Leveraging the potential of digital in a post COVID-19 world:

Current use of digital in NZ settings

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1. Background

This is one of a series of papers written to help inform thinking about how we might leverage the potential of digital in a post COVID-19 world. Much of the material was written prior to the outbreak of the COVID-19 pandemic which forced the closure of schools and required a shift of teaching and learning activity into the online environment. This shift has highlighted the importance of digital technologies as a means of 'bridging the gap' in a remote teaching and learning context, and further, the importance of digital skills and capabilities to ensure these things are used appropriately and to good effect.

According to the recent Curriculum, Progress and Achievement MAG Report, digital technology, and the efficiencies it enables, supports educators across the system to:

- easily access high quality resources that support curriculum, progress, and achievement
- access and use smart tools for designing, enacting, and inquiring into curriculum, progress and achievement
- connect with groups of educators grappling with similar issues to themselves
- contribute and share their knowledge and insights.

The intention of the papers in this series is to provide guidance around what is required to enable an environment with equitable access to internet connectivity, digital devices, and information-sharing tools and processes that use the affordances of digital technologies and do not increase (and may reduce) teacher workload. New Zealand has yet to achieve full digital inclusion so consideration is given to the design for digital learner materials and digital online professional learning to ensure all learners are catered for.

These things have taken on a new significance as we have experienced the shift to an online world in response to the COVID-19 crisis. While we may expect a return in the future to where learners and teachers will resume activity in their physical spaces of learning, the need for a more comprehensive plan of action for how we can best utilise the potential of digital technologies and the online environment to achieve our goals as learners, as teachers and as a system has certainly increased in prominence in the minds of many educators and others supporting the notion of a more accessible, equitable and quality education provision in New Zealand.

2. Introduction

Over the past 30 years educators have enjoyed the freedom to explore the use of technologies in their schools in ways that are of interest to them or suit their particular teaching approach(es). This has resulted in digital technologies being used in a wide variety of ways across a range of settings by teachers and learners to achieve what they want to in their learning.

While there may not be a 'standard' or mandated approach to using digital technologies to support teaching and learning, there are some broad areas of use that apply across all settings:
- As a tool for learning (including BYOD)
- As a curriculum resource
- Learning *about* technology
- Supporting school administration
- Professional support and development

The following pages provide an overview of the ways in which digital technologies are being used currently across different settings in New Zealand education. As these examples illustrate, the majority of use reflect how the majority of approaches stem from the initiatives of individual teachers or local schools more than things that have been centrally mandated and enforced.

3. As a tool for learning

In New Zealand, as in many other countries, digital technologies are being used more regularly across all educational settings (including early childhood) to support a wide range of pedagogical activity, from accessing information and resources, to creating and sharing new knowledge, to communicating and collaborating with others.

A key enabler of this has been the provision of digital devices for teachers and learners, making their use a more 'natural' part of the teaching and learning process within the context of the classroom and beyond.

According to the most recent PISA report (PISA, 2019), the use of digital devices in NZ classrooms has increased more than the OECD average, as illustrated below:
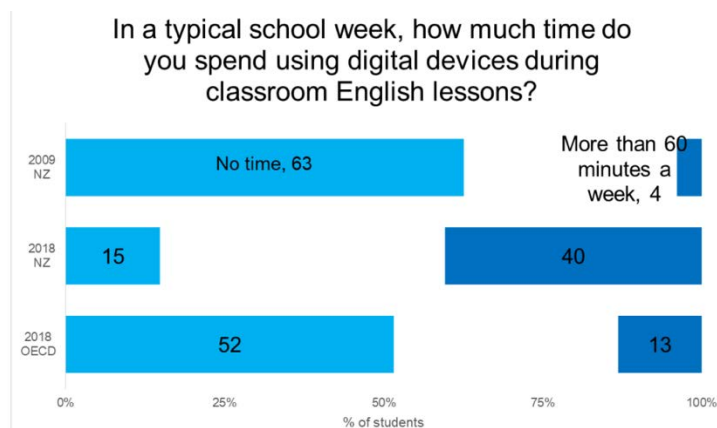
While this dramatic increase can give cause for hope, it is the quality and purpose of that time spent that is important as the PISA report goes on to explain, and in the NZ context, there remains the need for an ongoing focus to support schools and educators to ensure that as the reported time spent using digital devices is indeed purposeful and linked directly to teaching and learning activity. Moreover, it is important that this use is supporting the development of agentic learning practices that truly enable confident, capable, connected life-long learners.

