opportunities predicted to have meaningful relevance to the future of education are advanced connectivity, applied artificial intelligence, cloud and edge computing, immersive reality technologies, industrialising machine learning, trust architectures and digital identity, Web3, the future of bio engineering and the future of sustainable consumption.*[19]
>
> The leading edge of change offers significant opportunities and challenges. While education agencies plan for change, they prudently try to minimise risk. Thought leadership, support, horizon scanning to identify local and international opportunities, encouraging research and development, setting ethical standards, quality assurance and risk management are all part of agencies' responsibilities.

While setting direction and leadership, government agencies can create the environment to allow useful innovation to flourish, to improve services and outcomes for learners and providers.

Over the course of a learner's journey from early childhood education through to tertiary graduation and/or workplace learning, a learner navigates significant technological change.

[19] Summarised from McKinsey Technology Trends Outlook Report 2022

Learners and education providers expect to enjoy the benefits of emerging technologies. Equally, they expect risks to be managed.

It is important that we build and share a sector-wide view of digital potential, and a coordinated approach to providing advice and insights, providing direction for the sector.

New networks such as Te Mahau are designed to help the Ministry of Education become more attuned to local needs. Education agencies are trying to stay closely attuned to local and community needs. While solutions may include international providers, with good design and delivery they accommodate and encourage local tikanga.

At the same time, agencies understand the need to make the provision and procurement of services easier for local, often small-scale technology providers to access. Government can also use advantages of scale in procurement of tools, platforms, and services that may be needed across the education system.

Learn more *about how learning in a virtual world makes young Kiwis safer drivers with CoDriVR at Waimate High School.*

The range of government agencies that play pivotal roles in education can make it difficult for others to engage. Many digital and data workstreams across education require a system level approach, which agencies are working together to deliver.

Providing leadership

As stewards of the education system, education agencies have a role to foster research and innovation, to enable leadership, disseminating intellectual property, contributing knowledge, and insights within New Zealand, from and through national and international connections.

Well-coordinated digital leadership across agencies is essential to achieve the educational improvements and transformations that digital approaches enable.

Agencies will work together to provide direction and certainty for the sector.

Upon adoption of the strategy, the key agencies, MOE, NZQA and TEC will develop an action plan of work and priorities. Broader agencies in the education whānau will use the strategy to inform and guide their own plans.

This may lead to initiatives such as the establishment of a centre of digital excellence within the Ministry of Education and/or associated agencies.

We will work to bring coherence and leadership to the education sector.

In line with other recommendations of the strategy in relation to Te Tiriti and te ao Māori, ongoing digital governance will need to incorporate dedicated Māori representation.

An external reference group to facilitate sector input will certainly be important.

Capability

To deliver

Building on the commitments and the ways of working, the outcome of all agency work is to enable the transformation of learning, teaching, assessment and research.

Transformed learning, teaching, assessment and research

Learning, teaching, assessment and research can be transformed by digital and data to lift wellbeing, maximise capability and improve learning outcomes.

Learning, teaching, assessment and research at all levels can be enhanced by appropriate best use of digital and data approaches.

Education agencies are working to ensure education includes the skills learners need to thrive in the digital world. This includes our approaches to safety and wellbeing, curriculum, assessment and research and building the capability of educators.

There is a rich and evolving digital strand to all these areas of work.

Learn more about how in early childhood education, learning with technology is expanding young minds at JustKidz Henderson.

Safety and wellbeing

Digital tools and approaches can build wellbeing, and undermine it. Threats include identity theft, cyber security risks (real and perceived), mis-, dis- and mal-information (distribution of false or harmful information and baseless conspiracy) deep fake technologies, bullying, excessive screentime or the inability to manage the online environment.

The benefits and risks of digital differ for individuals. All people need the knowledge, skills and resilience to succeed in a digital world. This includes access to accurate information, appropriate positive relationships, culture and language. Digital practices will evolve on marae, in accordance with iwi and hapū tikanga. The enduring task is to equip people to manage their own safety and wellbeing, to discern risks and operate successfully in the digital environment.

A safe and secure environment in which to learn, teach, assess or carry out research is as critical online as it is on campuses and within classrooms. Educators, learners and whanau expect a digital ecosystem that is trusted and secure. This requires secure systems, appropriate knowledge and human behaviours, as well as policy, legal and governance practices.

