

24 New Zealand

This note provides an overview of New Zealand’s digital education ecosystem, including the digital tools for system and institutional management and digital resources for teaching and learning that are publicly provided to schools and educational stakeholders. The note outlines how public responsibilities for the governance of digital education are divided and examines how New Zealand supports the equitable and effective access to and use of digital technology and data in education. This includes through practices and policies on procurement, interoperability, data privacy and regulation, and digital competencies. Finally, the note discusses how New Zealand engages in any initiatives, including with the EdTech sector, to drive innovation and research and development towards an effective digital ecosystem.

Key features

- The central government publicly provides or funds digital infrastructure for system and institutional management at all levels of education for state and state-integrated schools, including providing Internet connectivity, laptops for teachers, a limited form of student information system that tracks compulsory sector enrolment, exam administration systems, and some administrative and facility management systems. The government also provides resources to support teaching and learning in primary and secondary education, including some that are centrally procured from commercial providers (e.g. Microsoft, Google) and made available to schools.
- Schools have significant autonomy in New Zealand to acquire and use their own digital infrastructure, both for institutional management and for supporting teaching and learning. Only a minority of (but not all) system management tools must be used by all public schools.
- Data protection and privacy laws regulate the management, use and access to student and education data in New Zealand. However, the access to and use of digital technologies in education is only partially regulated, due to the highly devolved nature of the education system.
- The country has invested in supporting access to digital technologies and infrastructure in educational institutions, particularly ensuring connectivity and providing or leasing digital devices to schools. During the COVID-19 pandemic, the country scaled up efforts in its Equitable Digital Access programmes (which are ongoing). In June 2023, a new strategy for education agencies was released – “Connected Ako: digital and data for learning” – as part of a major refresh of the country’s digital education strategy, taking into account lessons learnt in the pandemic and advances in education technology and data analytics.
- In 2018, the New Zealand government published a new Digital Technologies and Hangarau Matihiko curriculum for primary and secondary education. To support its implementation, the ministry pursued a comprehensive suite of initiatives including professional development and programme financing, teaching and learning resources, and public and private partnerships.

General policy context

Division of responsibility

In New Zealand, the governance of the education system is shared between the central government (the Ministry of Education, hereafter “the ministry”), supported by various education agencies, and schools. Decision-making is highly devolved: schools and kura (Māori-medium public schools where teaching is based on Māori culture and values) have significant autonomy over their curriculum, assessment and resource allocation, whereas the ministry and government agencies focus on supporting teachers and education providers, developing national policy and curriculum frameworks, and calculating and delivering operational funding and staffing entitlements to all state-funded schools and kura.

Public responsibilities for providing digital technologies in education follow this devolved context, with part of the digital education infrastructure provided centrally and other parts acquired locally. Independent private schools fall somewhat outside the remit of the government’s digital strategy and their provision and funding of digital infrastructure. While they are part-financed by the state, they must acquire their digital hardware infrastructure (Internet and devices) with their own budget and in some cases may not be able to access publicly procured software made available to public state schools by the ministry.

Whereas the provision of digital infrastructure to schools is partly devolved, the overarching rules that govern the access to and use of data and digital technologies in education, including data protection and privacy, are enacted by the central government and apply to all educational levels. Further guidelines may also exist at local or institutional levels.

Digital education strategy

The government has recently published a renewed 10-year strategy to guide the digital and data direction of the country's education agencies, "Connected Ako: Digital and Data for Learning", that takes into account lessons from the pandemic and advances in education technology and data analytics.¹ The strategy identifies 6 areas for ongoing work: 1) te ao Māori in digital design (agreeing processes to embed Māori language and culture); 2) using data to make a difference; 3) safe and effective digital services; 4) engaging widely and effectively with diverse stakeholders; 5) future-focused leadership to trial emerging technologies; and 6) transformed learning, teaching, assessment and research. Improving Internet speed, access and coverage, and providing devices to teachers all remain a priority. Based on the high-level strategy, the ministry, the New Zealand Qualifications Authority and the Tertiary Education Commission are developing plans of action and for monitoring the implementation of initiatives.