The following sections illustrate some of the ways this intention is being supported in New Zealand:

3.1 Laptops for teachers

The NZ Ministry of Education introduced its Teacher Laptop (TELA) laptop leasing scheme for eligible principals and teachers in New Zealand state and state integrated schools 2004. The TELA scheme also provides help-desk, warranty and repairs services. Laptops are leased for three years and then replaced with the school's choice of device from the latest TELA catalogue.

The premise of this initiative was that teacher access to a laptop for their individual professional use would lead to gains in confidence and expertise in the use of ICTs, to efficiencies in administration, would contribute to teacher collaboration and support the preparation of high quality lesson resources. It was also anticipated that teachers would use their laptop in the classroom for teaching and learning.

The table below provides a summary of uptake of the laptops for teachers scheme from the Cyclone 3rd Quarter Report, from 1 July to 30 Sept 2019

	Ministry Data:	Portal Actual:	%
Eligible Principals	2,373	2,282	96.20%
Eligible teachers	50,116	46,701	93.18%
Total	52,489	48,983	

(Note that these numbers include a number of schools who have historically taken up the option to increase the number of devices acquired, because they previously had that option at their Principal's discretion. This has now been stopped, but the legacy will flow for another 18 months.)

Research from early in the programme[1] revealed:

- increasing confidence and expertise with ICT in many teachers

- increasing use of laptops to strengthen collegial relationships

- efficiencies gained in lesson planning, preparation, administration and reporting

- growing use of laptops for classroom practice and student learning activities.

An important consequence of the TELA policy to provide teachers with laptops rather than desktop computers has been that teachers have the flexibility of time and place for working and experienced efficiencies arising from the ability of the laptop to act as the sole repository of work-related documents.

3.2 BYOD

Aligned with the benefits for teachers of having access to a personal digital device, the move towards providing students with the same or similar experience has been a focus for most schools in recent years. With no direct funding from government for this, schools have had to find ways of doing this from within their own budgets, fund-raising, sponsorship and parent purchasing schemes.

The value of learners having regular access to a personal device has driven the now common approach known as 'Bring your own device' (BYOD). This approach recognises the value that comes from supporting students to bring a personally owned device to use in the school setting and then be able to use that same device at home or in other settings outside of school. This approach parallels what has been happening across a number of workplaces where employees have been encouraged to bring their own device. A part of the motivation here is to share the cost and risk to schools of providing devices to students, although this must be considered along with the evidence of the benefits of having an 'ownership stake' in the device and the ability to use it in multiple contexts (i.e. within and outside of school).

Recent NZ research reveals that 64% of the schools surveyed for the 2018 IDC report have or plan to implement a BYOD policy for students. In terms of established BYOD policy, Intermediate and Secondary schools are the most advanced, with deployment rates about twice the rate(75%) of primary and composite schools. There is also a strong correlation between school size and BYOD policy-the smaller the school the less likely they are to have BYOD policy. In large schools 78% reported that they have a BYOD policy and a further 18% plan to implement a policy.

Whether a policy is in place or not, 55% of schools reported a BYOD program was in place at the school. 72% of schools that use or plan BYOD indicated that it would only to certain year cohorts.

Laptops are the most preferred device (BYOD and school provided). 91% reporting the use of laptops and 78% reported the students were using tablets. But tablets are the most preferred BYOD device (34% vs 26% for laptops). While laptops and tablets are now common in the classroom only 2% of the schools surveyed, that provide devices, allow students to take the device off campus.

In terms of impact on learning, the IDC report concludes the biggest impact of BYOD on learning has been the uptake of self-directed learning with 75% of respondents agreeing that self-directed learning is seen as one of the biggest benefits of using digital technology in schools. Other top benefits include the ability to update learning content faster, facilitating the adoption of 'flipped classroom' models and enabling easier collaboration. These identified benefits of BYOD for learning are closely aligned to the biggest impacts on teaching: 1) Teaching and learning beyond the classroom (seamless and continuous learning experience), 2) Enabling collaboration, and 3) Leveraging student attachment to device to enhance personalised learning.