At an individual level it is important that educators have the capability to teach learners how to operate safely in digital environments.

Learn more *about how families with stronger digital skills better support children's education with Digimatua's Pacific community digital inclusion programme.*

At an organisational level safety and wellbeing requires that educators have the tools and knowledge to minimise risk, for example, from unauthorised data access, or unauthorised online access within an organisation. This is more complex in education organisations where learners are using their own devices.

Curriculum design and implementation in schooling

The Ministry of Education is building curricula and pedagogical approaches to incorporate the progressions required for learners to achieve digital agency.

For example:

- The Literacy & Communication and Maths Strategy and Action Plan developed for use in digital contexts as well as paper-based ones.
- Well-designed digitalised curriculum resources; accessible, easy to navigate, use and adapt; designed to meet the needs of Māori and Pacific learners, disabled learners, neurodiverse and learners with specific learning needs.
- Inclusive learning and curriculum design, and delivery skills specific to online learning; including how to use digital for best learning outcomes in distance learning, blended and hybrid learning and research settings.

Assessment and assessment practices

Assessment practices must be relevant for a digital age and support equitable outcomes. This means adapting the way some assessment happens and the New Zealand Qualifications and Credentials Framework. Challenges in current practice such as detecting plagiarism are exacerbated by new artificial intelligence tools such as ChatGPT. Re-examining what learning is assessed and how it as assessed will have greater importance as micro-credentialling becomes more common.

Secure systems and platforms for resources, data, learning and research transfer

To enable transformed learning, teaching, assessment and research, learning environments require secure platforms and systems, and assistive tools. Current initiatives such as strengthening digital and cybersecurity support for kura and schools[20] are important in this.

Initiatives such as Virtual Learning Network Learning Exchange, the Online Curriculum Hub (OCH),[21] Te Rito[22] and other innovation in the schooling sector are transforming educational opportunities.

In the tertiary sector services such as EduRoam and those provided by REANNZ for data movement are particularly important both for learners and researchers within New Zealand and internationally. Other parts of the education sector could benefit from similar approaches.

[20] Cyber security in schools
[21] Briefing Note: Update on the Online Curriculum Hub
[22] Briefing Note: Te Rito Programme Update

Learn more *about how data better identifies learners in need of support at Massey University.*

Workforce capability

Growing digital competence, literacy, fluency and agency are now required for learning, living and participating in society.[23] This also means designing learning to ensure inclusion of those who face diverse challenges such as disability, neurodiversity, language, socio-economic and age barriers.

The education workforce requires skills and knowledge to support learners. There are well-developed international and local models about what constitutes high-quality digitally enabled inclusive pedagogy.[24] Educators need time to engage with these resources and approaches.

Education agencies will encourage training for educators to maximise their knowledge and skills in digital environments. A dynamic framework such as the Skills Framework for the Information Age (SFIA),[25] the global skills and competency framework for the digital world, could provide a visible and measurable way of education outcomes aligning with real world needs.

[23] Wenmoth. 2020. Digital Agency
[24] Wenmoth. 2021. Evidence Review: Digital technologies in education during the COVID-19 pandemic
[25] Skills Framework for the Information Age

From strategy to action

Agencies are already progressing important areas for action, working together to provide direction and certainty for the sector.

Upon adoption of the strategy, the key agencies, MOE, NZQA and TEC, will develop an action plan of work and priorities.

Broader agencies in the education whānau will use the strategy to inform and guide their own plans.

Learn more *about how tech-collaboration transforms learning and opportunities at Te Ara Poutama Alternative Education Centre.*

As the core agencies plan the work ahead, they will consider a wide range of work programmes, some already underway, some envisaged by individual agencies. These include:

Te ao Māori in digital design

Action: agree processes to embed te ao Māori in digital design and delivery

The design and delivery of digital services are areas of rapid change and innovation. The voices and insights of te ao Māori will allow Māori perspectives and needs to shape agency services.

Using data to make a difference

Action: design digital identity and deliver sector data framework

Secure digital identity provides access within the education ecosystem, unlocks entitlements, and increases system effectiveness.

Principles and approaches are being refreshed in an education data framework to guide the use of data in education and to address growing opportunities to generate anonymised information and insights about individuals, groups, communities and educational organisations.