In 2018, the ministry published the "Digital Technologies and Hangarau Matihiko" curriculum (for primary and secondary education) and developed a package of supports available to schools and kura to assist with the introduction of the new content into their local curriculum.² The technology learning area is currently being refreshed and due to be released in 2024. Additionally, New Zealand has invested over NZD 700 million (USD 450 million) into public schools and kura at all education levels to support the country's digital hardware infrastructure, including providing devices for schools and students (particularly those with special education needs) and improving broadband, Wi-Fi and mobile connectivity via the ministry-funded school Internet service provider Network For Learning (N4L).³ The ministry also provides a digital device leasing scheme, *TELA+*, for teaching staff in public schools (subject to certain eligibility criteria).⁴

As part of the government's COVID-19 response to address inequity during lockdowns and school closures, the ministry provided further support to schools and kura through the purchase and distribution of devices and financial assistance with costs related to the distribution of distance learning materials.⁵ The ministry also scaled-up its *Equitable Digital Access* programmes focused on ensuring that households with school-aged students had Internet connections and digital devices for learning from home.⁶

More broadly, New Zealand has a national digitalisation strategy, the "Digital Strategy for Aotearoa and Action Plan", to modernise and transform its public services – although digitalisation of the education system does not explicitly feature in the strategy. The government has also created Chief Digital Officer, Chief Data Steward and Chief Information Security Officer roles to support a whole-of-government approach.⁷

The public digital education infrastructure

In New Zealand, the ministry provides various components of the public digital ecosystem available to education providers, particularly in primary and secondary education. A newly established education agency, Te Pūkenga, is responsible for vocational education and training and therefore for providing its own public digital infrastructure for VET. This section reviews two aspects of the public digital infrastructure in New Zealand: digital tools for system and school management, and digital learning resources for teaching and learning.

Digital ecosystem for system and school management

Student information and enrolment system

The ministry maintains a central student register, the *National Student Index (NSI)*, that stores basic demographic data about students for computing education statistics and school funding. It allocates a unique identifier to students (*National Student Number; NSN*) so that they can be followed longitudinally

throughout the system. In addition, the ministry provides a central system management application called *ENROL* that all schools and kura must use and update as students enrol, change schools or leave the school system.⁸ However, *ENROL* is not a typical student admission or enrolment system that schools (or parents) use to directly register or enrol students; rather, its purpose is to track students at the central system level and to collect and store student demographic and administrative data (including special education flags, teaching and learning notes, and information relating to school health checks).⁹ Educators can only view a student's full record of information if they are currently enrolled at their school. The combination of the *NSI* nor *ENROL* systems represents a kind of limited centralised student information system that provides a consolidated record of student identity, demographic and enrolment information but does not replace the need for school-level systems for schools and kura.

Schools and kura must share basic student demographic data with the ministry for the centralised databases (e.g. birth date, gender, residential status). To facilitate this data sharing, the ministry compiles a list of school information systems that are approved for connecting with the central databases – although there is no ministry involvement in providing, procuring or directly funding schools' acquisition of such systems (used by 97% of schools and kura).

Administrative management and support systems

The ministry provides schools and kura with a range of web applications that serve other management purposes.¹⁰ For example, the *Attendance Service Application (ASA)* is a system that schools can use to make absence referrals; once a referral is generated, a local service provider will allocate it to an advisor for action to reduce student absenteeism.¹¹ This data also feeds into a statistical predictive modelling tool used by the Ministry of Social Development that essentially functions as an early warning system to identify at-risk youth and ensure they have access to the Youth Service for young people Not in Education, Employment or Training (NEET).¹²

In addition, a new centralised education resourcing system, *Pourato*, is currently being developed to provide an accessible and real-time view of funding and staffing entitlements to schools and kura (replacing an existing offline system).¹³ Other digital tools publicly provided or used by the ministry include those for executing administrative functions, such as *EdPay* (teacher payroll), or facility management systems, such as *Helios* and *School Evaluation of Physical Environment* (asset and property planning, management and evaluation). While the majority of the tools are used by school staff or the ministry, some are used by associated stakeholders (e.g. private transport companies). To access this ecosystem of publicly provided digital tools for system and institutional management, stakeholders require an Education Sector Logon (ESL).