While the benefits of BYOD appear to be well identified, the issue of equity remains a key barrier to participation for all. 87% of schools surveyed for the ICD report said they use pool devices meet the needs of students and families that cannot afford devices. However, 44% cannot take them beyond the classroom and

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[1] https://www.educationcounts.govt.nz/publications/e-Learning/Laptops_Evaluation_TELA_Scheme_Years_4_to_6/Executive_Summary

33% cannot take them off campus. This can result in significant implications when it comes to schools goals to encourage personalised learning and bringing the whanau and community on the learning journey.

3.3 Manaiakalani

The Manaiakalani Education Trust was established in 2011, championing the award winning programme that is transforming student's education in low decile schools. Students in the Manaiakalani schools[2] are supported to own their own device through a lease scheme at minimal cost to parents. The devices are renewed after three years to ensure they are not left with aging and un-supported technology.

Provision of the devices is just one part of the story, however, with the primary focus for this being the ways in which they are then employed to support personalised learning approaches throughout the school. The Manaiakalani "Learn, Create, Share" pedagogical model provides a framework to guide students, teachers and whānau in the ways that these devices can be used to support learners in achieving their goals.

Research conducted by the Woolf Fisher Research Centre since the inception of the programme reveals strong improvement in learning outcomes, including evidence that if a child is continuously present in a Manaiakalani school and were fully 'immersed' in this way of learning, the rate of gain in writing was twice that expected nationally, with similar gains shown in mathematics.

The key learning from the Manaiakalani experience reinforces the fact that the provision of devices alone (whether through BYOD or otherwise) is not the thing that determines effective learning – it is the way in which they are used, coherently and consistently across the school to support effective pedagogical practice that matters.

3.4 Online Learning

The use of online (virtual) learning has been steadily growing in a variety of ways in NZ schools over the past two decades. Key among these is the development of the Virtual Learning Network (VLN) Community, which a group of school clusters and organisations who choose to operate as a collaborative network, utilising digital technologies in order to enhance the learning outcomes and opportunities for learners (students, teachers, school communities and educators). Members include FarNet[3] , HarbourNet[4] , Volcanics[5] ,VLN Primary[6], Welcom[7] , and NetNZ[8] . Activity across these networks tends to address the 'formal' learning needs of learners (see section 3.4 above), providing access to areas of learning not catered for in their local setting, and providing opportunities to work towards gaining recognition for achievement within the frameworks used in face to face schools. The work of Te Kura[9] (the Correspondence School) deserves mention here as they are also involved in providing access to formal 'courses' online for learners in schools across NZ, with approx. 50% of their current enrolment of 22,000 EFTs being a part of this 'dual enrolment' programme. Because of their activity in the online learning space, all of these groups were called upon to contribute their expertise and resources to support schools and educators as part of the COVID-19 response.

Virtual Field Trips provide another example of the use of online learning opportunities in schools, where learning experiences outside the classroom are mediated via the online environment. An award winning NZ example is LEARNZ[10], a programme of free virtual field trips, helping students access learning experiences in places around Aotearoa/NZ, Antarctica and beyond. For over a decade LEARNZ has evolved into a comprehensive virtual field trip programme for the education sector.

Many schools are embracing online learning by creating environments where learning content is shared with students via a Learning Management System (or similar). Besides sharing content for learning, these environments are also being used to encourage learner to learner interactions and the participation in

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[2] http://www.manaiakalani.org/our-schools
[3] https://farnet.school.nz/
[4] https://vln.school.nz/pages/view/807391/harbournet
[5] http://www.volcanics.school.nz/
[6] http://vlnprimary.school.nz/
[7] http://welcom.net.nz/
[8] http://www.netnz.org/
[9] www.tekura.school.nz
[10] http://www.learnz.org.nz/

collaborative project work for example, all of which can now happen both within school and outside of school, thus extending the parameters of what has traditionally been regarded as 'learning time'.

Teachers are using a variety of online learning approaches to remain connected to their own professional learning – through participation in curriculum or subject specific communities of practice that are organised by subject associations for example, or in more general communities of learning that exist in areas such as Facebook, Twitter or the Forums section of the VLN, where the focus of discussion and exchange of ideas is much broader and addressing issues such as different pedagogical approaches, the use of learning space, transforming schools and classroom practice etc. In addition to these, informal, environments supporting professional growth, teachers are now able to participate in an increasing number of online 'courses' that provide a more formal approach to professional learning, and are recognised with various forms of qualification or 'credentials'.