Safe and effective digital services

Action: improve digital services and support for schools and kura and cyber security assurance across all education organisations

A programme of work is in planning to improve the quality and safety of digital technologies in kura and schools. It will work towards a safer, more secure, connected education system designed to put the needs of learners, parents and whānau at the centre.

Engaging widely and effectively

Action: work with diverse stakeholders on building inclusive digital approaches

Digital innovation and improvement come from diverse sectors, often causing disruption to accepted ways of doing things. Agencies will work to include diverse voices and create opportunities for inclusion.

Future-focussed leadership

Action: collaborate to scan, plan, and trial emerging technologies

Education agencies will work to provide leadership and cohesion for the sector, acknowledging that technology, suppliers and options are rapidly changing. Agencies have access to intellectual property, international connections, research, and insights to help decision-makers across the education sector.

Transformed learning, teaching, assessment and research

Action: build the commitment to include digital and data considerations throughout the education journey

Digital and data can contribute to better educational outcomes. Building digital capability is essential to helping learners gain the skills they need. This includes approaches to safety and wellbeing, curriculum, assessment, research and building the capability of educators. To enable transformed learning, teaching, assessment and research, learning environments require secure platforms, systems and assistive tools. Used well, digital and data can contribute to better educational outcomes.

Appendices

1 Engagement

Name	Sector
2020 Trust	Not for profit
38th Tertiary ICT Conference	Tertiary
5 Principals Hybrid Learning group	Ministry of Education internal group
CoDriVR Project	Technology sector business
Digital Future Aotearoa	Not for profit
Digital Strategy for Aotearoa project team	Department of Internal Affairs
Early Childhood Council	Early Childhood
EdTech Executive Council	Technology sector group
Education New Zealand	Education agency
Expert Groups Hui	Ministry of Education internal groups
Inclusion Aotearoa	Not for profit
IT Professionals	Technology sector peak body
Kindergarten Association	Early Childhood
Mātauranga Iwi Leaders Group	Ministry of Education Māori advisory group
Ministry for Ethnic Communities	Government agency
Ministry for Pacific Peoples	Government agency
Ministry of Education - Youth Advisory Group	Ministry of Education internal group
National Library	Department of Internal Affairs
Netsafe	Not for profit
New Zealand Area Schools Association	Peak body
New Zealand Principals' Federation Conference	Education union conference
New Zealand Post Primary Teachers' Association	Education union
New Zealand School Trustees Association Annual Conference	Education peak body conference
New Zealand Tech	Technology sector peak body

New Zealand Trust & Identity in Education & Research Steering Committee	Education sector group
Otago / Southland Principals' Conference	Education sector conference
Secondary Principal's Association of New Zealand	Education sector union
Te Aka Toitū Trust	Not for profit
Te Mahau	Ministry of Education internal groups
Te Pūkenga	Tertiary
Ngā Rau Whakatupu Auraki and Ngā Rau Whakatupu Māori	Ministry of Education internal advisory groups
Tertiary Education Council IT Directorate	Tertiary
Tech Users Association New Zealand – Rural conference	Peak body technology conference
United Kingdom DfE Digital Strategy Group	International
ULearn	Education sector conference
Universities New Zealand	Tertiary
Virtual Learning Network	Education sector group
Waikato Principals' Meeting	Ministry of Education regular principal meeting
Case studies	
Avonside Girls' High School	Secondary education
Bream Bay College	Secondary education
CoDriVR at Waimate High School	Education technology
Digimatua Pacific	Community digital inclusion programme
JustKidz Henderson	Early childhood
Massey University	Tertiary
Otaki College	Secondary education
Rūaumoko Marae	Deaf education
Stonefields' School	Primary education
Te Ara Poutama Alternative Education Centre	Alternative education