Examinations and career guidance

Beyond the digital tools provided by the ministry to facilitate system and institutional management, other government education agencies contribute to the digital ecosystem at the central level. The agency responsible for administering examinations and qualifications, the New Zealand Qualifications Authority (NZQA), provides a digital platform to manage and administer assessments that form part of the examinations for students at upper secondary level. Students logon to the platform to view their marked digital or scanned paper exams online, as well as receive their results and order certificates and records of achievement.¹⁴ Schools and contractors involved in the assessment process can also login to the platform via their ESL credentials to manage student information, online marking and exam supervision processes.

To help students find their future career, the Tertiary Education Commission (TEC) offers a careers guidance platform that provides information, tools and resources for secondary school students (e.g. on choosing subjects or orienting career decisions post-secondary education) as well as for adults in or seeking employment.¹⁵ The platform also has a dedicated section on tools and resources for educators

implementing career guidance programmes in schools. A separate agency, the Teaching Council of Aotearoa New Zealand, provides a career website for teachers with a range of information resources on certification and teaching practices (but it is not a professional development platform).¹⁶

Digital ecosystem for teaching and learning

As with digital tools for system and institutional management, the ministry publicly provides various digital resources for teaching and learning that schools and kura may choose to use.

Digital teaching and learning resources

Static learning resources targeted at primary and secondary educational levels are made available through the websites *Te Kete Ipurangi* (for English-medium resources) and *Kauwhata Reo* (for Māori-medium resources).¹⁷ Those resources cover a wide range of subjects and are all classified according to the relevant curriculum framework. An online curriculum hub has been launched in 2023 to integrate and rehouse the resources from both websites.¹⁸ The ministry also funds *Te Kura*, a distance education provider that offers a wide range of personalised learning programmes for students from early childhood through to secondary education and that follows the national curriculum. Students can enrol part-time or full-time, for flexible time periods, and engage in offline and online courses supported by qualified teachers.¹⁹

Some digital teaching and learning resources are more widely accessible through public media channels. For example, the ministry runs a YouTube channel with content targeted at teachers and students, and during the COVID-19 pandemic the ministry partnered with TVNZ, a free-to-air television network, to deliver educational programmes for primary students (*Home Learning TV*).²⁰

Formative assessment tools

Beyond the central provision of static teaching and learning resources, the ministry freely provides multiple digital tools for formative and continuous assessment. The online *e-asTTle* diagnostic assessment tool enables teachers to conduct formative assessments in their classrooms or (more recently) remotely on reading, mathematics and writing at the primary and lower secondary levels.²¹ The tool and assessment modules are available in both English and te reo Māori. The *Progress and Consistency tool (PaCT)* is another formative evaluation tool provided by the ministry that assists teachers in making consistent judgements about student progress in reading, mathematics and writing.²² It includes psychometrically calibrated measurement scales based on teachers' judgements of student achievement rather than direct assessments of the students themselves; each part of the scale is associated with a curriculum level. The PaCT system must be connected to a schools' LMS (or relevant school information system) and it can generate individual or cohort reports at various levels (e.g. class, school, etc.). A similar system, *Te Waharoa Ararau*, exists for teachers in kura to make consistent judgements about and track student progress in the Māori-medium curriculum.²³

Publicly procured tools to support teaching and learning

In addition to the digital resources it owns and provides, the ministry publicly procures or has negotiated special education pricing on a range of commercial software licences.²⁴ These publicly procured resources are available to all fully state-funded schools and kura, but not necessarily private independent schools. The ministry periodically advertises opportunities for private companies to produce government-funded learning resources on the Government Electronic Tender Service (GETS), but private suppliers can promote and sell their own learning resources to schools and kura directly without government funding or approval.

Access, use and governance of digital technologies and data in education

Providing a public digital education infrastructure does not necessarily imply that stakeholders will use it. Different rules and policies can therefore ensure access to digital technologies in education, as well as support and govern their use.