The use of social networking sites is increasingly recognised as having value as online learning tools. Many schools have a Facebook page as a means of connecting with communities – and with students. Twitter is regularly used as a way of collecting feedback at conferences and sharing news and information among the informally developed communities that form around areas of interest. An increasing number of informal 'meet-ups' are also being hosted regularly on Twitter, attracting groups of teachers from all over the world – including NZ.

Google's G-Suite[11] and Microsoft's Education solutions[12] now offer schools a plethora of ways of augmenting what has traditionally been limited to the time and space of classroom settings, and allowing learners (and teachers) to engage with content and each other outside these parameters. These include both synchronous and asynchronous tools allowing for real-time and time-independent engagement in learning. The web conferencing platform, Zoom[13] has also seen a phenomenal rise in popularity as a simple to use video-conferencing tool during the COVID-19 lockdown. Aside from breaking down the barriers of the time/space constraints of the traditional paradigm, these applications also allow for a more personalised learning experience, both for the learner and for the teacher who is now able to be more intimately 'aware' of the learning journey of each student through the various monitoring and feedback features available to them. Additionally, the affordances of these environments to allow for collaborative document development, iterative editing and versioning etc. is becoming commonplace in the lives of many educators, greatly enhancing the ways they work together and create new knowledge. Such tools and environments shift the focus of online learning from being simply a 'delivery channel' to an 'experience' where the learning is an active participant in the entire learning process.

4.   As a curriculum resource

The online environment has completely transformed the way in which learners can access the content and resources to support their learning. The World Wide Web, as originally conceived, was designed to make the distribution and sharing of online content simpler, easier, and more effective. Some of the earliest use of this technology was by groups seeking to collect, collate and distribute collections of resources to support educators in their work.

Significant among these in the NZ context is Te Kete Ipurangi (TKI)[14], established in 1999 as one of the key initiatives of the initial ICT Strategy for Schools. In the two decades since, TKI has been a key contributor to the realisation of the national ICT strategy through its various iterations. It has gained international recognition, is referencing over 25,000 online resources, and hosts over 30,000 Ministry commissioned web pages across 75 TKI websites, including:

- NZC Online (http://nzcurriculum.tki.org.nz/)

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[11] https://edu.google.com/
[12] https://www.microsoft.com/en-nz/education/products/office-365-app
[13] https://zoom.us/
[14] http://nzcurriculum.tki.org.nz/

- NZMaths (https://nzmaths.org.nz)
- Te Marautanga o Aotearoa (http://tmoa.tki.org.nz/)
- Te Whariki (https://tewhariki.tki.org.nz/)
- Technology Online (http://technology.tki.org.nz/)
- NCEA Online (http://ncea.tki.org.nz/)
- Educational Leaders (http://www.educationalleaders.govt.nz/)
- Assessment Online (http://assessment.tki.org.nz/)

In 2019 there were approximately 27 million page views across all TKI sites (includes NZMaths) which illustrates the extent to which these resources are being accessed and used, and the value that teachers evidently see in them. In addition to these resources, TKI provides regular communications with educators via its mailing lists. In 2019 there were 12,000 subscribers across 13 active lists.

A key issue for the MoE is the fact that the current TKI sites have grown 'organically' since their beginning in 1999, to the point where the MoE is now responsible for managing a collection of 74 (mostly unmanaged) websites that are powered by a variety of different technologies. As a response to this, the Ministry of Education is currently planning a significant future development for the TKI repository with their Curriculum Support Online (CSO) initiative. CSO will deliver current, trusted and high quality content that is accessible and targeted appropriately to multiple audiences. It will hold all curricula and learning support resources in one central place, including content development guides. The CSO will also provide a platform for content governance and oversight of content management processes.

A more recent example of the work of the Ministry of Education in providing curriculum support for learners is the School Leavers Toolkit[15], which it plans to further develop in the early part of 2020 to include micro-credentials as a way of recognising the work learners do in engaging with these materials. An associated part of the TKI site[16] provides teachers with support to teach financial literacy, civics education and key workplace competencies as part of local curriculum for year 7 to 13 students.