2 Timeline of IT in New Zealand education

Year	Initiative	What happened	Strategic significance
1989	Sallis Report	Led to the start of ICT professional learning and development (PLD) in schools from 1990	Government funded PLD for teachers which has continued in various forms to the current time
1994	CASAtech	An initiative involving 9 Canterbury area schools collaborating to provide broader curriculum choice for learners using online technologies. Teachers in a school enabled to offer subjects to students in other schools	Led to the rapid expansion of clusters of rural and remote secondary schools across NZ. For example, FarNET, CoroNet, TOSItech
1994	KAWM	An MoE initiative to support Māori teachers and curriculum in te reo Māori using online technologies	Full report published in 1999
1995	Introduction of the World Wide Web (www) in NZ		Teachers among the first to be introduced to the www. The Telecom Education Foundation ran "Internet for Teachers" in 14 centres on Monday evenings. Each session catered for 20 teachers over 2 hours. Two sessions ran each Monday for ten weeks in 2005 and 2006
1998	First ICT Strategy for Schools	Collaboration between MoE and sector experts. Specific recommendations included: • Support for Principals • Professional learning for teachers • An online content hub for teachers Initial budget of $14m over three years	Significant strategic change approaches have continued: • Principals First" recognised the importance of leaders of change leaders in schools and the need for specific training. Laid the foundations for current leadership strategies • The schools cluster approach to ICT-PD was revolutionary. Is now widely regarded as means to enable system-wide change through local innovation

			The ICTPD programmes aimed to: • Increase teachers' ICT skills and pedagogical understanding • Increase the use of ICT for professional and administrative tasks in schools • Increase the frequency and quality of ICT to support effective teaching and learning • Paved the way for current Kāhui Ako work • Establishment of Te Kete Ipurangi (TKI) led to a generation of teachers using online content and participating in online communities of practice. Key principles continue in the design of the Online Curriculum Hub (OCH) • The success of initiatives, led to an actual spend of over $80m over time
2000	TEC Introduction of the Single Data Return	Single data collection used in monitoring tertiary education delivery	Standard method of collecting enrolment and completion data from the tertiary sector
2001	Community based initiatives	Organisations such as Porirua City Community IT ELearning Trust (2001) worked to get connectivity and equipment to low socio economic communities including schools	
2002	Virtual Learning Network	Began as a collaboration of the OtagoNet initiative and NZ Correspondence School (now Te Aho o Te Kura Pounamu) to broker curriculum services for students in rural and remote schools. Expanded to include FarNet, HarbourNet, Volcanics,VLN Primary, Welcom, NetNZ	Demonstrated: • The power of partnerships. Most clusters established with support of local trusts and/or commercial providers (e.g. Asnet, Telecom) • The value of the Correspondence School as a distance education provider within the education ecosystem • The benefits of a brokerage approach to enable connections and reduce the administrative burden on schools
2003	Tertiary Introduction of national student number (NSN	Introduction of a standard identified for use across the tertiary education system	Provided a combined view of learner education across the tertiary sector

2003	Revised ICT Strategy for Schools	New initiatives included the Teacher Laptop (TELA) scheme	TELA continues today
2004	Towards a National eLearning Framework	Discussion paper commissioned by MoE. Intended to guide development of ICT across the education sector	Recommended a whole system approach that would benefit early childhood education, compulsory schooling and the tertiary sector
2004	Superloop	Coalition of various school clusters and communities to work with government and the business community to achieve improved ICT delivery for schools	School Loops such as Nelson (2004) Wellington (2006) Christchurch GCSN (2006) Northshore HarbourNEt, Manaiakalani (2011) sought to achieve cheaper delivery of data and equipment using scale and partnering with providers, prior to government commitment to connectivity and infrastructure. Loops focussed collectively on upskilling teachers for changes in administration and to improve teaching and learning with ICT. They sought to address the digital divide
2005	Schools Network Upgrade Programme (SNUP)	This MoE programme subsidised and managed upgrades of internal networks (data and electrical) in state and state-integrated schools. It spanned 11 years and represented a $280 million investment in 2,400 schools.	Continues through N4L today
2005	REANNZ	The Research and Education Advanced Network New Zealand (REANNZ - originally KAREN) implemented to connect tertiary institutions, research organisations, libraries, schools museums and the rest of the world	NZ research communities connected internationally with the ability to communicate quickly and move large amounts of data as required
2007	Huge Year for Tech	• iPhone • Big Data • Twitter • Facebook • Other …	
2007	Tertiary Education Reforms	Creation of the Tertiary Education Strategy Set out investment plan-based funding Set out TEC's monitoring functions	Investment planning meant greater exchange of data between the sector and TEC and the introduction of tertiary educational performance indicators