Ensuring access and supporting use

Equity of access

New Zealand has rules and guidelines on equitable access to educational opportunities at all levels of education, including distance learning – but not specifically on access to digital technologies. The ministry enforces the use of a minority of its publicly owned and provided digital tools for system and institutional management (e.g. data sharing requirements with *NSI*, and the use of *ENROL* and the *Attendance Service Application*) at all educational levels; most other centrally provided or procured digital tools and resources are used on an opt-in basis by schools and kura. The centralised provision of several digital tools and resources provides students, teachers and schools with equal access to the digital education ecosystem. The ministry also funds the government-owned *Network for Learning* (N4L) company that provides Internet connectivity and cyber security and safety services to all public schools.

Nonetheless, the devolution of responsibilities to education providers for ultimately using publicly provided or centrally procured digital solutions, as well as their discretion to acquire additional components of their digital infrastructure, leads to possible disparities and inequities across institutions. While the ministry's funding formula, in principle, partially mitigates disparities across schools and kura by taking into account socio-economic barriers, issues of uneven access to (digital) hardware and learning resources will likely remain given that there is no oversight of how institutions internally manage and allocate their operational budget.

The ministry also implemented a scaled-up *Equitable Digital Access* programme during the COVID-19 pandemic to provide connectivity and digital devices to students. The programme was not means-based, meaning all schools regardless of their socio-economic decile ranking were able to request devices, although the ministry identified students in upper secondary education in deciles 1-3 as priority learners. Teachers in each school reported the number of devices needed for students in their classrooms, and school leaders thus identified and communicated their school needs to the ministry; the ministry then provided as many devices as possible in line with needs. Over 49 000 devices were provided to students, including for all year 9 to 13 learners in need.²⁵

Finally, while the development of digital competences is part of the national curriculum, schools and teachers can try to meet this objective with total pedagogical discretion – except for the mandatory course on digital competences that was included in the new curriculum. The only aspect of education in which the access and use of digital technologies is specifically regulated relates to digital examinations for students at the end of high school. This provides an incentive to schools and kura to acquire and use digital technology to some extent.

Supporting the use of digital tools and resources

Access to the publicly owned and centrally provided digital tools for system and institutional management is facilitated for teachers and administrators through the centralised Education Sector Logon (ESL) identifier, meaning that users do not need to create individual credentials for accessing and using different applications and that access to various functions within those applications is personalised according to user needs (or status). Users are provided with some basic training and guidance for how to use the tools, and the ministry also provides clear and easily accessible guidance on its website.

The ministry supports the use of the digital teaching and learning resources it provides through dedicated guidance for teachers via an e-learning hub, connected to the *Te Kete Ipurangi* website.²⁶ Guidance focuses on pedagogical practices using technology in general, both inside and outside of the classroom, and support for using specific technologies. The “Kāhui Ako” (“Communities of Learning”) also de facto function as local communities of support and guidance for teachers, although their focus is much broader than digital education and the use of technologies for teaching.²⁷

More generally, the ministry provides guidelines to schools and teachers on aspects of student well-being and safety that pertain to the use of digital technologies in the classroom in primary and secondary education.²⁸ The ministry also provides other related guidelines intended to support the evaluation and development of schools’ capacity to deliver digital education (e.g. *e-Learning planning framework*) and to support the use of technology for inclusive education.²⁹

Cultivating the digital skills of education stakeholders

In New Zealand, professional standards regarding teachers’ digital competencies specifically do not exist, although initial teacher education (ITE) programmes are expected to develop teacher digital competencies and this aspect is included within ITE approval and monitoring requirements. The ministry does provide some guidelines on the uses of digital technologies in class as well as on in-service teachers’ digital competencies (for both primary and secondary educators). Developing digital fluency, both as a user of digital technologies and a producer of digital content, constitutes one of the seven professional learning development (PLD) priorities underpinning the ministry PLD programme.³⁰ Applications for the regionally allocated PLD are made by teachers directly via an online platform provided by the ministry.