Several other new initiatives are in the pipeline currently, providing yet greater reason for establishing a coherent, future-focused CSO approach that moves beyond the provision of 'websites' and takes advantage of more networked and interoperable, cloud-based solutions where machine readable and curricula aware content can be managed and accessed by educators. These new initiatives include:
- New Zealand Histories[17]
- Kauwhatareo[18]
- Pūtātara – Global Citizenship and Sustainability Resource
- Challenging Racism (the SameGame and #notpartofmyworld toolkit)
- Healthy initiatives for schools (with Sport NZ)
- Refreshed Sexuality Education guidelines

In addition to these Ministry-led initiatives teachers and learners are making use of a wide range of online resources to support the curriculum. Three examples of commonly used respositories are the Khan academy[19], Education Perfect[20] and Mathletics[21].

Khan Academy provides a library of trusted practice and lessons covers math, science, and more that is available free to teachers and students. Besides providing valuable curriculum-support materials in this way, learners accessing these materials are able to practice at their own pace, first filling in gaps in their understanding and then accelerating their learning – thus achieving a key goal of personalised learning.

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[15] https://school-leavers-toolkit.education.govt.nz/
[16] https://sltk-resources.tki.org.nz/
[17] https://education.govt.nz/news/including-new-zealand-history-in-the-national-curriculum/
[18] https://kauwhatareo.govt.nz/
[19] https://www.khanacademy.org/
[20] https://epforlearning.com/
[21] https://www.mathletics.com/nz/

Mathletics and Education Perfect are examples of a growing number of online curriculum support websites, providing the opportunity for learners to engage with learning through engaging challenges, lessons and games, helping them develop essential lifelong skills. Access to these sites is based on a subscription model – and schools are increasingly making use of such sites to supplement and augment their own curriculum materials.

These three examples were among a larger number of sites that schools and educators were able to make use of during COVID-19 as they are able to be accessed from home, and do not rely on a classroom environment to be used. Thus, they help bridge the home-school connection by providing purposeful learning activities that can be engaged with in either context. Further, most of these sorts of programs provide a level of personalisation and individualised feedback and monitoring that isn't always possible with a classroom situation with a single teacher working with 25 learners.

5. Learning about technology

In December 2017, the technology learning area of the NZC was revised to strengthen digital technologies in The New Zealand Curriculum[22]. The goal of this is to ensure all learners have the opportunity to become digitally capable individuals. The intention here was to strengthen the opportunities for learners to develop their own technological knowledge and practice, specifically in areas of computational thinking (CT)[23] and in designing and developing digital outcomes (DDDO)[24]. The strands identified in this new area are compulsory for all schools from 2020, and may be taught within a given lesson, topic or theme or may be taught as a separate part of the school timetable. The focus of this new area is on learning about digital technologies and becoming creators/innovators, rather than just users and consumers.

6. Supporting school administration

An area where the use of digital technologies is more universally applied across the education system is in support of school administration. The backbone of any school operation is its student management system (SMS), containing the record of all students (and staff), enabling the management of the "learning lifecycle" of each student, and making everyday tasks as quick and efficient as possible. From a whole of system perspective the real benefit of all schools using an approved SMS is realised in the ability for data to be exchanged between systems and to provide important information that enables the targeting of appropriate resourcing and support to particular learners (and schools).

In addition to the core SMS, many schools use a variety of other systems to support and manage the operational aspects of what they do, including;

- Financial Management System (FMS) – schools currently use a variety of software products to oversee and govern their income, expenses, and assets. The ability of such systems to integrate with the SMS and to provide reports for the MoE, auditors and budget holders within the school is increasingly important.

- Library Management System (LibMS) - at its basic level this may be regarded as an electronic replacement for the old card catalogue, but has grown to include a wider range of functionality around the lifecycle management of resources as well as the integration with other library systems (e.g. other schools, public libraries, national archives etc.)

- Content Management System (CMS) – with an increasing amount of digital content being produced, stored and managed by schools many are looking to large systems to assist with doing this. Some schools are investing in separate systems, others are using 'open' systems such as Google or Microsoft cloud storage solutions.

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[22] http://technology.tki.org.nz/Technology-in-the-NZC
[23] http://technology.tki.org.nz/Technology-in-the-NZC/CT-Progress-outcomes-exemplars-and-snapshots
[24] http://technology.tki.org.nz/Technology-in-the-NZC/DDDO-Progress-outcomes-exemplars-and-snapshots

- Learning Management System (LMS) – many schools are now using a range of products that fit loosely in this category to allow their learners to engage with their learning online and independent of the physical classroom. Examples of such environments include Google Classroom[25], Microsoft Teams[26] and Moodle[27].