2011	Tertiary Industry Training Register	Introduction of a system to collect training data about industry trainees and apprentices	Replaced a spreadsheet-based system
2012	Select Committee of Inquiry into 21st Century Learning		A cross-party government initiative • Widely consultative across NZ • Report recommendations widely agreed • Focussed on a ten-year horizon
2012	Network for Learning (N4L) created	Crown-owned company created as the vehicle to deliver fibre broadband to NZ schools	By 2016 all NZ schools connected
2012-2016	Ultra-Fast Broadband (UFB) and Rural Broadband Initiative (RBI)	Roll out of fibre to school gates under the UFB and RBI programmes	
2013	21st Century learning reference group	Set up as an outcome of the Select Committee Inquiry	Findings published 2014
2014-2015	NZQA - digital assessments for National Certificates of Educational Achievement (NCEA)	External assessments trialled digitally with e-Mathematics Common Assessment task	Evaluations published
2015	Education system digital strategy: "Transforming Education for the Digital Age"	A strategy created on behalf of the combined Education agencies	Identified directions and areas for further attention in digital development 2015-2020
2016	Release of TEC Ngā Kete portal	A wide range of education data made available to the sector and other organisations interested in education outcomes	
2016	NZQA National Certificate of Education Achievement (NCEA) - end of year exam subject trials	End of year exam subject trials and pilots for 3 NCEA subjects (Classical Studies, English, Media Studies)	The beginning of NCEA Online and "digital first" change pilots for new achievement standards, literacy-numeracy / te reo matitini me te pāngarau assessments. Evaluations of psychometric and statistical analysis regularly published

2017	Careers NZ merged with Tertiary Education Commission	TEC mandate to lead NZ's careers system extended	Careers strategy - Inspiring the Future Tiro Whetū
2017	TEC - Fees Free initiative	First year of fees free policy enacted	
2017	NZQA - online moderation	External moderation of internally assessed student work commences for planning, submission and moderation online	By 2022 is close to 100% online
2018	MoE Digital Technologies curriculum development		Implementation of Digital Technologies Curriculum in schools
2020	TEC/MoE Reform of Vocational Education (RoVE)	Te Pūkenga New Zealand Institute of Skills and Technology, a unified, sustainable, public network of regionally accessible vocational education, bringing together the existing 16 Industry Training Providers	A unified, sustainable system for all vocational education that delivers the skills that learners, employers and communities need to thrive

3 Glossary

A guide to terms and images

Concept	Image	Meaning
Tūhonotanga		**Te ao Māori in digital design** Embedding te ao Māori. The koru symbolises the weaving of the digital strategy with te ao Māori
Tātaritanga		**Using data to make a difference** Analysis to make informed decisions. The koru meeting together symbolise the need to work collaboratively and equitably
Āheitanga		**Safe and effective digital services** Capability to improve services and support. The design symbolises Te Aka Matua, the parent vine and references the story of Tawhaki and his ascension to the baskets of knowledge
Kōtahitanga		**Engaging widely and effectively** Unity and collective action are needed to build an inclusive digital approach. The koru meeting together symbolise the need to work collaboratively and equitably
Te Anamata		**Future-focussed leadership** What is needed to engage with the digital world of the future. The square koru represents a microchip and the interweaving of data
Mātauranga		**Transformed learning, teaching, assessment and research** Knowledge needed to embed and grow digital capability. The joined koru represents a mouth and references Māori oral traditions and the rich, poetic record of the past handed down over generations

Te reo	Translation
Ako	To learn, study, instruct, teach, advise
Aotearoa	Land of the long white cloud (New Zealand)
Ākonga	Student, pupil, learner, protégé
Hapū	Kinship group, clan, tribe. Whānau sharing descent from a common ancestor
Iwi	Extended kinship group, descended from a common ancestor, associated with a distinct territory
Kaiako	Land of the long white cloud (New Zealand)
Kōhanga reo	An early childhood education centre where communication is in te reo Māori
Kōrero Mātauranga	Education discussions held in 2018 to discuss with communities potential changes to the education system
Kura	School, education, learning
Mahi ake	Growth
Mahi tahi	Inclusion
Mahi tika	Trust
Mana to mana	An enduring and reciprocal relationship with iwi/Māori leaders to ensure the public services delivers with and for Māori
Mātauranga Māori	Māori knowledge/education
Ohu Mahi	Workforce Development Councils
Rangatiratanga	Self determination
Taonga	Treasure – anything prized or considered to be of value
Te ao Māori	The Māori world
Te Kete Ipurangi (TKI)	New Zealand's current bilingual education portal. Is an initiative of the Ministry of Education
Te Mahau	Regionalised offices of the Ministry of Education
Te Pūkenga	A new, Crown-owned national tertiary education provider
Te Rito	A web-based national information repository that enables learner and ākonga information to follow them throughout their education
Te Tiriti o Waitangi	NZ foundational treaty between the Crown and Māori, focussing on partnership, participation and protection
Tikanga	Customary system of Māori values and practices that have developed over time
Wānanga	A public tertiary institution that provides education in a Māori cultural context, defined under the Education and Training Act 2020
Whānau	Family, extended family