In 2018, the “Digital Technologies and Hangarau Matihiko” curriculum introduced new content areas in the curriculum including computational thinking and “designing and developing digital outcomes”. By the time the curriculum came into force in 2020, NZD 38 million (EUR 21 million) had been spent to ensure schools and kura understood the new content areas and how they could be integrated into teaching and learning programmes. *Technology Online*, a site housed within the *Te Kete Ipurangi* website, showcases examples of contemporary teaching and learning in technology education and provides curriculum support materials to teachers.³¹ The ministry also launched the 3-year *Digital Readiness Programme* in 2017 to support and embed the new curriculum in schools and kura.

In addition to their own initiatives, the ministry partnered with various organisations to support the roll-out of the new curriculum. The ministry worked with Auckland University to develop several online learning modules to support students and teachers at the senior secondary levels. In 2018, in partnership with the IT industry, the ministry launched the annual *123Tech Challenge* aiming to find regional and national ‘tech’ champions.³² Students participate as individuals or teams to represent their school or kura, supported by a teacher, and demonstrate how digital technologies can be used to solve a local problem in their school community. Finally, to support the development of student competencies, two innovative programmes – *Raranga Matihiko* and *Digital Ignition | Mapura Matihiko* – were delivered in partnership with a museum and a private company respectively, providing access to specialised technologies and rich learning environments to primary and lower secondary students through free face-to-face and online workshops.³³

More generally, to inform and involve parents, students and the general public in consultations about a host of education issues, the government has an active consultation website, *Kōrero Mātauranga*.³⁴ In 2017, the government launched a consultation on digital technology in education (specifically on the draft of the new curriculum), and publicly published both a summary and consultation process report.³⁵

Governance of data and digital technologies in education

There is a range of legislation and a charter that apply to the governance of data and digital technologies in education including the Education and Training Act 2020, the Privacy Act 2020, the Data and Statistics Act 2022 and the Algorithm Charter for Aotearoa New Zealand.

The New Zealand government is a signatory to the *Algorithm Charter for Aotearoa New Zealand*.³⁶ The goal of the charter is to demonstrate a commitment to ensuring New Zealanders have confidence in how government agencies use algorithms, as well as demonstrating transparency and accountability. While not specific to education, one of the principles of the charter is that any system-level decisions impacting a given individual must have, at some point, been reviewed by or received input from a human. While the charter is non-binding, it does provide guidelines related to the development, use, interpretability and monitoring of algorithmic models at all education levels, as well as accountability of (some) digital technologies in education. In general, few (if any) automated decisions are made at the system-level in education by algorithms, but where they are (e.g. the *NEET analytics model* housed by the Ministry of Social Development), these are subject to the charter principles.

New Zealand has national data protection and privacy rules, both in general (via the Privacy Act 2020) and specifically regarding student data and privacy at all education levels (via the Education and Training Act 2020).³⁷ For example, national student numbers are not connected to other national identity numbers. The government also provides various guidelines and resources to schools and early learning services on data protection, privacy and online security, including resources for understanding responsibilities related to the law changes introduced in 2020.³⁸ Further guidelines about the use of student data and the protection of student privacy, as well as that of teachers and school staff, may be developed by individual schools or more local governance bodies. While the ministry does not enforce those rules proactively, the Education Review Office (the ministry's external evaluation agency) does conduct regular inspections of all schools and kura. Misuse of the national student number by schools is also explicitly considered an offence in New Zealand and punishable by a penalty of up to NZD 15 000 (USD 9 600).

In terms of access to student data, specific rules govern the access to and use of education data in New Zealand. Some of the data collected by the ministry is regulated under the Data and Statistics Act 2022, which provides for national statistics including education data.³⁹ Some education data are made available to researchers (subject to rigorous application processes and criteria) through data products such as the *National Census* and the *Statistics Integrated Data Infrastructure*, which is a large, longitudinal research database holding microdata about people and households from various government services and agencies. Researchers may also request to use data from the *PaCT* evaluation tool; in these cases, all identifying information about schools and students will be removed from *PaCT* data to ensure anonymity. The Data and Statistics Act also sets out new powers for the Government Chief Data Steward that apply in an education context and include adopting mandatory data standards, new accountability rules and improved scrutiny of algorithms.