Increasingly, these systems are being purchased on a subscription basis as a 'cloud-based' solution (or Software as a Service – SaaS[28]). Using SaaS solutions provides a convenient way for schools to manage their costs (both in terms of capital investment, and also in terms of support), in addition to providing greater capability for sharing data and strengthening the system-level support for learners. As part of its support role for schools the Ministry of Education currently maintains a registry of SaaS providers for the various systems in NZ[29].

As the use of these cloud-based solutions increases, so too does the requirement for all educators to be knowledgeable about how they are used and also about how to use them confidently and competently, as there are also potential risks with sharing data inadvertently or inappropriately.

7. Professional support and development

ICT-related (e-learning) professional development has been supported by the MoE continuously in NZ since 1990, following the recommendations of the Sallis report in 1989. This was in response to the need to provide teachers with the skills and knowledge required to use computers in the context of their classroom programmes, as these were a relatively new innovation at the time. No other area of the curriculum has received continuous support of this kind over such an extended period of time.

Following the introduction of the World Wide Web (WWW) to NZ in 1995, the impact of ICTs in schools increased steadily, leading to the development of NZ's first ICT strategy for schools in 1998 (revised 2003). This saw the introduction of a cluster-based model of PD, as well as programmes for principals and the introduction of an online resource centre for teachers, Te Kete Ipurangi (TKI).

The cluster model required groups of schools to collaboratively develop a PD plan and apply to a contestable fund for support over three years. This approach seen a number of effective collaborations emerge, including a national knowledge-building community that is evident in forums such as the national conferences that are held, as well as the online forums on TKI and the Virtual Learning Network (VLN).

While the initial focus of these PLD programmes was on computer competency and skill development, the emphasis has changed over time to a focus on pedagogical practice. School leaders and teachers are increasingly understanding the transformative potential of ICTs in teaching and learning, and for education as a whole.

While an ongoing emphasis on digital fluency remains, the revision of the Technology learning area in the NZC strengthen the positioning of digital technologies in The New Zealand Curriculum (NZC) and Te Marautanga o Aotearoa (TMoA) has seen the focus of much of the professional learning shift to equipping teachers with the skills and knowledge required to include computational thinking and designing and developing digital outcomes.

Despite this ongoing and continuous provision of PLD, the overall uptake and system level impact has been limited according to recent research. The IDC report (2018) concludes that whilst the digital fluency of students in New Zealand is relatively high, there is a gap between teachers and students at secondary school level. This may be due to a higher base requirement, given that teaching at the secondary level comes with the expectation of more complex technology and tech savvy students overtaking teachers in terms of their digital fluency. This segment of the report also indicated that motivating teachers to change their practice was a challenge, suggesting an underlying obstacle to increasing digital literacy in these schools. However, IDC's

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[25] https://edu.google.com/products/classroom/?modal_active=none
[26] https://www.microsoft.com/en-nz/microsoft-365/microsoft-teams/group-chat-software
[27] https://moodle.org/
[28] https://searchcloudcomputing.techtarget.com/definition/Software-as-a-Service
[29] https://www.education.govt.nz/school/digital-technology/managing-data/sharing-data/contacting-vendors-of-school-management-systems/

previous research has found that a teacher's lack of digital literacy does not necessarily impact digital learning (by students).

The government, however, sees digital fluency as a critical issue in schools. The New Zealand government announced a NZ$40 million package over three years in June 2017 to improve student digital fluency on top of NZ$21 million over three years already prioritised for teachers' digital technologies related professional learning and development (PLD). The Ministry of Education is launching several initiatives to upskill teachers as well as students and transition to a digital education system. But, as experienced in other countries, the challenge will be how to attract STEM (science, technology, engineering and maths) graduates into teaching when they are lured by the prospect of more lucrative IT careers in other industries.

Appendix 1 lists a number of the key providers of professional learning and support available to schools, kura and early years settings in NZ who support a focus on digital fluency and/or digital technology development to some degree or another. Many of these are provided within the online environment, providing teachers with the opportunity to develop their own skills in learning online in the process.