Term	Definition
Artificial intelligence (AI)	A computerised system capable of simulating human decision making and learning, including performing cognitive functions associated with the human mind including learning and language
Assistive tools	Includes assistive, adaptive, and rehabilitative devices for ākonga/learners with additional learning needs to participate and learn
Blended learning	The combination of traditional classroom learning and online learning while ākonga/learners are onsite
Culturally responsive learning	Making learning relevant and effective for learners by drawing on students' cultural knowledge, life experiences, frames of reference, languages, and performance and communication styles
Cyber security	Protecting people and their computers, networks, programs and data from unauthorised access, exploitation, or modification
Data	Facts and statistics collected together for reference or analysis
Data agency	The inherent rights and interest of the individual in relation to the collection, ownership and application of data
Data sovereignty	Data is subject to the laws of the nation within which it is stored
Device	Any piece of hardware that enables people to access and use digital learning resources
Digital	Available in electronic form, readable and able to be manipulated by computer
Digital agency	The learner being the driver of what happens, as one who has genuine choice about the options open to them, and possesses the skills, knowledge, dispositions and capabilities to act on those choices and work effectively and sustainably in a digital environment
Digital competence	Having the skills and foundational knowledge to use digital technology
Digital ecosystem	The digital ecosystem in education encompasses all the digital tools, resources, infrastructure, data, platforms, software and technology standards and the people who use them across schools, homes, libraries, marae, and government agencies to support education whether it is online and remote, blended or face to face
Digital environment	An integrated communications environment where digital devices communicate and house the content and activities within it
Digital equity	An end state where everyone has what they need to function in an increasingly digital world. Elements of digital equity include: affordable access to internet and appropriate devices, digital skills, motivation and trust, and wrap around support to get and stay online. An outcome of digital inclusion

Digital fluency	Being able to decide which specific digital technologies to use and when to use them to achieve their desired outcome, as well as being able to articulate why the tools being used will help achieve said outcomes
Digital identity	How you show who you are online. The sharing of personal and organisational information online to access services and complete transactions, which have been consented to by the owner of the information
Digital inclusion	The outcome of the interventions that can support the achievement of digital equity, including affordable access to internet and appropriate devices, digital skills, motivation and trust, and wrap around support to get and stay online
Digital infrastructure	Comprises the physical resources that are necessary to enable the use of data, computerised devices, methods, systems and processes
Digital literacy	Being able to know how to use digital technologies and what to do with them
Digital services	The electronic delivery of information and services including data and content across multiple platforms and devices like web or mobile
Digital skills	The skills people need to engage in the digital world from both an essential level (for example, digital literacy) to more advanced skills needed to work in the technology sector (for example, programming skills)
Digital technology	Electronic or digital products and systems – this includes hardware, software, peripherals, wiring
Digital transformation	Using digital technology to enhance and transform learning
Digital wellbeing	Using technologies and digital services in ways that support positive mental, physical, social and emotional health
Distance learning	A method of learning between kaiako/teachers and ākonga/learners who are geographically distanced
Hybrid learning	Leverages technologies to provide continuity of quality learning for all ākonga/learners, no matter when, where or how they are learning
Interoperability	Ability for digital platforms and systems to securely transfer data
Machine learning (ML)	techniques that allow computers to learn directly from examples, data, and experience, finding rules or patterns, and employing methods that a human programmer did not explicitly specify
Māori data sovereignty	The inherent rights and interests that Māori have in relation to the collection, ownership, and application of Māori data
Online learning	Learning takes place over the internet whether onsite or at a remote location
Virtual learning	Uses computer software, the Internet or both to change how instruction is delivered to ākonga/learners

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