To facilitate data portability across the system the ministry provides guidelines on managing student and teacher data, and it also publishes a list of school information and management software that can easily share student data collected in schools with the central NSI register.⁴⁰ While there are no rules governing the interoperability of digital tools within the national digital ecosystem in education, the ministry encourages the use of open and specific technical standards – for example actively participating in the *Access 4 Learning* community that uses SIF specifications (a standardised and well-defined infrastructure for integrating student-centric software applications). The *Access 4 Learning* community is a non-profit, collaborative and international community of schools, education policymakers, software vendors and consultants that focuses on data interoperability, management and privacy in the context of digital learning ecosystems.⁴¹

Supporting innovation, research and development (R-D) in digital education

Although no public research priorities have been formulated in the field of digital education nor is there a specific research funding programme focused on the topic, the New Zealand Council for Educational Research (NZCER), an independent public research agency, is partly funded through a government grant and conducts research and analysis on a range of educational topics including the use of digital technologies to improve learning outcomes, teaching and assessment.

There are no institutionalised partnerships between EdTech companies and the government in New Zealand – the ministry and its agencies mostly contract research and development work including the development of specific digital tools to external partners, and there are no formal financial mechanisms (e.g. investment, subsidy) to incentivise private sector innovation and development in this field. However, the ministry does support and foster some forms of collaboration with EdTech companies indirectly or through non-monetary means. For example, it has established an effective relationship with The Education Technology Association of New Zealand (EdTechNZ), a satellite of the New Zealand Tech Alliance that represents over 500 organisations in the field of (education) technology.⁴² The ministry also organises conferences with education and technology stakeholders and co-sponsors the *Techweek New Zealand* initiative, which seeks to build a community of entrepreneurs, businesses, government officials and educators and foster new connections among them.⁴³

Notes

¹ <https://www.education.govt.nz/digitalstrategy/introducing-connected-ako/>

² <https://www.education.govt.nz/our-work/changes-in-education/digital-technologies-and-hangarau-matihiko-learning/>; <https://www.education.govt.nz/our-work/changes-in-education/digital-technologies-and-hangarau-matihiko-learning/more-information-on-the-curriculum-change/>

³ <https://www.n4l.co.nz/>

⁴ <https://www.education.govt.nz/school/digital-technology/devices/tela-laptops-for-teachers-and-principals/>

⁵ <https://www.education.govt.nz/school/funding-and-financials/school-finances/quick-reference-guide-for-new-ministry-funding-and-programmes/#devices>

⁶ <https://www.education.govt.nz/school/digital-technology/your-schools-ict-network/enabling-home-internet-access-for-your-community/>

⁷ <https://www.digital.govt.nz/digital-government/about-digital-government/introduction-to-nzs-digital-transformation/> ; <https://www.digital.govt.nz/digital-government/strategy/digital-strategy-for-aotearoa-and-action-plan/>

⁸ <https://www.education.govt.nz/school/managing-and-supporting-students/enrolling-students/>

⁹ <https://assets.education.govt.nz/public/Documents/School/Managing-and-supporting-students/ENROL/ENROLSchoolsUserGuide-V4-0-v2.pdf>