8. Role of Government and agencies

The Ministry of Education's role in leading the thinking and overarching strategy regarding the use of digital technologies cannot be over-emphasised. While a couple of decades ago it may have been OK for individual schools (and teachers) to pursue their own interests and build their own local infrastructure to support that, the 'cloud' enviornment requires a coherent and centrally supported approach. The Ministry of Education's Digital Strategy "*Transforming Education for the Digital Age*"[30] is intended to provide just that, and will be the key focus of work over the next few years.

An initial ICT Investment Plan was agreed in June 2019, enabling work to continue on several key digital initiatives to support effective, coherent, system-wide adoption of technologies for education. These initiatives aim to:

- enable an integrated, connected online learning environment, accessible to educators and to students and those who support them anytime, anywhere

- design new approaches to curriculum and assessment that leverage technologies to enable assessment to be a seamless part of learning

- enhance decision-making by ensuring high-quality data is easily accessible to educators, stakeholders, and decision-makers, including data on the education workforce

- provide core digital services and infrastructure to free up educators and providers to focus on delivering a quality education, reduce costs, and improve efficiency

- improve agency communication channels and systems to make it easy for the public to interact with the education system, and to improve agency efficiency and reduce costs.

It is also important to note in the context of this paper the significant role of other government agencies and NGOs in creating the 'baseline' for development of digital technology use within the education system in New Zealand. Some examples include:

- The National Broadband rollout[31] has laid the foundation for 98% of all NZ schools being able to access high speed broadband at their gate, and thus enable them to connect to the Internet at maximum speed and capacity.

- The New Zealand Qualifications Authority (NZQA) has been leading the way with their Digital Assessment Trials and Pilots[32], and are also pioneering the alignment of micro-credentials with the existing frameworks they have.

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[30] http://services.education.govt.nz/assets/Uploads/MoE-Digital-Strategy-briefing-SI-vendors.pdf
[31] https://broadbandmap.nz/
[32] https://www.nzqa.govt.nz/about-us/future-state/digital-assessment-trials-pilots/

- NetSafe NZ[33] has provided online safety advice, expertise and education for schools and teachers for more than 20 years. Their role has become increasingly important in recent years as the issues associated with cyber-bullying, online safety, privacy and data security have all become important areas for individual teachers and schools to know how to deal with.

- The TELA+ scheme[34] is a digital device leasing scheme for eligible principals and teachers in state and state integrated schools that has been running since 2001. Providing teachers with these devices ensures they have access to the same set of documents and resources at home and at school.

- Network for Learning (N4L)[35] - a crown company that connects 99% of New Zealand schools and kura to internet services through a Managed Network.

The COVID-19 response has brought into sharp focus the work of each of these agencies and organisations and highlighted the importance of their work in supporting a robust, connected and digitally enabled education ecosystem. For example, Netsafe and N4L worked together to design and provide a free safety filter for students learning from home[36].

9. Conclusion

The regular use of digital technologies to support teaching and learning has now become an established feature of the education system in New Zealand. Yet despite the encouraging reports supporting this view, there remains a concern about the lack of equity that exists, with some schools and learners having much greater access and opportunity than others. This growing "digital divide" may be considered an unintended consequence of the highly devolved schooling system in New Zealand, with responsibility for investment in digital technologies residing with individual schools. In an era of competing priorities for limited discretionary funding within school budgets, and with varying levels of 'belief' about the value of digital technologies to support learning, decisions being made at a local school level have resulted in a significant variance in terms of technology investment and use.

A significant driver over recent years has been the shift of core computing functionality to 'the cloud'. This has reduced the need for individual schools to own, operate and manage expensive IT infrastructure. It also enables a raft of other benefits including remote technical support, off-site storage and back-up, and access to core learning platforms and systems on a subscription basis rather than as a one-off investment that requires ongoing upgrades etc. The big opportunity here is to consider the value of a range of centralised platforms and services that can be made available to all schools to use, with the cost being met by the Ministry of Education for 'whole of country' licensing. While some may consider such a move to encroach upon the independence of individual schools to make their own decisions, the benefits in terms of addressing the wide-spread inequity within the system, and the overall cost-burden across the whole of the system with each school investing in its own applications means it should be given serious consideration.

It is essential that educators at all levels of the system to be engaged with recognising what is driving the use of digital technologies in the education system, and the trends that are emerging as a consequence. Without a clear understanding of these things the adoption of technology will remain, at best, piecemeal and inequitable across the system. Efforts to include digital technology in teaching and learning will likely be embraced un-critially by the 'techno-optimists', and resisted and ignored by the technophobes and 'techno-pessimists'. It will become technology for technology's sake, rather than a considered and informed approach based on our collective understanding about the role and impact of technology in all areas of our lives. Our investments will fail to realise the changes we imagine or hope for, and our work with students will fail to prepare them for the increasingly digital world that they will inevitably inhabit and the choices and challenges they will face as a consequence.

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[33] https://www.netsafe.org.nz/
[34] https://www.education.govt.nz/school/digital-technology/your-schools-ict-network/tela-laptops-for-teachers-and-principals/
[35] https://www.n4l.co.nz/
[36] https://www.n4l.co.nz/n4l-provides-free-safety-filter-for-all-students-learning-from-home/

10. Current Use Checklist

Use the table below to reflect on what you have read in this paper, and to consider what you might do in your context to address some of the questions raised.

Driver	Questions	Next Steps
As a tool for learning		
As a curriculum resource		
Learning about technology		
Supporting school administration		
Professional support and development		
Role of government		

11. References

2020 Trust (2018) *Computers in Homes Outcomes report* – retrieved from
https://computersinhomes.nz/outcomes/

2020 trust (2017) *Digital Technologies in New Zealand Schools* – retrieved from: https://2020.org.nz/wp-content/uploads/2014/05/Digital-Technologies-in-Schools-2016-17-04-05-2017-FINAL.pdf

21st Century Learning Reference Group (2014) Future-focused learning in connected communities. Retrieved from:
https://www.education.govt.nz/assets/Documents/Ministry/Initiatives/FutureFocusedLearning30May2014.pdf

Digital Inclusion Group (2017) *Digital New Zealanders: The Pulse of our Nation* A report to MBIE and DIA retrieved from: https://www.mbie.govt.nz/dmsdocument/3228-digital-new-zealanders-the-pulse-of-our-nation-pdf

ERO (2015). *Focus on the use of technology in Educationally powerful connections with parents and whanau* retrieved from: https://www.ero.govt.nz/publications/educationally-powerful-connections-with-parents-and-whanau/

ERO (2018) *Leading Innovative Learning in New Zealand Schools* retrieved from:
https://www.ero.govt.nz/publications/leading-innovative-learning-in-new-zealand-schools-april-2018/

IDC (2018) *IDC New Zealand Education Study: Bring your Own Device (BYOD) & Digital Education in New Zealand Schools for Ministry of Education* retrieved from:
https://www.education.govt.nz/assets/Uploads/IDC-Education-Study-June-2018-Summary-Survey-Results.pdf

IDC (2018) *IDC Education Study; Digital Education in Schools* (developed for the NZ Ministry of Education – retrieved from https://www.education.govt.nz/assets/Uploads/IDC-Education-Study-June-2018-Summary-Survey-Results.pdf

NZ TECH (2016*) Leading for 21st Century Learning* (Briefing Paper). Retrieved from:
https://www.conferenz.co.nz/downloads/1493259886/nztech-education-technology-summit-briefing-paper-aug-2016.pdf

MBIE (2019) *From the knowledge wave to the digital age*. Retrieved from
https://www.mbie.govt.nz/dmsdocument/5866-growing-innovative-industries-in-new-zealand-from-the-knowledge-wave-to-the-digital-age

Ministry of Education (2018) Curric*ulum Progress and Achievement Ministerial Advisory Group: Conversation Document* – Retrieved from: https://conversation.education.govt.nz/assets/CPA/CPA-Programme-Conversation-Document.pdf

Newton, C. for the Ministry. (2018). *Towards digital enablement: A literature review*. Retrieved from:
https://www.educationcounts.govt.nz/publications/schooling/towards-digital-enablement-a-literature-review

NZ Digital Skills Forum (2018) *Digital Skills for a Digital Nation*. Retrieved from
https://www.digitalskillsforum.nz/read-the-digital-skills-for-a-digital-nation-report/

Wenmoth, D. (2013). *Our digital aspiration*? (blog post) retrieved from:
https://wenmoth.net/2013/11/10/our-digital-aspiration/