- ¹⁰ <https://applications.education.govt.nz/>
- ¹¹ <https://www.education.govt.nz/school/managing-and-supporting-students/managing-student-attendance/attendance-services/>
- ¹² <https://www.msd.govt.nz/about-msd-and-our-work/work-programmes/initiatives/phrae/youth-service-for-neet.html>
- ¹³ <https://www.education.govt.nz/our-work/changes-in-education/pourato/>
- ¹⁴ <https://www2.nzqa.govt.nz/login/>
- ¹⁵ <https://www.careers.govt.nz/>, although the website will soon be at: <https://www.tec.govt.nz/focus/our-focus/careers-system-strategy/tahatu/>
- ¹⁶ <https://teachingcouncil.nz/>
- ¹⁷ Te Kete Ipurangi has been renamed to Tāhūrangi with a new website (<https://tahurangi.education.govt.nz/>) / <https://kauwhatareo.govt.nz/>; <https://www.tki.org.nz/>
- ¹⁸ https://assets.education.govt.nz/public/Documents/our-work/information-releases/Advice-Seen-by-our-Ministers/October-2021/12.-1269502-Update-Online-Curriculum-Hub-project_Redacted.pdf
- ¹⁹ <https://www.tekura.school.nz/learn-with-us/learn-with-us/about-te-kura/>
- ²⁰ Ministry of Education NZ YouTube channel: https://www.youtube.com/channel/UCdFyjdfqmXgIPJ4wMsQd_Hg; TVNZ <https://www.tvnz.co.nz/shows/home-learning-tv>
- ²¹ <https://e-asttle.tki.org.nz/About-e-asTTle/Basics>
- ²² <https://curriculumprogresstools.education.govt.nz/pact/learn-about-pact/>
- ²³ <https://tmoa.tki.org.nz/Mataiako/Te-Waharoa-Ararau>
- ²⁴ <https://www.education.govt.nz/school/digital-technology/software/>
- ²⁵ https://www.educationcounts.govt.nz/_data/assets/pdf_file/0007/214468/Full-Report-Evaluation-of-Provision-of-Connectivity-and-Devices-A-Covid-19-Response.pdf
- ²⁶ <https://elearning.tki.org.nz/>
- ²⁷ <https://www.education.govt.nz/communities-of-learning/>
- ²⁸ <https://www.education.govt.nz/school/digital-technology/ict-incidents/digital-technology-guide-for-schools/>
- ²⁹ E-Learning planning framework: <https://elearning.tki.org.nz/Professional-learning/e-Learning-Planning-Framework>; Guidelines on technology tools for learning: <https://inclusive.tki.org.nz/guides/technology-tools-for-learning/>

30 <https://pld.education.govt.nz/regionally-allocated-pld/pld-priorities/>

31 <https://technology.tki.org.nz/>

32 <https://123tech.nz/>

33 <https://www.tepapa.govt.nz/learn/for-educators/raranga-matihiko-weaving-digital-futures;>
<https://www.digitalignition.co.nz/>

34 <https://conversation.education.govt.nz/about/>

35 <https://www.education.govt.nz/our-work/consultations/recent-consultations/digital-technology-consultation/>

36 https://data.govt.nz/assets/data-ethics/algorithm/Algorithm-Charter-2020_Final-English-1.pdf

37 Privacy Act (2020): <https://www.legislation.govt.nz/act/public/2020/0031/latest/LMS23223.html>;
Education and Training Act (2020):
https://www.legislation.govt.nz/act/public/2020/0038/latest/LMS170676.html?search=qs_act%40bill%40regulation%40deemedreg_education+training+act_rese1_25_h&p=1&sr=1

38 Resources and guidelines include: <https://www.education.govt.nz/our-work/changes-in-education/privacy-act-2020-resources-for-schools-and-early-learning-services/>;
<https://www.education.govt.nz/school/digital-technology/ict-incidents/protect-your-school-from-cyber-attacks-and-cyber-security-breaches/>; <https://www.education.govt.nz/school/managing-and-supporting-students/sharing-information/>

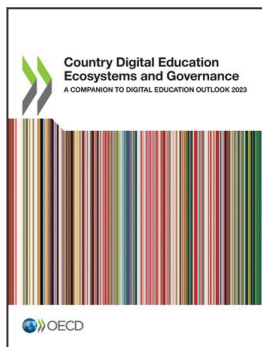
39 Data and Statistics Act (2022): <https://www.legislation.govt.nz/act/public/2022/0039/latest/whole.html>

40 <https://www.education.govt.nz/school/digital-technology/data-and-information-management/managing-data/>

41 <https://home.a4l.org/>. For more on SIF specifications specifically:
<https://www.a4l.org/page/SIFSpecifications>

42 <https://edtechnz.org.nz/about/>

43 <https://techweek.co.nz>



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